A new exceptional *Meligethes* of the *M. aeneus* species-group from Western Alps and an updated key to identification of *M. aeneus* and allied species (Coleoptera: Nitidulidae: Meligethinae)

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A new *Meligethes* from Italian Maritime Alps (Piedmont, Cuneo province), member of the *M. aeneus* species-group, is described as *M. salvan* sp. n. The new taxon, despite sharing a few important morphological features with members of the *M. aeneus* species-complex, is very distinct due to a peculiar combination of characters. The systematic position of *Meligethes salvan* sp. n. is rather problematic, this new species probably representing a true "palaeoendemic relict" of Tertiary origin, as a few other well-known isolated species of different taxonomic groups, endemic to the crystalline Ercinian massifs of the SW Maritime Alps. The new synonymy *Meligethes asperrimus* Guillebeau, 1897 = *Meligethes flavimanus* Stephens, 1830 is introduced, while *Meligethes gracilis* C. Brisout de Barneville, 1863, recently erroneously synonymyzed with *M. aeneus* (Fabricius, 1775) by a Russian author, is resurrected at a specific rank. A provisional key to the identification of *Meligethes aeneus* and allied Holarctic species is finally presented.

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Introduction

Recent years have seen the description of only a few new southern European species of the huge pollen-beetle genus *Meligethes* Stephens, 1830 (Audisio & Spornraft 1990; Kirejtshuk 1997; Audisio & De Biase 1999; Audisio *et al.* 1999; Audisio, Jelínek & Stevanovic 1999; Audisio *et al.* 2000, 2001a, b, 2002). Most of them were represented by rare sibling species, only characterized by molecular, ecological, and fine biometrical distinctive traits. It was then a big surprise to find recently in the collections of the Forschungsinstitut Senckenberg, Frankfurt (FSF), a couple of *Meligethes* collected in the Italian Maritime Alps at the beginning of the past century, belonging to a strongly isolated and clearly undescribed species of the *M. aeneus* species-group.

This paper mainly deals with the description of this evidently rare and local new species, very interesting in terms of systematic position, biogeographic origin, and conservation issues.

Acronyms of the studied collections

CAR – P. Audisio's collection, University of Rome "La Sapienza", Rome, Italy;
FSF – Forschungsinstitut Senckenberg, Frankfurt a. Main, Germany;
MHL – Muséum d'Histoire naturelle de Lyon, France.

Taxonomic arrangement of *Meligethes aeneus* and allied species

The large *Meligethes aeneus* species-group includes more than 40 species in the Holoarctic (Easton, 1955, 1959; Kirejtshuk, 1992; Audisio, 1993; Audisio & De Biase, 1999; Audisio *et al*., 1999; Audisio, Jelínek & Stevanovic, 1999; Audisio *et al*., 2000, 2001a, b; Jelínek, 1997), all associated with plants of the botanical family Brassi-

caceae s.l. (= Brassicaceae + Capparaceae: Judd *et al*. 1994). Within this group it is possible to identify a small cluster of species, sharing the following combination of characters:

- Dorsal body surface green, bluish-green, violet-green, or at least with more or less strong metallic greenish hues on elytra;
- Posterior edges of middle femora simple, entirely lacking teeth or projections;
- Anterior edges of front femora simple, entirely lacking even barely distinct projections;
- Aedeagus usually elongate and parallel-sided, and tegmen with very deeply and widely "V"-shaped distal excision.

1. The "*Meligethes aeneus* species-complex"

1.1. ***Meligethes aeneus*** (Fabricius, 1775); this common and widespread Holoarctic taxon includes probably two or more sibling species, sharing almost identical male and female genitalia, very difficult to identify on morphological basis only, provisionally treated below as "*M. aeneus* s.l.", and so far generally listed as synonyms or uncertain subspecies of *M. aeneus* (Audisio, 1993; Kirejtshuk, 1997). This assemblage, whose taxonomic arrangement needs to be accurately analysed by way of molecular markers (Audisio et al., *in prep*.), includes *M. dauricus* Motschulsky, 1849 (Eastern Palaearctic, Nearctic), *M. cleominis* Easton, 1959 (Nearctic, associated with Capparaceae), *M. boops* Easton, 1957 (Middle Asia), and a few southern European "groups of populations" of the true *M. aeneus*, associated with peculiar larval host-plants and habitats (e.g. feeding on *Matthiola sinuata* L. in rocky coastal environments or on *Biscutella* spp. in high altitude Alpine meadows).

