Contribution to the knowledge of the genus *Clanoptilus* Motschulsky, 1854 in Italy (Coleoptera: Cleroidea, Malachiidae)

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Abstract

In this paper, the species of the genus *Clanoptilus* Motschulsky, 1854 mentioned for the Italian territory are reviewed. Two separate keys are provided for identification of males and females. For each species a discussion of taxonomic status and distribution in Italy, and the list of localities of studied specimens are also presented. *Clanoptilus affinis subconcolor* (Pic, 1911) and *Clanoptilus spinipennis brevispina* (Kiesenwetter, 1871) are tentatively proposed as valid subspecies or separate semi-species. The new synonymy *Clanoptilus bellieri* (Peyron, 1877) = *Clanoptilus transadriaticus* (Evers, 1970) is also proposed.

Key words: Soft-winged Flower Beetles, identification keys, distribution, Italy, new synonymy, new subspecies.

Introduction

Malachiidae of genus *Clanoptilus* are easy to observe and collect, often very common in spring-summer in sunny environments, on flowers and herbaceous vegetation from sea level to alpine meadows. This accessibility is however rather skin-deep; in fact, the knowledge on their systematics, distribution and biology is largely incomplete and inaccurate, also because the simple species recognition is often difficult. Determination errors and species intermingling, even at the generic level, come up frequently in the revision of the collection material, especially on female specimens, and the literature often contains unreliable data.

The present work therefore aims at giving a contribution to the improvement of this knowledge, although limited to the Italian fauna, the most accessible to the writer.

History

The genus *Clanoptilus* (from Greek: “hollow wings”) was established by Motschulsky (1854) for the species of *Malachius* with male elytral apex folded and fitted with appendages. Later authors either considered *Clanoptilus* as a subgenus of *Malachius* (e.g. Mulsant & Rey 1867 and Pic 1913–1914), or ignored it (e.g. Peyron 1877; Abeille de Perrin 1890–91; Krauss 1902), until the publication of the fundamental work by Evers (1985) which focused on characters of excitators and related structures. The excitators are paired secretory organs of males, located in various parts of body; their secretion is used for precopulatory behavior (Matthes 1962). Evers (1985) divided the genus *Malachius* into eight genera and reproposed *Clanoptilus* as a genus in its own right, with its original meaning. The type species is *C. antennatus* Motschulsky, 1854, synonymous of *C. spinipennis* (Germar, 1824).

The subgenus *Hypoptilus* was established by Mulsant & Rey (1867) for the *Clanoptilus* species in which the elytral apex of males is only slightly folded, and its appendages are reduced or missing. The type species of the subgenus is *C. barnevillei* (Puton, 1865).

The catalog of the Palaearctic fauna of Mayor (2007) lists 82 *Clanoptilus* s.str. and 19 *Hypoptilus*.

Tshernyshev (2009) moved some of Evers’s *Clanoptilus* into the new genus *Anthomalachius*, characterized by the prolonged body, elongate pronotum, characteristic shape of antenna, completely dark coloration with green or blue metallic lustre except for the yellow or orange spots on the elytral apices, and specific shape of urites and genitalia. *Anthomalachius* is represented in Italy by two species not treated in this work: *A. spinosus* (Erichson, 1840) with a wide Italian diffusion, and *A. strangulatus* (Abeille de Perrin, 1885) with citations for Emilia Romagna, Lazio and Basilicata.

For the Italian territory, important contributions to the knowledge of the species now included in genus *Clanoptilus* were given by Baudi di Selve (1873), and above all by Pardo Alcaide (1960–1969). In more recent years, the faunistic works of Angelini (1986, 1991), Pasqual & Angelini (2001) and Pasqual (2007, 2010) have been pub-
Ecology
Imagoes of *Clanoptilus* can be found on flowers and herbs and, as common in Malachiidae, they are pollen feeders and partially zoophagous. Larvae are zoophagous and develop at the expense of xylophagous arthropods under bark of trees and in the stems of herbaceous plants: maritime pine (Perris 1863), grapevine (Abeille de Perrin 1890–91), bramble (Pic 1913–1914). F. Izzillo (pers. comm.) has recently observed the emergency of *C. spinipennis* from stems of *Ferula communis* attacked by *Anthaxia anatolica* (Col. Buprestidae) and *Psilothrix viridicoerulea* (Col. Dasytidae); G. Altadonna (pers. comm.) has obtained *Clanoptilus paralis* from stems of the same plant attacked by *Psilothrix viridicoerulea* and *P. protensa*. Cases of parasitism at the expense of Hymenoptera have also been reported (Pic 1913–1914), analogously to what is known for other members of the family.

Materials and Methods
Identification by comparison with type material has been necessary only in two cases, as most of the taxa covered have indeed widely recognized taxonomic statuses and boundaries.

Bibliography for each species includes the original description and the main works that support its identification or provide significant information.

During the present work, some thousands of Italian specimens belonging to museums and private collections were examined. For each species, all localities reported have been checked by the author and are listed, by region and province, in alphabetical order, with the altitude when specified on the label. After each locality the repository of the specimens has been added.

The framework of Vigna Taglianti et al. (1992, 1999) has been followed for definition of chorotypes.

Line drawings of antennae have been obtained from macrophotographs, and converted to digital form with Inkscape™ software package.

Abbreviations used:

| Abbreviation | Repository |
|--------------|------------|
| CAB          | Coll. A. Bramanti, Pietrasanta, IT |
| CFA-MB       | Coll. F. Angelini & M. Bocci, Francavilla Fontana, IT |
| CFA-MZUF     | Coll. F. Angelini in Museo di Storia Naturale dell’Università degli Studi di Firenze, Sezione di Zoologia “La Specola”, Firenze, IT |
| CGF          | Coll. G. Franzini, Milano, IT |
| CGL          | Coll. G. Liberti, Ubozdo, IT |
| CLF          | Coll. L. Forbicioni, Portoferraio, IT |
| CLS          | Coll. L. Saltini, Modena, IT |
| CRP          | Coll. R. Papi, Castelfranco, IT |
| CSC          | Coll. S. Cosimi, Casale Marittimo, IT |
| CTG          | Coll. T. Gazurek, Warszaw, PL |
| MNB          | Museum für Naturkunde, Berlin, DE |
| MNHN         | Musée National d’Histoire Naturelle, Paris, FR |
| MSNG         | Museo Civico di Storia Naturale, Genova, IT |
| MSNM         | Museo Civico di Storia Naturale, Milano, IT |
| MSNVE        | Museo di Storia Naturale, Venezia, IT |
| MSNVR        | Museo di Storia Naturale, Verona, IT |
| PNALM        | Coll. di Parco Nazionale Abruzzo, Lazio e Molise, Villetta Barrea, IT |

Identification Keys
In descriptions the below listed conventions have been adopted for the following anatomical parts:

- antennal articles are always considered in physiological position, i.e. facing forward: the term *upper* refers to the superior side (generally uniform and devoid of differentiated structures) and *lower* to the inferior one (often concave, serrate or triangular).
- the structures at the apex of the elytra of the males (*excitators*) consist of a portion more or less deeply inwards folded, with an angular or rounded *upper margin*, usually of a pale (yellow or orange) color contrasting with the rest of the elytra, and more or less broadly dark-bordered at apex. In many species the excitators are provided with sturdy bristles and a dark thorn-shaped appendage, according to the “*marginellus* type” of Matthes (1962: 443). This appendage is sometimes provided with rows or tufts of setae arranged differently depending on the species.

Key for Males
Antennae exhibit constant differences between species and are the most reliable means of identification.

The pro- and/or metatibiae of some species are characterized by the presence, in addition to the basic bristles, of long, curved whitish bristles. Metatibiae can, in some other genera of Malachiidae (e.g. *Anthocomus*, *Axinotarsus*, *Charopus*, *Ebaeus*), present themselves in two states: keeled on the inner side, or simple.

Male genitalia show a great uniformity of structure and do not display useful elements for species identification. They are therefore not used in the table.

1. Elytra at apex strongly folded inwards, excitators with well developed appendages .................................................. 2
2. Elytra at apex at most weakly folded, appendages of excitators rudimentary or absent (see also *C. spinipennis*) ...... 13
3. Metatibiae with a thin, sharp keel along the inner side ........ 3
4. Metatibiae simple, without keel ........................................ 7
5. Knees dark like the rest of the femur .............................. 4
6. Knees pale ....................................................................... 5
7. Lower edge of antennomeres IV–VI clearly concave; frons dark .............................................................................. *affinis*
8. Antennomeres IV–VI subconical, not concave at lower edge; frons pale in large extent ................................................. ambiguous

1. Clypeus with an oval or rounded depression ........................ 2
2. Clypeus long, curved, whitish ............................................ 13
3. Clypeus short, narrow .................................................... 7
4. Knees dark like the rest of the femur .............................. 4
5. Knees pale ....................................................................... 5
6. Lower edge of antennomeres IV–VI clearly concave; frons dark .............................................................................. *affinis*
7. Antennomeres IV–VI subconical, not concave at lower edge; frons pale in large extent ................................................. ambiguous

1. *Prorhinus* ................................................................. 2
2. Clypeus long, curved, whitish ............................................ 13
3. Clypeus short, narrow .................................................... 7
4. Knees dark like the rest of the femur .............................. 4
5. Knees pale ....................................................................... 5
6. Lower edge of antennomeres IV–VI clearly concave; frons dark .............................................................................. *affinis*
7. Antennomeres IV–VI subconical, not concave at lower edge; frons pale in large extent ................................................. ambiguous

1. *Prorhinus* ................................................................. 2
2. Clypeus long, curved, whitish ............................................ 13
3. Clypeus short, narrow .................................................... 7
4. Knees dark like the rest of the femur .............................. 4
5. Knees pale ....................................................................... 5
6. Lower edge of antennomeres IV–VI clearly concave; frons dark .............................................................................. *affinis*
7. Antennomeres IV–VI subconical, not concave at lower edge; frons pale in large extent ................................................. ambiguous
The females of Clanoptilus are uniform in appearance, and they can be found mixed up. It has been considered useful to include these genera in the table below, which again is applicable only within the Italian territory.

Differences in pale/dark pattern of head seem constant, but they are usable only for a subset of the species. Many of the other characters used in the table are somewhat blurred and best viewed on a series of individuals. The antennae repeat the characters of the corresponding males, but in a reduced and attenuated form; other characters, such as the keels and the long white bristles of the tibiae, are absent. The determination of single female specimens is therefore not always possible with certainty, except by resorting to differences in distribution.

### Key for Females

The females of Clanoptilus are uniform in appearance, moreover they can be confused with those of the other genera derived from the split of historical Malachius, such as Malachius s.str., Anthomalachius, Cordylepherus and Micrinus, with which they can be found mixed up. It has been therefore considered useful to include these genera in the table below, which again is applicable only within the Italian territory.

Differences in pale/dark pattern of head seem constant, but they are usable only for a subset of the species. Many of the other characters used in the table are somewhat blurred and best viewed on a series of individuals. The antennae repeat the characters of the corresponding males, but in a reduced and attenuated form; other characters, such as the keels and the long white bristles of the tibiae, are absent. The determination of single female specimens is therefore not always possible with certainty, except by resorting to differences in distribution.

### Key for Females

| Clanoptilus | Malachius s.str. | Anthomalachius | Cordylepherus | Micrinus |
|-------------|------------------|----------------|--------------|---------|
| Antennomere I | Antennomere I | Antennomere I | Antennomere I | Antennomere I |
| Antennomere II | Antennomere II | Antennomere II | Antennomere II | Antennomere II |
| Antennomere III | Antennomere III | Antennomere III | Antennomere III | Antennomere III |
| Antennomere IV | Antennomere IV | Antennomere IV | Antennomere IV | Antennomere IV |
| Antennomere V | Antennomere V | Antennomere V | Antennomere V | Antennomere V |
| Antennomere VI | Antennomere VI | Antennomere VI | Antennomere VI | Antennomere VI |

- Sides of pronotum orange-yellow; sutural angle of elytra pale with only a narrow dark border
- Antennomere I about 1.5 times longer than wide, cylindrical; metatibiae keeled on 3/4 of length; outer margin of dark apical spot of elytra forming an angle with the suture
- Antennomere I about 2 times longer than wide, with bottom edge concave; keels on metatibiae extending up to close to articulation with femora; outer margin of dark apical spot of elytra parallel to the suture
- Elytra entirely orange-red
- Elytra metallic, often with orange or yellow spot at apex
- Antennomere I cylindrical
- Antennomere I conical
- Legs completely dark; genae dark; size smaller (4–5 mm)
- Knees pale, specially the front ones; genae pale; size larger (6–8 mm)
- At least protibiae with two types of white bristles: short, brush-like and long, thin and curved. Upper edge of excitors, seen from above, sharply angled; the appendages of excitors almost reach the apex of elytra, bearing bristles much shorter than the appendages
- All tibiae with only short, brush-like bristles. Upper edge of excitors, seen from above, obtuse or rounded; appendages of excitors short, barely protruding from the upper edge, and bearing a row of bristles about as long as the appendages; large body size (6–7 mm), antennae longer than the body
- Both pro- and metatibiae bearing two types of white bristles; appendages of excitors with a tuft of bristles at tip
- Two types of white bristles on protibiae only; appendages of excitors with a longitudinal row of bristles on inner side
- Apex of antennomeres III–IV rounded at tip; sutural angle of elytra with narrow dark border; appendages of excitors with a longitudinal row of bristles at mid of inner side; genae dark
- Apex of antennomeres III–IV angled at tip; sutural angle of elytra with wide dark border; appendages of excitors with a longitudinal row of bristles at bottom of inner side; genae pale
- Elytra entirely metallic
- Elytra with orange or yellow spot at apex
- Pronotum entirely metallic
- Sides of pronotum orange-red
- Palpi partly pale; antennomeres IV–VI not widened at apex
- Palpi entirely dark; antennomeres IV–VI sharply widened at apex
- All antennomeres but first partly pale; apical palpomere slightly darkened distally; eyes strongly protruding; body size smaller (5 mm)
- Only antennomeres II–V partly pale on upper side; eyes less protruding; apical palpomere entirely dark; body size larger (6–8 mm)

- Key for Females

The females of Clanoptilus are uniform in appearance,

- Moreover they can be confused with those of the other genera derived from the split of historical Malachius, such as Malachius s.str., Anthomalachius, Cordylepherus and Micrinus, with which they can be found mixed up.

It has been considered useful to include these genera in the table below, which again is applicable only within the Italian territory.

Differences in pale/dark pattern of head seem constant, but they are usable only for a subset of the species. Many of the other characters used in the table are somewhat blurred and best viewed on a series of individuals. The antennae repeat the characters of the corresponding males, but in a reduced and attenuated form; other characters, such as the keels and the long white bristles of the tibiae, are absent. The determination of single female specimens is therefore not always possible with certainty, except by resorting to differences in distribution.

### Key for Females

- Sides of pronotum orange-yellow; sutural angle of elytra pale with only a narrow dark border
- Antennomere I about 1.5 times longer than wide, cylindrical; metatibiae keeled on 3/4 of length; outer margin of dark apical spot of elytra forming an angle with the suture
- Antennomere I about 2 times longer than wide, with bottom edge concave; keels on metatibiae extending up to close to articulation with femora; outer margin of dark apical spot of elytra parallel to the suture
- Elytra entirely orange-red
- Elytra metallic, often with orange or yellow spot at apex
- Antennomere I cylindrical
- Antennomere I conical
- Legs completely dark; genae dark; size smaller (4–5 mm)
- Knees pale, specially the front ones; genae pale; size larger (6–8 mm)

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genae entirely dark, so the border pale-dark is straight; pale spot at elytral apex larger ........................................... spinipennis
16. Antennae long and slender, antennomeres V–IX about 3 times as long as maximum width .................................. calabrus
- Antennae shorter and stouter, antennomeres V–IX about 2 times as long as maximum width .................................. 17
17. Antennomeres IV–VIII triangular; antennae appear distinctly serrate ............................................................. 18
- Antennomeres IV–VIII cylindrical or subconical; antennae do not appear distinctly serrate .................................. 20
18. Apex of antennomeres III–IV rounded at tip; genae dark below eyes; palpi uniformly dark ...................... parilis
- Apex of antennomeres III–IV angled at tip; genae partly pale below eyes ........................................................... 19
19. Pronotum more transverse, about 1.3 times wider than long; inter-antennal space wider than width between internal margin of eye and internal margin of antennal insertion ...... arnaizi
- Pronotum less transverse, about 1.2 times wide as long; inter-antennal space as wide as that width ............ italicus
20. All antennomeres but I partly pale at upper side ..[dissimilis]
- Only antennomeres II–IV partly pale at upper side ...... 21
21. Antennomere III pale in major part; antennae appear bicoloured. Elytra parallel, about 3 times as long as maximum width, body size 6 mm or above ........................................... bellieri
- Antennomere III dark in major part; antennae do not appear bicoloured. Elytra widened posteriorly, about 2 times as long as maximum width, body size 5 mm or less .......... ambiguus

Species Accounts

Clanoptilus affinis (Ménétriés, 1832) (Figs 1a, 2a)

Malachius affinis Ménétriés, 1832: 164, loc. typ. Salyan (Azerbaijan); Horion, 1953:106.
Malachius affinis v. concolor Krauss, 1902: 21.
Malachius affinis v. subconcolor Pic, 1911: 113.
Clanoptilus affinis Mayor, 2007: 442.