1.2. ***Meligethes gracilis*** C. Brisout de Barneville, 1863; this SW European species, very closely related to *M. aeneus* s.l., was recently synonymized with *aeneus* by Kirejtshuk (1997). In several European Institutions, especially from Eastern Europe, are housed some specimens of *M. aeneus* collected in Central and SE Europe that were erroneously identified as *M. gracilis*. On the contrary, *Meligethes gracilis* is a rare SW European species, well-characterised especially by its very distinct metasternal longitudinal furrow (deeper in males, shallower in females) and its peculiar body colouration (blackish brown and dull pronotum contrasting with greenish and more shining elytra, associated with always yellowish legs and antennae, and strongly reduced body sizes). We recently analysed syntopic specimens of both species from southern Italy (De Biase *et al*., 2003). The comparison of mtDNA sequences of the gene for the Citochrome C Oxidase subunit I showed a degree of genetic divergence (p and K2P distances) with values more than 10 %, confirming the clear-cut specific distinction between the two taxa: *Meligethes gracilis* C. Brisout de Barneville, 1863, **sp. propria**.

1.3. ***Meligethes affinis*** Jelínek, 1982; this eastern Palaearctic species is widespread and apparently not uncommon in several provinces of central and southern China. It is rather closely related to *M. aeneus* s.l. and to *M. gracilis.*

2. An assemblage of more or less isolated and relict species, with uncertain and unclear phylogenetic relationships:

4. ***Meligethes audisioi*** Jelínek, 1997; isolated eastern Palaearctic species, apparently rare and local, endemic to Tibet.

5. ***Meligethes salvan*** **sp. n.**, described and discussed below.

6. ***Meligethes simplipes*** Easton, 1947; this Eastern Nearctic species is very closely related only to the following species.

7. ***Meligethes prometheus*** Jelínek, 1982; this rare Pontic-Caucasian species is very closely related to the Nearctic *M. simplipes.*

8. ***Meligethes humerosus*** Reitter, 1871; this rare and relict Central European species occupies a very isolated position, but it is probably more closely related to *M. aeneus* and allied species, especially to *M. prometheus*, *M. simplipes*, and *M. salvan* sp. n.

Another Eastern Palaearctic species, *Meligethes praetermissus* Easton, 1957 (E China, Primorje region, Japan), placed by Jelínek (1982a, b, 1997) near *M. affinis* and *M. prometheus*, is actually related to *M. coeruleovirens* Förster, 1849 (Central Europe), to *M. spornrafti* Audisio, 1977 (Italy, Serbia) and to a so far undescribed species from SE China. All these species form together the "*M. coeruleovirens*" species-complex and are characterized by having a barely distinct bulge along the anterior edge of the front femora and a narrower