The species does not raise nomenclature problems: it is well recognizable by the entirely dark legs, metatibiae with keels and proportionally short antennae, especially in males. The dark color of mesepimera seems to be constant in the Italian populations but the writer has studied specimens with pale ones from other parts of its geographic range. This Euro-Asiatic, steppic and thermophile element (Horion 1953: 106) shows in Italy an apparently disjunct distribution. It is present in Trentino-Alto Adige in the Venosta, Iserco and Pusteria valleys, and with two plausible citations for Pejo (Bertolini 1898: 104) and Castel Toblino (Dudich 1922: 10); then reappears in the Central and Southern Apennines, with the Monti della Maddalena (Basilicata - Potenza) as a hitherto established southern limit (Pasqual & Angelini 2001: 116).

The male specimens examined from both the above Italian areas have completely dark elytra, or with a pale spot limited to a small area at upper excipitators apex, on the other hand elytra of other European populations have excipitators largely pale. The chromatic form with dark apex was described from Croatia as var. concolor by Krauss (1902: 21), and this is the name under which the specimens from Trentino-Alto Adige appear in the collection of MNB. Pic (1911: 113) recording the primary homonymy with Malachius (now Cordylepherus) viridis v. concolor (Schilsky, 1888), proposed the new replacement name subconcolor.

In consideration of the uniformity and amplitude of its geographical distribution, the writer proposes to give to the Italian populations subspecific rank, keeping the name subconcolor (Pic, 1911). There is a margin of doubt in this interpretation, as it has not been possible to verify the identity of the Italian specimens with any corresponding to Krauss’ diagnosis neither from Croatia nor from adjacent regions. However, there is no doubt about their belonging to C. affinis, and they fit with the Krauss description (although succinct). The writer did not verify the males pigmentation pattern of the populations west of Italian Alps; the species is indeed reported for France up to the Massif Central (Allenspach & Wittmer 1979:b90; Constantin 2014: 475). In this latter part of its range, females can be, at first sight, confused with C. barnevillei and with Micrinus species, however head and mesepimera colour, as already mentioned, remains a good diagnostic character.

List of localities: Trentino-Alto Adige: Brixen-Tschötscher Heide (Bressanone - Scezze) (Bolzano) (MNB); Coldrain (Coldrano) (Bolzano) (MNB); Collalbo (Bolzano) m 1190 (MNB); Lasà (Bolzano) (CGF); Latlch (Laces) (Bolzano) (MNB); Schludern (Sluderno) (Bolzano) (MNB); Staben b. Naturm (Stava - Naturno) (Bolzano) (MNB); Tannas (Bolzano) m 1500 (MNB); Villabassa (Bolzano) (MSNVE). Marche: Furlo - Mount Paganuccio (Pesaro-Urbino) (CGF); Mount Catria (Pesaro-Urbino) m 1600 (CRP); Mount Vettoretto (Ascoli Piceno) m 1920 (CGL); Pretare (Ascoli Piceno) m 1015 (CG). Umbria: Fossato di Vico (Perugia) m 740 (CFA-MB); Nocera Umbra - Mount Alago (Perugia) m 1000 (CGL, CFA-MZUF); Scaggea e Pascelupe (Perugia) m 700-1400 (CFA-MB); Sigillo (Perugia) m 950-1100 (CFA-MB). Lazio: Mount Terminillo (Rieti) m 1500 (CGL); Piano di Rosce (Rieti) (MSNVR). Abruzzo: Castelvecchio Calvisio (L’Aquila) m 1000 (MSNG); Cerchio (L’Aquila) (MSNM); Rocca di Cambio (L’Aquila) m 1400 (MNB).

Clanoptilus ambiguus (Peyron, 1877) (Figs 1b, 2b, 3)

Malachius ambiguus Peyron, 1877: 102, loc. typ. Austria; Krauss, 1902: 2 [status changed to good species]; Horion, 1953: 110.
Malachius geniculatus var. ambiguus Abeille de Perrin, 1891: 139.
Clanoptilus ambiguus Mayor, 2007: 443.

In the Peyron’s collection (American University, Beirut -
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LB) are kept five specimens labelled “Autriche” (three); “Naples”; “Balis Th. Deyr.” (K. Knio, pers. comm.). They correspond well to what Peyron wrote in the original description [“Autriche. Hongrie. Italie: Naples (Costa). Arménie: Bitlis, Erzéroum, lac de Van (Th. Deyrolle)”], and must be considered as syntypes. Unfortunately they were not available for detailed examination at this time.

This species has a Pontic-Pannonian distribution (Hörion 1953: 110; Evers 1979: 63), has been reported in the past for several Italian peninsular regions, e.g. by Pardo Alcaide (1960: 174) and Pasqual & Angelini (2001: 116). Also Peyron (1877) in his original description, associated with the true *ambiguus* of Austria the name *apenninus*: listed but not described by Costa (1858: 14; 1881:48) from “Monti Partenii” (= Partenio Mts, Campania, Avellino province), presumably corresponding to the syntype of “Naples” mentioned above.

Based on the material studied by the writer, however, its presence in Italy is very marginal. It is confirmed only for a few locations in eastern Friuli-Venezia Giulia (Fig. 3), from the Carso westwards up to the Tagliamento river, a presence which is in agreement with the datum of Kahlén (2010: 101) for Flagogna (Udine). It has been possible to check (in MSNVR) some of the specimens from Monti Picentini and Sibillini identified as *ambiguus* by Pardo Alcaide (1974: 174, 175): they are, in fact, *C. italicus*.

The shape of the antennomere I of males, one of the crucial characters used in determination keys, looks objectively difficult to interpret (“épais, presque quadrangulaire” in the description) for *C. ambiguus*: either reported as cylindrical e.g. in Krauss (1902: 22), or as conical e.g. in Evers (1979: 62). It must also be noted that the male antenna drawing in Solodovnikov (1994: 677) poorly fits with Peyron’s description “4e à 7e un peu prolongés au bout”, raising the doubt that it might refer to another species. In Italy, the most likely confusion is with the species with the antennomere I conical, namely *arnaizi, italicus* and *parilis*. However, for these latter species males can be

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**Fig. 1** – Antennae of males of *Clanoptilus* spp.: a, affinis: Krym/Krymskie gory (RU); b, ambiguus: Prezli Pan (HR); c, arnaizi: Giaglione; d, barnevillei: Hautes Alpes - Ancelle (FR); e, bellieri: Ferla-Valle F. Anapo; f, calabrus: Straorini; g, emarginatus: Mount Vulture; h, geniculatus: bubano di Mordano; i, italicus: Pania della Croce; j, marginellus: Palencia-Baltanas (ES); k, parilis: San Piero a Patti; l, rufus: Foresta Burgos; m, sardous: Palau; n, spinipennis: Tesnuraghès; o, elegans: Sierra Gredos (ES).

**Fig. 2** – Antennae of of females of *Clanoptilus* spp.: a, affinis: Vettoretto Mt.; b, ambiguus: Prezli Pan (HR); c, arnaizi: Giaglione; d, barnevillei: Palencia - Baltanas (ES); e, bellieri: Kestrini (GR); f, calabrus: Sella Entrata; g, emarginatus: Mazia - Piz Lun; h, geniculatus: Hradec Králové (CZ); i, italicus: Mount Catria; j, marginellus: Souss (MO); k, parilis: Gioiosa Marea; l, rufus: Oschiri; m, sardous: Palau; n, spinipennis: Bassura del Bardello; o, elegans: Villaseca (ES).
easily recognized for the keeled metatibiae and the protibiae without long white bristles, and females for the antennomeres IV–VIII not serrate.

List of localities: Friuli-Venezia Giulia: Gemona - Mount Chiampon (Udine) (MSNM); Lake Cavazzo (Udine) (MSNM); Mount Festa (Udine) m 500-600 (MSNM); Mount Matajur (Udine) (MSNM, MSNV); Istrien - Gradišče (Gorizia) (MSNM); Gropada (Trieste) (MSNM); Opicina (Trieste) (MSNM); Trieste - Carso (Trieste) (MSNM).

Clanoptilus arnaizi (Pardo Alcaide, 1966) (Figs 1c, 2c)

Malachius arnaizi Pardo Alcaide, 1966: 34, loc. typ. Barcelona; Malachius parilis Auct. nec Erichson, 1840.

Clanoptilus arnaizi Mayor, 2007: 443.

Pardo Alcaide (1966: 34) has highlighted the distinctive features of this species from the true parilis, describing it from Spain and southern France. This same Author, in a subsequent work (1967: 103), also indicated its presence in Italy in Western Liguria. Focarile (1975: 30) reports it for two other Italian regions: Valle d’Aosta and Piedmont up to Ivrea. Based on the material examined, it is possible to confirm the presence in Italy of C. arnaizi only in the north-western regions, namely western Liguria, at least up to the province of Savona, Maritime and Ligurian Alps, intra-alpine valleys of Piedmont (Stura, Susa, Chisone, Lanzo) and Valle d’Aosta, with Ivrea as the eastern limit. The specimens, on which the report of Focarile (1975: 30) for Friuli-Venezia Giulia is based (Lago di Cavazzo, Udine, leg. Springer), are stored at MSNM, and have been found to belong to C. ambiguus (see above), with respect to which males can be identified for long white bristles on tibiae and absence of keels on metatibiae, and females for the antennomeres IV–VIII serrate. All the abundant material examined for the other peninsular regions from Genoa southwards turned out to belong either to C. italicus or C. calabrus. For the time being the writer consider all citations of C. arnaizi for these regions, as for example those of Focarile (see also distribution map in 1974: 17) and Pasqual & Angelini (2001: 117) as doubtful. A single male specimen from Sardinia (Asuni - Nuoro, leg. Krausse) is located at MNB, and the actual presence of this species in the region is to be confirmed.

List of localities: Valle D’Aosta: Chambave (Aosta) (MSNG); Champdepraz (Aosta) m 600 (CGL); Cogne (Aosta) (MSNM); Gressan (Aosta) m 750 (CGL); La Ravoire - Lake Lolair (Aosta) m 1110 (CGL); Planaval (Aosta) m 1450 (CGL); Pondel (Aosta) (MSNM); Quart (Aosta) (CGF); River Dora - Bard (Aosta) (MSNM); Vetan (Aosta) m 1550 (CGL), Piemonte: Balme (Torino) (MSNM); Exilles (Torino) m 1000 (CGL); Fenestrelle (Torino) (MSNM, MSNG); Giaglione (Torino) m 800 (CGF); Ivrea (Torino) (MSNM); Perrero (Torino) (MSNM); Salbertrand (Torino) m 1100-1750 (CGF); Sasa - San Colombano (Torino) m 1300 (MSNG); Aisone - Vallone di Valletta (Cuneo) m 1550 (CGL); Ardua - Pesio Valley (Cuneo) m 950 (MSNG); Cuneo (Cuneo) (MSNM); Montalto Mondovi (Cuneo) (MSNG); Montenero (Cuneo) m 1800 (CGF); Murazzano (Cuneo) (MSNG); Ormea (Cuneo) (MSNM); Ormea - Chionea (Cuneo) m 1220 (CGF); San Giacomo (Cuneo) m 1390 (CGF); Tanaro Valley (Cuneo) (MSNM); Terme di Valdieri (Cuneo) m 1750-1970 (CGL); Valdieri (Cuneo) m 850-930 (CGF); Vinadio - Neraissa (Cuneo) (MSNG); Viozene (Cuneo) m 1500 (CGL). Liguria: Baiardo (Imperia) m 942 (CGF); Colla Melosa (Imperia) m 1780 (CGL); Mount Bignone (Imperia) m 1200 (CGL); Mount Grammondo (Imperia) m 900 (CGF); Mortola Superiore (Imperia) m 700 (CGF); Sanremo (Imperia) (MSNM); Sanremo - Mount Bignone (Imperia) m 1300 (MSNG); Teglia Pass (Imperia) m 1390 (CGF); Ventimiglia - Sant’Antonio (Imperia) m 300 (CGF); Villatella - Cornà Pass (Imperia) m 800-900 (CGF); Albissola (Savona) (MSNM); Bormida River - Case Borgno (Savona) (CGF); Bormida River - Mereta (Savona) (CGF); Cengio (Savona) (MSNG); Colle di Melogno (Savona) (MSNM, CGL); Ginestro Pass (Savona) (CGL); Laigueglia (Savona) (CGL); Mount San Giorgio (Savona) (MSNM); Sassello (Savona) 6 km N (CGF). Sardegna: Asuni (Orista-no) (MNB).

Clanoptilus barnevillei (Puton, 1865) (Figs 1d, 2d)

Malachius barnevillei Puton, 1865: 131. loc.typ. Seyne (Basses Alpes); Horion 1953: 105.

Clanoptilus barnevillei Mayor, 2007: 445.

This species does not raise nomenclature problems. The males are recognizable by the combination of unicolouredelytra and poorly differentiated excitators, the females can...
be distinguished from those of *C. affinis*, having equally unicoloured elytra, by the pale color of genae and mesepimera. It is widespread from the Iberian Peninsula to the British Isles and Scandinavia, and in Italy it has only a marginal presence on the western border of Piedmont, with a transalpine distribution.

List of localities: **Piemonte**: Salbertrand (Torino), 1000 m (MSNG); Ulzio (Torino) (MSNG).

**Clanoptilus bellieri** (Peyron, 1877) (Figs 1e, 2e, 4, 5, 6)

Malachius bellieri Peyron, 1877: 53, *loc. typ.* Sicilia, Malta;

Malachius dissimilis *v.* bellieri Abeille de Perrin, 1883: 50; Evers 1964: 362.

Malachius dissimilis Pardo Alcaide, 1968: 274.

Clanoptilus bellieri Mayor, 2007: 445 (*nomen dubium*);

Malachius transadriaticus Evers, 1970: 241; (*loc. typ.* Calabria), *syn. nov.*

The types (two syntypes) object of Peyron’s description are kept in the Abeille de Perrin collection (MNHN): a male labelled “Bellieri Peyr. / ♂♀ / Types” and “Sicile” (Fig. 4), and a female labelled “Bellieri ♀ / Type ex Peyr.” and “Malta” (Fig. 5). The male actually displays the differences from *C. dissimilis* highlighted by Peyron in his description; the female of Malta lacks part of the antennae and is difficult to attribute.

In describing his *Malachius bellieri*, Peyron compares it to *M. dissimilis* of Baudi di Selve only on the ground of the original description. Abeille de Perrin (1883: 50) gives little value to the differences highlighted by Peyron and dismisses *bellieri* to a variety of *dissimilis*. Later (1891: 138) he assigns the Maltese specimen (female) to *geniculatus*, whose presence in Malta, however, has to be confirmed (Švihla & Mifsud, 2006: 100).

Luigioni (1929: 623), Porta (1929: 103) and Pardo Alcaide (1968: 274) follow the Abeille de Perrin’s opinion. Evers (1964) reports *M. dissimilis* var. *bellieri* for Albania. Subsequently the same Author describes (1970: 241) another "type ex Peyr." from Malta, differing from *Malachius* species in the following characters: antennae shorter; palpi reaching the middle of the conchial plate; elytra longer, more oval; the pronotal disc having a sinuous outline; metepisternum having the posterior margin much less extended; and the conchial plate being very broad, with the posterior margin almost straight. However, the type is lost, and no new specimens were collected during the search for the type locality.

![Fig. 4 – Clanoptilus bellieri, syntype male (copyright MNHN).](image)

![Fig. 5 – Clanoptilus bellieri, syntype female (copyright MNHN).](image)
241), on specimens from Calabria, Sicily and Albania, *M. transadriaticus* comparing it only with *M. geniculatus*. Evers (1964) recognizes the proximity of his new species to *M. dissimilis var. bellieri* [on which he accepts (see also 1985: 5) the opinion of Abeille de Perrin] but he excludes that his new form might be identical to *bellieri* on the ground of incompatible body length ("wegen deren Länge nicht übereinstimmt"). However, this argument is based on an error of identification: the Sicilian specimens labelled *M. dissimilis var. bellieri* kept in the Evers’ collection (MNB) (and possibly used for comparison) are indeed smaller than the 7–8 mm indicated for *transadriaticus*, but they are not *bellieri*. They were found to belong in majority to *C. spinipennis ssp. brevispina* (see below), and for the rest to *C. parilis*.