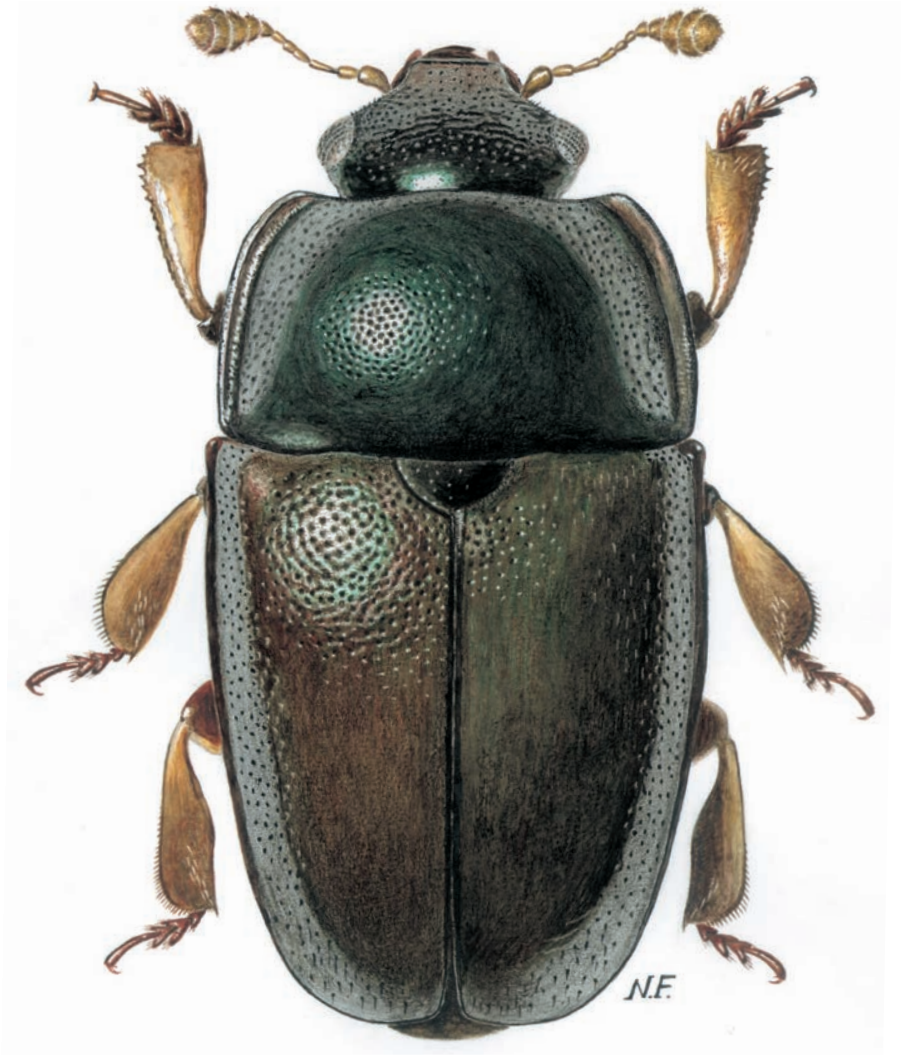


Figure 1. Habitus of *Meligethes salvan* sp. n., ♂ holotype from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m (antennae partially reconstructed basing on female paratype). Body length: 2.6 mm.

apex of the aedeagus. This complex is not closely related to *M. aeneus* and its allies.

Meligethes salvan sp. n.

(Figs 1, 2-3, 6-8, 11-12)

Diagnosis. – Middle-sized (length 2.6-2.7 mm), dark metallic greenish brown, with darker black-greenish head, pronotum, scutellum, pygydium and ventral surface; legs and antennae yellowish to pale brown (tarsi and femora brown), and short fine brownish pubescence. In general appearance (Fig. 1) roughly similar to relatively short and wide specimens of *M. aeneus* (Fabricius, 1775) and of *M. viridescens* (Fabricius, 1787), but with pronotum dorsally more convex and with more widely flattened lateral borders. Middle femora with simple, not toothed posterior edge (Fig. 12); posterior tibiae relatively wide, with inner edges distinctly sinuate (Figs 1, 8) in both sexes.

Scutellum with exceptionally fine and sparse punctuation (Fig. 11). Male genitalia as in figs 2-3. Ovipositor as in figs 6-7.

Description. – Male holotype. Length 2.61 mm; breadth (at widest point of elytra) 1.44 mm. Moderately elongate and scarcely convex, except on discal portion of pronotum (Fig. 1); dark metallic greenish brown, with blackish-brown head, pronotum, scutellum, pygidium and ventral surface; legs and antennae yellowish to pale brown (tarsi and femora brown), with short and sparse brownish pubescence. Legs yellowish to pale brown (tarsi and femora brown). Antennae yellowish to pale brown.

Head with dorsal punctures as large as, or slightly smaller than eye facets, finely impressed, separated by nearly one diameter, surface between them finely microscopically reticulated; front margin of clypeus completely and very distinctly bordered, almost transversely truncate or very shallowly emarginate (if observed frontally), with distinct but obtusely rounded side angles. Frontogeneal furrows absent. Tentorial pits barely distinct and very shallow. Antennae (partially mutilated in the male holotype; description based also on female paratype) of normal size (Fig. 1) for members of the *M. aeneus* group, third antennal segment slender, distinctly longer than second one; antennal club relatively large-sized.

Pronotum 1.77 times as wide as long, broadest at posterior fourth (Fig. 1), narrower anteriorly; sides strongly and widely bordered, narrowly explanate, with discal portion distinctly more convex; posterior angles moderately rounded. Posterior base distinctly sinuate on either side of scutellum; punctures slightly larger and deeper than on head, separated by slightly less than one diameter, surface between barely shining and with distinct traces of microreticulation.