Pasqual & Angelini (2001: 118) include in their Catalogue both *bellieri* and *transadriaticus*. To the former they attribute all the specimens studied by them and, for the latter, they report only the localities mentioned in Evers’ description.

The examination of the typical series of *transadriaticus* (MNB), and the comparison with other specimens attributable to this taxon from Sicily, southern Italy and Greece indicate that they all belong to the same species, conforming to the type of Peyron’s *Malachius bellieri*, and well distinguishable from the Middle-Eastern *dissimilis* of Baudi di Selve. The distribution of *C. bellieri* therefore appears to be transonic (Fig. 6). The citation by Della Beffa and Gagliardi (1911: 41) for Mount Senario (Tuscany), re-proposed by successive Authors, is probably wrong.

The general aspect of *bellieri* and *geniculatus* females are really very similar and it is possible to distinguish them only from the differences in the antennomeres III–V shape and colour. Re-examination of materials from the above mentioned regions, currently determined as *geniculatus*, could probably lead to the identification of further specimens of *bellieri*.

The examination of the few known localities suggests that *C. bellieri* could be a species linked to wetlands, which would make it very vulnerable from the ecological point of view, given the low extent and the degree of threat of these habitats within its known range.

List of localities: **Puglia**: Francavilla Fontana (Brindisi) (CGL); River Lato (Taranto) (CGL); Upper Lake Alimini (Lecce) (CGL). **Basilicata**: Terranova di Pollino (Potenza) (MSNM); Metaponto (Matera) (CGF); Nova Siri (Matera) (MSNV); Policoro (Matera) (CFA-MZUF). **Calabria**: Piana di Sibari (Cosenza) (MSNM); River Crati mouth (Cosenza) (MNB). **SICILIA**: Bosco della Ficuzza (Palermo) (MSNG, CGL); Palazzo Adriano - River Sosio (Palermo) (MSNG); Portella Polizzi (Palermo) (MSNV); Nebrodi - Lake Quattrocchi (Messina) (CFA-MZUF); Ferla - River Anapo valley (Siracusa) (CRP); Lentini (Siracusa) (MNB). **Albania**: Berat (MNB). **Greece**: Corfu (MNB); Iguomenitsa (MNB); Kestrini (CGL).

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**Clanoptilus calabrus** (Baudi di Selve, 1873) (Figs 1f, 2f, 7)

*Malachius parilis* var. *calabrus* Baudi di Selve, 1873: 244, loc. typ. “Provincia di Catanzaro”.

*Malachius calabrus* Abeille de Perrin, 1883: 50 [status changed to good species]; Pardo Alcaide 1967: 98.

*Clanoptilus calabrus* Mayor, 2007: 443.

It was not possible to locate the typical material of Baudi di Selve, but even if it has been described as a variety of *parilis* the species does not raise today problems of nomenclature. The first author to attribute the status of good species was Abeille de Perrin (1883: 50), who clearly highlighted its distinctive characteristics.

According to the material studied, the distribution of this species appears limited to a part of Calabria, from Cosenza province to Aspromonte (Fig. 7); it is therefore much narrower than it appears in the literature. There are citations of *calabrus* from other mountainous massifs of the Southern Apennines, e.g. Mount Pollino (Angelini 1986: 66) and Sila (Angelini 1991: 197) and from Sicily (Pasqual & Angelini 2001: 118), but all the specimens examined thus far for these localities turned out to belong to *C. italicus* and to *C. parilis* respectively. The discrimination between males of these three species based on the length of the antennae alone can be misleading, as in *italicus* and *parilis* the antennal length is highly variable. Protibiae without long white bristles, large size, hollow forehead, shape of the elytral apex and short appendages of excitators allow a secure recognition. Some of these characters are found in *C. capricornis* (Peyron, 1877), a mid-eastern species which, however, has paler edge of pronotum and whose males have keeled metatibiae and antennomenes with setae on the lower edge. Identification of *C. calabrus* females from other species with serrate antennae is possible on the ground of the longer and thinner antennae.

*C. calabrus* is included in the Red List of Italian Saproxylic Coleoptera (Audisio et al. 2014: 115) as species of Least Concern (LC) but, considering the narrowness of its assessed distribution such classification should be probably reconsidered. Some of the recorded localities are protected inside both the Sila and the Aspromonte National Parks.

List of localities: **Calabria**: Cosenza (Cosenza) (MSNG); San Pietro in Guarano (Cosenza) (MSNG); San Vincenzo in Costa - Zizito (Cosenza) m 500 (CRP); Sambiase (Catanzaro) (MSNG); Mount Pecoraro - Le Serre (Vibo Valentia) (MSNV); Serra San Bruno (Vibo Valentia) m 750 (CGL); Bagaladi (Reggio Calabria) m 1150 (CGL); between San Lorenzo and Roccaforte del Greco (Reggio Calabria) m 700 (CRP); Motta San Giovanni (Reggio Calabria) m 400 (CRP); Piani di Aspromonte (Reggio Calabria) m 1000 (CFA-MZUF, CGF); Roccaforte del Greco (Reggio Calabria) m 900 (CRP); Santuario di Polsi (Reggio Calabria) m 1000 (CGL); Sella Entrata m 1370
The genus *Clanoptilus* in Italy

*Clanoptilus emarginatus* (Krauss, 1902) (Figs 1g, 2g)

Malachius *elegans v. emarginatus* Krauss, 1902: 24, loc. typ. Ostalpen; Horion 1953: 109.

Malachius *falcifer* Abeille de Perrin 1891: 144, pars; Paradó Alcaide 1960: 173; 1961: 6.

Malachius *emarginatus* Pardo Alcaide, 1969: 356 [status changed to good species]; Allenspach & Wittmer 1979: 91. *Clanoptilus emarginatus* Mayor, 2007: 443.

Malachius *emarginatus* has been described by Krauss as a variety of *elegans*, previously (Abeille de Perrin 1891: 144) and afterwards (e.g. Pi, 1913–1914:37; Porta 1929: 103; Luigioni 1929: 623; Pardo Alcaide 1960: 173 and 1961: 6) mistaken with the middle-eastern *M. falcifer* (Abeille de Perrin, 1882). The relationship between these taxa was at last clarified by Pardo Alcaide (1969: 356) who recognized *emarginatus* as a valid species. The species is widespread throughout the Peninsula, from hilly zones up to over 1500 m, but apparently not in Sicily. It is also present outside the Italian borders, with an Alpine-Apenninic type of distribution.