Scutellum large-sized, hemi-circular, very finely and sparsely punctate, with nearly 14-15 punctures in its exposed portion (Fig. 11); surface showing a faint trace of microscopic reticulation.

Elytra (Fig. 1) 1.17-1.18 times longer than wide, broadest at basal second fifth, scarcely (1.04 times) wider than pronotum; shoulders feebly raised, humeral bulge distinct; humeral stria absent; elytral punctures slightly larger and coarser than on pronotum, with orange-peel appearance, surface between them as on pronotum.

Ventral surface blackish-brown, with fine short pale brown pubescence. Prosternal antennal furrows absent. Prosternal process rather long and narrow in the middle (here slightly narrower than antennal club), with wider and obtusely pointed apex, 1.1 times as wide as antennal club; punctures distinctly coarser than on head and slightly rough, surface between them rather dull.

Mesosternum with hind edge rather strongly concave and with longitudinal carina reaching its posterior edge.

Metasternum rather flat (punctures and the spaces between as on head, but distinctly sparser and more shiny), simple, without tubercles or impressions (only slightly triangularly flattened in its posterior third). The caudal marginal line of the hind coxal cavity follows closely its posterior edge, turning back just before its outer end. Last visible abdominal sternite simple.

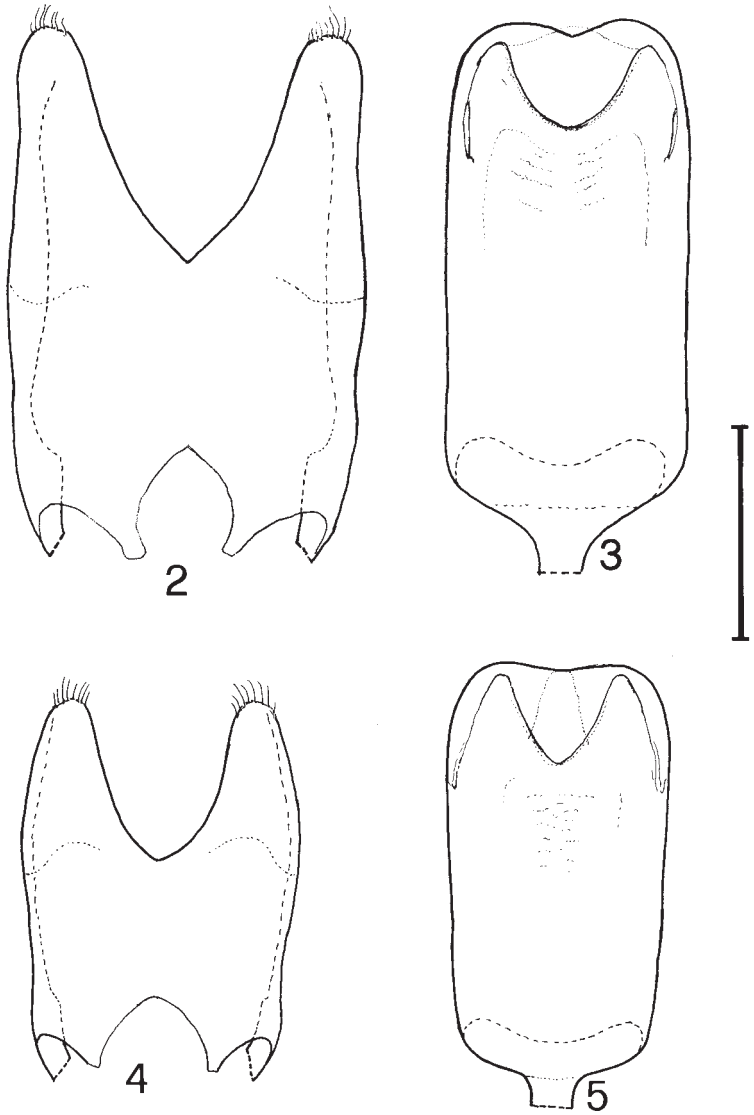
Anterior edge of front femora simple, without teeth or tubercles. Anterior tibiae (Fig. 1) nearly as in *M. viridescens*, with their outer edges finely crenulate in its distal half; anterior tarsi as wide as length of first antennal joint; tarsal claws simple, not toothed. Posterior edge of middle femora simple, without teeth or projections (Fig. 12). Middle tibiae relatively wide, their inner edges slightly sinuate at the basal third (Fig. 1). Posterior tibiae relatively wide, their inner edges distinctly sinuate (Figs 1, 8).