List of localities: **Valle D’Aosta**: La Ravoire - Lake Lolaïr (Aosta) m 1000 (CGL). **Piemonte**: Bracchio - Mount Faïé (Verbano-Cusio-Ossola) m 1350 (CGL); Cairasca Valley (Verbano-Cusio-Ossola) (MSNG); Craveggia - Mount Zicher (Verbano-Cusio-Ossola) m 1600 (CGL); Domodossola (Verbano-Cusio-Ossola) (MSNG); Premeno (Verbano-Cusio-Ossola) (MSNG); Valstrona - Forno (Verbano-Cusio-Ossola) m 1000 (CGL); Vigezzo Valley (Verbano-Cusio-Ossola) (MSNG, CGL); Caravino (Torino) (CGL); Castiglione Torinese (Torino) (MSNG); Salbertrand - Auberges (Torino) m 1000-1400 (CGF); Alpe Le Plane - Chiobbia Valley (Biella) m 1300 (MSNG); Bioglio - Mount Rovella (Biella) (MSNG); Mount Cucco (Biella) (CGL); Piedicavallo (Biella) (MSNG); Sabbiola Valley (Vercelli) (CFA-MZUF); Varallo (Vercelli) (CGL); Carpigniano Sesia (Novara) (CGL); Aisone - Vallone della Valletta (Cuneo) m 1470-1550 (CGL); Ardua - Pesio Valley (Cuneo) m 950 (MSNG); Maira Valley - Elva (Cuneo) (MSNG); Mongioie - Montenegro (Cuneo) m 1800 (CGL); Ormea - Chionea (Cuneo) m 1220 (CGL); Ponte di Nava (Cuneo) (MSNM); Pradeleves (Cuneo) m 1000 (CGL); San Giacomo (Cuneo) m 1390 (CGL); Valdieri (Cuneo) m 930 (CGL); Termé de Valdieri (Cuneo) m 1340-1390 (CGL); upper Tanaro Valley (Cuneo) (MSNM); Cartosio - River Erro (Alessandria) (CGL). **Lombardia**: Arcisate (Varese) (MSNM); Cerro - Fortino (Varese) (MSNM); Gaggio- lo (Varese) (CGL); Laveno (Varese) (MSNM); Calco (Como) (MSNG); Canzo (Como) (MSNG); Caslino d’Erba (Como) (CGL); Erba (Como) (MSNG, CGL); Lake Segri no (Como) (CGL); Arlate (Lecco) (MSNG); Esino Lario (Lecco) (MSNG); Galbiate - Mount Barro (Lecco) m 600-800 (CGL); Mandello Lario (Lecco) m 800 (CGL); Pasturo (Lecco) (CGL); Codera (Sondrio) m 800 (CGL); Grosina Valley - Verva Pass (Sondrio) m 1700-2100 (CGF); Masino Valley - Filorera (Sondrio) m 1100 (CGL); Masino Valley - Valbiore (Sondrio) m 1550 (CGL); Carona (Bergamo) m 1100 (CGL); Dossena (Bergamo) m 1065 (CGL); Lake Sardegnana (Bergamo) m 1750 (CGL); San Pellegrino Terme - Antea (Bergamo) (CGL); Valcava (Bergamo) (MSNG); Vallee de Bergamo (CGL) m 1300 (CGL); Vivione Pass (Bergamo) m 1175 (CGL); Zambla - Pizzo Aresa (Bergamo) m 1400 (CGL); Zorzone (Bergamo) m 1230 (CGL);
Magenta - River Ticino (Milano) (CGL); Milano (Milano) (MSNM); Milano - Lacchiarella (Milano) (MSNM); Milano - Trenno (Milano) (CGL); Nosate - River Ticino (Milano) (CGL); Segrato (Milano) (CGL); Rivolta d’Adda (Cremona) (MSNM); Monti Penic (Pavia) m 1000 (CGL).

**Trentino-Alto Adige:** Brunico - Furchia Pass (Bolzano) m 1730 (CGL); Campo di Tres - Mules (Bolzano) (MSNVE); Mazia - Piz Lun (Bolzano) m 1600-2200 (CGF); Folgaria - Sommo Pass (Trento) m 1380 (CGD); Madonna di Campiglio (Trento) m 1500 (CGF); Mount Baldo - Madonna della Neve (Trento) (MSNG); Mount Penegal (Trento) m 1700 (CGL); Vallarsa - Piano delle Fugazze (Trento) m 1200-1420 (CGL).

**Veneto:** Mount Baldo - Le Colme (Verona) (MSNG); Alleghe - Coi (Belluno) m 1350 (CGL); Alpago - Tambre (Belluno) m 1275 (CGL); Auronzo di Cadore (Belluno) m 900 (CGL); Vallada - Andrich (Belluno) m 1300 (CGL).

**Friuli-Venezia Giulia:** Barcis - Forcella di Pala Barzana (Pordenone) m 930 (CGL); Amaro (Udine) m 290 (CGL); Fusine Val Romana (Udine) m 813 (CGL); Lake Cavazzo (Udine) (MSNG); Mount Festa (Udine) (CGL); Mount Matajur (Udine) m 900 (CGL); Pontebba (Udine) (CGL); Stazione Carnia (Udine) (MSNM); Tanamea Pass (Udine) m 1000 (CGL); Tarcento - Musi Valley (Udine) (CGL).

**Liguria:** Colla Melosa (Imperia) m 1680 (CGL); Molini di Triora (Imperia) m 750 (CGL); Mount Bignone (Imperia) m 820-1200 (CGL); Teglia Pass (Imperia) m 1390 (CGL); Alpicella - Varazze (Savona) (MSNG); Colle del Melogno (Savona) (MSNM, CGL); Mount Beigua (Savona) m 1000 (MSNG); Mount Cammo (Savona) m 1000 (CGL); Mount San Giorgio (Savona) (MSNM); River Bormida - Case Borgno (Savona) m 600 (CGL); Sassello (Savona) (CGL); Savona (Savona) (MSNM); Faiallo Pass (Genova) m 650 (CGL); Mignanego - Vitto-ria (Genova) (MSNG); Mount Fasce (Genova) (MSNG); Mount Fogagna (Genova) (MSNM); Prato Casarile (Genova) (MSNG); Rezzoaglio (Genova) (MSNG); Turchino Pass (Genova) m 600 (CGL); Voltri (Genova) (MSNG); Bocco Pass (La Spezia) m 900 (CGL); Bocco Pass - Soprano Lake (La Spezia) m 1000 (CGL); Carro (La Spezia) (MSNG); Chiusola (La Spezia) m 800 (MSNG); Foce Tre Confini (La Spezia) m 1350 (MSNG); Mount Gottero (La Spezia) m 1250 (MSNG); Mount Penna (La Spezia) m 1400 (MSNG); Rastrello Pass (La Spezia) m 800 (MSNG); Varese Ligure - Cento Croci Pass (La Spezia) m 1000 (MSNG).

**Emilia Romagna:** Emilia Romagna (MSNG); Varese Ligure - Cento Croci Pass (La Spezia) m 800 (MSNG); Varese Ligure - Cento Croci Pass (La Spezia) m 1000 (MSNG).
**Clanoptilus geniculatus** (Germar, 1824) (Figs 1h, 2h)

*Malachius geniculatus* Germar, 1824: 73, loc. typ. Dalmatia; Horion 1953: 109.

*Clanoptilus geniculatus* Mayor, 2007: 443.

This widespread Central Asian-European species is one of the most common and better known of the genus, and does not raise problems of interpretation.

In Italy *C. geniculatus* is present in most of the Peninsula, southwards at least up to Puglia, but more frequent in the North, in lowland or hilly areas.

List of localities: Val D’Aosta: Pollein (Aosta) (CGL). Piemonte: Castiglione Torinese (Torino) (MSNG); Ivrea (Torino) (MSNM); Meana di Susa (Torino) (MSNG); Venaria Reale - River Stura woods (Torino) (MSNG); Villar Pellice (Torino) (MSNG); Carignano - River Sesia (Vercelli) (CGL); at the confluence of the rivers Cerco and Sesia (Vercelli) (CGL); Ghislarengo - River Sesia (Vercelli) (CGL); Vercelli - River Sesia woods (Vercelli) (MSNG); Asti (Asti) (MSNG); Casale Monferrato - Terranova (Alessandria) (MSNG); Cassine (Alessandria) (CGL); Piovera (Alessandria) (MSNG). Lombardia: Gabbiate - Mount Barro (Lecco) m 600-800 (CGL); Bignone (Sondrio) m 550 (CGF); Abbiategrasso - River Ticino (Milano) (CGL); Boffalora (Milano) (CGL); Castano Primo (Milano) (CGF); Milano - Affori (Milano) (CGL); Milano - Bruziano (Milano) (MSNG); Milano - San Siro (Milano) (CGL); River Ticino near Turbigo (Milano) (MSNM); Segrate (Milano) (CGL); Trenno (Milano) (CGL); Vimodrone (Milano) (CGL); Vaccarizza (Pavia) (CGL); Zerbolò - Siro Negri wood (Pavia) (CGL). Trentino-Alto Adige: Lasä (Bolzano) m 800 (CGF); Cavarena (Trento) (MSNG). Veneto: Treviso (Treviso) (MSNG); Padova (Padova) (CGL); Marghera (Venezia) (CGL); Mestre (Venezia) (CGL); Venezia - San Giuliano (Venezia) (CGL). Friuli-Venezia Giulia: Vivaro (Pordenone) (CGL). Liguria: Albenga (Savona) (MSNM); Bisagno - Ca de Pitta (Genova) (MSNG); Genova - Creto (Genova) (MSNG); Mignanego - Vittoria (Genova) (MSNG); Molassana (Genova) (MSNG). Lombardia: Mount Penice (Pavia) m 1000 (CGL). Liguria: Genova (Genova) (MSNG); Molassana (Genova) (MSNG); Mount Maggio (Genova) (MSNG); Reppia di Ne - Val Graveglia (Genova) (MSNG); Rezzago (Genova) (MSNG); Torriglia (Genova) (MSNG, MSNG); Bocco Pass - Sopralacreo (La Spezia) m 1000 (MSNG); Carro (La Spezia) (MSNG); Chiusola (La Spezia) m 800 (MSNG); Deiva Marina (La Spezia) (MSNG); Foce Tre Confini (La Spezia) m 1350 (MSNG); Mount Aiona (La Spezia) m 1350 (MSNG); Mount Gottero (La Spezia) m 1250 (MSNG); Mount Penna (La Spezia) m 1400 (MSNG); Rastrello Pass (La Spezia) m 800 (MSNG); Rocchetta Varra - Beverone (La Spezia) m 600 (MSNG); Varese Ligure - Cento Croci Pass (La Spezia) m 1000 (MSNG). Emilia-Romagna: Ferriere (Piacenza) m 700-1000 (CGL); Ferrriere - Colle Pass (Piacenza) m 800 (CGL); Ferriere - Lake Moo (Piacenza) m 1000 (CGL); Monteggropoli (Piacenza) m 950 (CGL). Toscana: Campo Cecina (Massa-Carrara) m 900 CGL; Colonnata (Massa-Carrara) (CAB); Mount Folgorito (Massa-Carrara) (CAB); Mount Sella (Massa-Carrara) m 1500 (CAB); Mount Tambora (Massa-Carrara) (CAB); Resceto (Massa-Carrara) m 950 (CAB); Col di Favilla (Lucca) m 950 (CAB); Mount Altissimo (Lucca) m 1580 (CAB); Mount Alto (Lucca) m 750 (CAB); Mount Cormichia (Lucca) m 1100 (CAB); Mount Matanna (Lucca) (CAB); Padule di Fociomboli (Lucca) m 1100 (CAB); Pania della Croce (Lucca) m 600-1800 (CAB); Pruno (Lucca) m 900 (CAB); Serravezza (Lucca) m 850 (CAB); Volegnio (Lucca) m 300 (CAB); Bosco del Teso (Pistoia) (MSNG); Prachia (Pistoia) m 700 (CGL); Mount Senario (Firenze) (MSNM); Pontassieve (Firenze) (MSNG); Mount Ceto-
Malachius marginellus (A.G. Olivier, 1790) (Figs 1j, 2j)