Genitalia. Tegmen large-sized (Fig. 2), parallel-sided, with V-shaped median excision very deep and wide; aedeagus large-sized, elongate, nearly 2.05 times longer than wide (Fig. 3), parallel-sided, with apex broadly sinuate.

Female paratype. Length 2.65 mm. Anterior tarsi distinctly narrower than in male. Middle and posterior tibiae with inner edges nearly as sinuate as in male. Ovipositor (Figs 6-7) small, yellowish, slightly darker towards the apex, scarcely pointed and with short styli inserted at a distance from apex slightly less to their length (Fig. 7); outer subdivision of coxites long and narrow; 'central point' placed at its distal 4/9 (ventral spicule absent); transverse suture as figured; external angles of basicoxites obtuse.

Type material. – Holotype, ♂, Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m, end of June 1912, Singer leg. (FSF). Paratypes: 1♀, same data as holotype (CAR).

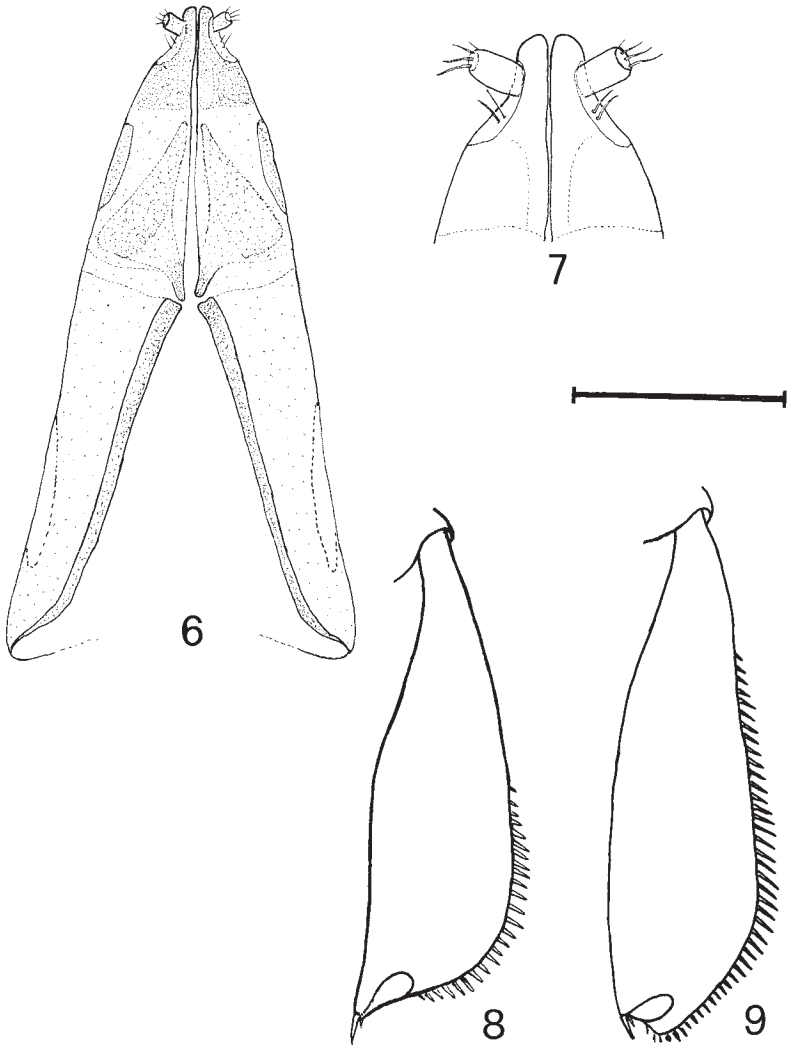
Etymology. – The specific epithet of the new species derives from the Occitan name "*salvàn*" (known also as "*salvanòt*", "*salvònt*" or "*servànt*"), referred to a mythi-



Figures 2-5. Tegmen and aedeagus (dorsal aspect) of *Meligethes* spp. *M. salvan* sp. n., ♂ holotype from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m (2-3); *M. aeneus* (Fabricius), ♂ from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Valdieri, 1100 m (4-5) (body length: 2.6 mm). Scale bar = 0.17 mm.

cal kind of spiteful and mysterious fauns or elves inhabiting the mountain areas of the Western Alps.