Malachius marginellus A.G. Olivier 1790: n.27, loc. typ. Francia; Horion 1953: 109.

Malachius marginellus var. pseudosardous Reclaire & Franzini 1989: 126, loc. typ. Vlieland [synonymized by Mayor (2007: 61)].

Clanoptilus marginellus Mayor, 2007: 444.

The citations for Sardinia by Luigioni (1929: 622) and Porta (1929: 100) are probably to be referred to C. sardous, as no Sardinian specimens referable to marginellus were identified among the numerous sardous of various locations studied during this work. C. marginellus is however reported for Corsica (Bastia) by Sainte-Claire Deville (1914: 534). The distinction between these two species, at least for females, is not straightforward, as in marginellus the pale edge of the pronotum is of variable width and can get to be as narrow as it usually is in sardous. This led in the past to citations of C. sardous to be certainly referred to marginellus (e.g., those from northern Germany: Kraatz 1890: 211), and to the description of the aforementioned chromatic form with a narrow margin as pseudosardous. Apart from Sardinia, in the peninsular regions this species is unmistakable, and is present southwards to Puglia (Pasqual & Angelini 2001: 120). Its overall distribution is of Euro-Mediterranean type.

List of localities: Piemonte: Macugnaga (Verbano-Cusio-Ossola) (MSNG). Lombardia: Esino Lario (Lecco) (MSNG); Milano (Milano) (CGL); Parco Monza (Monza-Brianza) (CGL). Veneto: Punta Sabbioni (Venezia) (CGL); Lido - San Nicolò (Venezia) (CGL); Isola Sant’Erasmo (Venezia) (CGL). Liguria: Colle del Giovo (Savona) (CGL); Mignanego - Vittoria (Genova) (MSNG), (CGL); Moneglia (Genova) (CGL); Santo Stefano d’Aveto (Genova) (MSNG). Emilia-Romagna: Bologna (Bologna) (MSNG); Borgo Capanne (Bologna) (MSNG). Toscana: Bibbiena - Poggio Mercatile (Arezzo) (MSNG); Brolio (Siena) (MSNG); Monteperti (Siena) (MSNG). Marche: Porto San Giorgio (Fermo) (MSNG); Sibillini Mts, Montemonaco (Ascoli Piceno) (MSNG). Umbria: Perugia (Perugia) MSNG, Lazio: Roma (Roma) (MSNG). Abruzzo: Majelletta (Chieti) m 2000 (MSNG).

Clanoptilus parilis (Erichson, 1840) (Figs 1k, 2k)

Malachius parilis Erichson, 1840: 80, loc. typ. Sardegna, Sicilia; Pardo Alcàde (1967: 98, 1968: 274). Clanoptilus parilis Mayor, 2007: 444.

The writer has been able to examine the type specimens of Erichson kept at MNB, coming from Sicily and Sardinia, already described by Pardo Alcàde (1968: 274). C. parilis is indeed common and widespread in Sicily, while for Sardinia no further findings seem to be documented after the description. Taking into account that the Sardinian Coleoptera are rather well studied and known, a doubt remains that the indication “Sardinia” might be due to a labelling mistake. At any rate, such presence in Sardinia should be confirmed.
The genus *Clanoptilus* in Italy

The reports in the literature before 1967 for all other Italian regions are to be referred to the vicariant species *C. armatzii* and *C. italicus*.

The shape of the lower edge of the antenomeres III-IV of the males, already reported in the Erichson’s description and visible in the sketch of Pardo Alcaide (1966: 35): “apice inferiore incrassato-producto, rotundato” is shared with the males of *C. calabrus*. The two species however can be recognized for the previously reported characters.

List of localities: **Sicilia**: Alcamo (Trapani) (MSNM); Altofonte (Palermo) (CGL); Bosco Ficuzza (Palermo) (CGL); Cefalù (Palermo) (CGL); Cerda (Palermo) (MSNG); Giacalone (Palermo) (MSNG); Isnello (Palermo) m 500 (CGL); Madonie (Palermo) (PNALM); Monreale (Palermo) (CGL); Mount Quacella (Palermo) (MSNG); Palermo (Palermo) (MB); Partinico - Lake Poma (Palermo) (CGL); Piana Albanesi (Palermo) (MSNG); Piano Battaglia (Palermo) m 1650 (CRP); San Martino Monreale (Palermo) (MSNG); Trabia - Sant’Onofrio (Palermo) (MSNG); Cesarò (Messina) m 1300 (CFA-MZUF); Cesarò - Portella dei Bufali (Messina) m 1250 (CRP); Floresta - Nebrodi Park (Messina) m 1250 (CRP); Goioisa Marea (Messina) (CRP); Letojanni (Messina) (CGF); Lipari (Messina) (CGL); Messina (Messina) (MSNM); San Piero Patti (Messina) m 750 (CRP); Cattolica - Lake Gorgo (Agrigento) (CFA-MZUF); Caltanissetta (Caltanissetta) (MSNG); Troina (Enna) (CGF); River Simeto mouth (Catania) (CGL); Linguaglossa (Catania) m 800 (CRP); Piano Provenzano (Catania) m 1780 (CRP); Cava d’Ispica (Ragusa) m 150 (CRP); Cava d’Ispica (Ragusa) m 160 (CRP); Mount Lauro (Ragusa) m 980 (CRP); Ferla - River Anapo valley (Siracusa) (CGL); Lentini (Siracusa) (CGF); Madonna del Bosco (Siracusa) (CGL); Siracusa (Siracusa) (MSNG). **Sardegna**: unspecified (MNB).

*Clanoptilus rufus* (A.G. Olivier, 1790) (Figs 11, 21)

*Malachius rufus* A.G. Olivier 1790: n.27, loc. typ. Provence; *Clanoptilus rufus* Mayor, 2007: 444.

The species is immediately recognizable among the others of the genus because it is the only Italian one with entirely red elytra. On the other hand, in the case of females, it is possible, at first sight, to mistake them with *Anthocoerus rufus* (Herbst, 1784); their “near” homonymy does not help, although the different pubescence allows a safe discrimination. The distribution of *C. rufus* is of W-Mediterranean type; the recent report by Yildirim & Bulak (2012: 234) for Turkey, in the writer’s opinion, requires confirmation. Its range in Italy includes all the Tyrrhenian regions from Liguria to Lazio, and Sardinia.

List of localities: **Liguria**: Ventimiglia (Imperia) (CGL). **Toscana**: Talamone (Grosseto) (CLF). **Lazio**: Guidonia - Tor Mastorta (Roma) (CGF). **Sardegna**: Arzachena (Sassari) (CGF); Foresta Burgos (Sassari) m 600 (CGF); Luras (Sassari) (CGF); Monteforte (Sassari) (CGF); Oschiri (Sassari) (CGF); Stintino (Sassari) (CGF); Posada (Nuoro) (CGF); Borore (Oristano) m 300 (CGF).

*Clanoptilus sardous* (Erichson, 1840) (Figs 1m, 2m)

*Malachius sardous* Erichson, 1840: 75, loc. typ. Sardinia; *Malachius schaeferi* Pic, 1953:7, loc. typ. Corsica [synonymy in Mayor 2007: 445]; *Clanoptilus sardous* Mayor, 2007: 445.

The species does not raise nomenclature problems. *Malachius schaeferi*, described on a single female of Corsica, is to be referred to this species (Mayor 2007: 445). It is a Sardinian-Corsican endemic (see above under *C. marginellus*), common and widespread throughout Sardinia, from sea-level to mountain areas.

List of localities: **Corsica**: Corte 16 km S-W nr. Lac Cavalluccio m 2000 (CGL); Vescovato (CGL). **Sardegna**: Bunani (Sassari) (MSNG); Luras (Sassari) (CGF); Monteforte (Sassari) (CGF); Palau - River Liscia mouth (Sassari) (CGF); Pilo Pond (Sassari) (CGF); Ploaghe (Sassari) (MSNG); Sorso - River Silis (Sassari) (MSNG); Stintino (Sassari) (CGF); Arzito (Nuoro) (CGF); Capo Comino (Nuoro) (CGF); Fonni, River Aratu (Nuoro) m 1000 (CGF); Mount Ortobene (Nuoro) (CGF); Posada (Nuoro) (CGF); Villagrande Strisaili - Cantoniera Pirà ‘e Onni (Nuoro) (CGF); Asuni (Oristano) (CGF); Arbuz (South Sardinia) (CGL); Burcei - Cantoniera Campu Omu (South Sardinia) (CGL); Cantoniera Arco dell’Angelo (South Sardinia) (CGL); Cantoniera Rio Gironi (South Sardinia) (CGL); Gonnosfanadiga - Mount Linas (South Sardinia) m 600 (CGL); Quirra - River San Giorgio (South Sardinia) (CGL); Colostrai Pond (South Sardinia) (CGL); Uta - Arcosu Mt. (South Sardinia) (CGL); Villacidro (South Sardinia) (CGL); San Gregorio (Cagliari) (CGF); San Nicola - Corte fonte (Cagliari) (CGF).

*Clanoptilus spinipennis* (Germar, 1824) (Figs 1n, 2n)

*Malachius spinipennis* Germar, 1824: 75, loc. typ. Illiria, Dalmazia; Horion 1953: 107. *Malachius brevispinus* Kiesenwetter, 1824: 75. This species does not raise interpretation problems and has a Turanian-European type of distribution. It is typical of low-level environments, up to hill belts, often coastal. In this species the development of excitators and related appendages presents a geographical variation: populations of central-southern Italy, Sardinia and Sicily have males
with poorly developed, or undeveloped, excitators. This form appears constant and was described by Kiesenwetter (1871: 81) with the name brevispina (loc. typ. Sardinia). It was treated by successive Authors sometimes as mere variety, sometimes as a valid species, as e.g. by Gridelli (1950: 132). It could be thought as belonging to “subgenus” Hypoptilus, but the only true Hypoptilus in the area in question with completely dark palpi and forehead (sardous) has the margins of pronotum orange-red.

The writer proposes tentatively herein to consider brevispina (Kiesenwetter, 1871) at least as a valid subspecies, endemic to Central and Southern Italy, and Thyrrenian islands. So far, it has not been possible to precisely identify the boundary between the two subspecies (or vicariant sister species) on the Adriatic side since, for the Marche region, only one female was studied. On the western coast this taxon is certainly present northwards up to the Tuscan Alpine ridgeline.

List of localities for C. spinipennis spinipennis: Veneto: Rosolina (Rovigo) (MSNV); Alberoni (Venezia) (CGL, MSNG, MSNV); Bibione, River Tagliamento mouth (Venezia) (MSNV); Malamocco (Venezia) (CGL); Marghera (Venezia) (CGL); Punta Sabbioni (Venezia) (MSNG); Sant’Andrea (Venezia) (CGL); Venezia (Venezia) (CGL); Venetian Lagoon (Venezia) (CGL); Venezia Lido (Venezia) (CGL). Friuli-Venezia Giulia: River Isonzo, Sarentino (GORIZIA) (MSNM). "Transkaspia" (now Iran): Saramsakli (MSNM).

List of localities for C. spinipennis brevispina: Toscana: Campo nell’Elba (Livorno) (CGF); Pianosa Island (LIVORNO) (CGL); Ansedonia (GROSSETO) (MSNG). Lazio: River Ariccia valley (Viterbo) m 540 (CGF); Guidonia - Tor Masorto (SINAIO) (CGL); Lido di Castelsusano (Roma) (CGL); Roma - Villa Borghese (Roma) (CGL). Abruzzi: Pianella (Pescara) (CGF). Puglia: Isola Tremiti - San Nicola Island (Foggia) (CGL); Mattinata (Foggia) (CGL); Monte Sant’Angelo (Foggia) m 700 (CGF); San Giovanni Rotondo (Foggia) (CGF); San Marco Catola (Foggia) (CGL); Torre Pietra (Foggia) (CGL); Villaggio Amendola (Foggia) (CGF); San Basilio (Taranto) (CGL); Capo D’Otranto (Lecce) (CGL); Lake Alimini Grande (Lecce) (CGL); Maglie (Lecce) (CGL); Santa Cesarea Terme (Lecce) (CGL); Torre dell’Orso (Lecce) (CGL). Basilicata: Grassano (Matera) (CGL). Calabria: Crotone (CATANZARO) (MSNG), Sardegna: Marina di Sorso (Sassari) (MSNG); Porto Torres (Sassari) (MSNG); Sassari (Sassari) (CGL, MSNG, MSNM); Sorso - River Silis (Sassari) (MSNG); Tresnuraghes (Oristan) (CGF); Sanluri (South Sardinia) (MSNG). Sicilia: Mazara del Vallo - Gorghi Tondi (Trapani) (MSNG); Cefalù (Palermo) (CGL); Cesarò (Messina) (CGL); Messina (Messina) (MSNG); Agrigento (Agrigento) (MNB); Sant’Angelo Muxaro (Agrigento) (CGF); Santo Pietro - Mazzarrone (Catania) (CTG); Taormina (SIRACUSA) (MNB).

Species previously erroneously reported for the Italian fauna

Clanoptilus dissimilis (Baudi di Selve, 1873)

Malachius viridis var. dissimilis Baudi di Selve, 1873: 241, loc. typ. Caucasus; Malachius dissimilis Peyron, 1877: 52 [status changed to good species].

Clanoptilus dissimilis Mayor, 2007: 445.

The citations of this Middle Eastern and Caucasian species, such as that for Sicily reported by Pardo Alcaide (1968: 274), are to be attributed to C. bellieri, as already discussed under this species.

List of localities: Caucasus [sic!] (MSNG). “Transkaspia” (now Iran): Saramsakli (MSNM).

Clanoptilus elegans (Olivier, 1790) (Figs 1o, 2o)

Malachius elegans A.G. Olivier 1790: n.27, loc. typ. Environ de Paris. Allenspach & Wittmer 1979: 90. Clanoptilus elegans Mayor, 2007: 443.

All Italian specimens studied, determined as C. elegans, were found to belong to C. emarginatus. However, it cannot be excluded that C. elegans, a species with a wide European distribution, might be present somewhere near the Alpine ridgeline.

Clanoptilus falcifer (Abeille de Perrin, 1882)

Malachius falcifer Abeille de Perrin, 1882: 114 loc. typ. Caucasus; Pardo Alcaide, 1969: 350. Clanoptilus falcifer Mayor, 2007: 443.

All citations for Italy of this species should be referred to C. emarginatus, as already mentioned in the discussion of that species.

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