Comparative notes. – *Meligethes salvan* sp.n. is certainly very isolated among the other members of the *M. aeneus* species group. As above emphasized in the diagnosis and in the description, this new species occupies a taxonomic position apparently intermediate between members of the *M. aeneus* species-complex and those of the *M. viridescens* species-complex. *Meligethes salvan* sp.n. is very probably more closely related to *M. aeneus* and its allies, due to a series of important shared



Figures 6-9. Ovipositor (6) and apex of the same (7) of *Meligethes salvan* sp. n., ♀ paratype from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m. Outline of the posterior tibia of *Meligethes salvan* sp. n. ♂ from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m (8) and of *M. aeneus* (Fabricius), ♂ Italy, Piedmont (Cuneo Province), Mount Argentera massif, Valdieri, 1100 m (9). Scale bar = 0.17 mm (Fig. 6); = 0.085 mm (Fig. 7); = 0.12 mm (Figs 8-9).

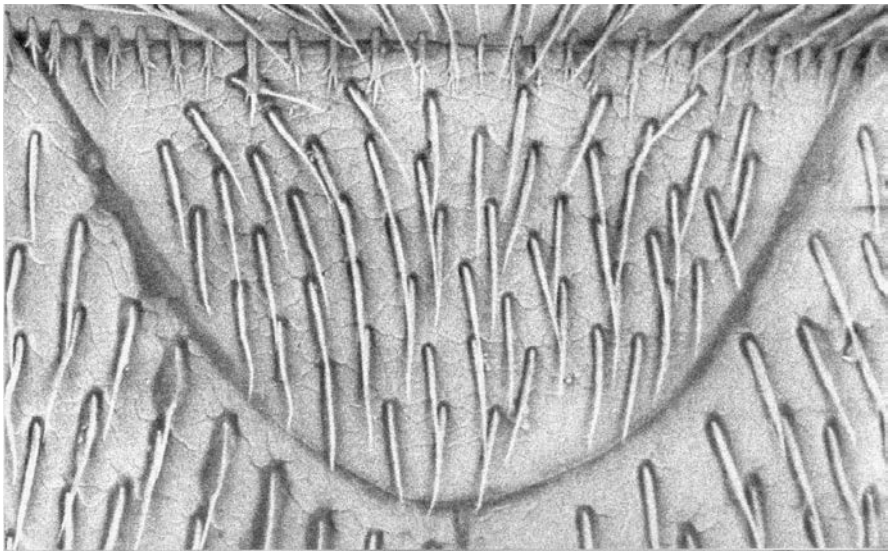
characters, such as the parallel-sided aedeagus, the more strongly and deeply excised tegmen, and the absence of teeth on the posterior edges of its middle femora. On the other hand, its dorsal aspect, the yellowish-brown colouration of both legs and antennae, and the sinuate posterior tibiae (Figs 1, 8) are shared characters with members of the *M. viridescens* species-complex. It seems likely that this new species represents an ancient and relict element, at some degrees related to a few other relict, rare and isolated Palaearctic species of the group, such as the above listed *M. prometheus* Jelínek, *M. humerosus* Reitter, *M. affinis* Jelínek, and *M. audisioi* Jelínek, all living in humid forest

habitats with suboceanic climate. *Meligethes salvan* sp.n. probably belongs to the same ancient "biogeographic stem" including a few important and well-known taxa, endemic to the SW crystalline Ercinian massifs (predating the Alpine orogenesis) of the Western Alps, and commonly recognized as "W-Alpine Tertiary paleoendemics" (Vigna Taglianti, 2000; Chemini & Vigna Taglianti, 2002). Among these elements, we could point to other beetles such as, e.g., *Carabus (Chrysocarabus) solieri* Dejean and *Sphodropsis ghilianii* Schaum (Coleoptera Carabidae) or, among plants, the strongly isolated *Saxifraga florulenta* Moretti (Saxifragaceae). All these elements share more or less evident relationships with other species, species-groups or genera presently known from Central and NE Asia, or from the extreme SE Palaearctic, as probably *M. salvan* sp.n. does.

Biological notes. – The biology of this species is completely unknown yet. The type specimens were collected by sweeping at the end of June 1912 in the area of the Rovina lake, a small basin at intermediate altitude (1600 m a.s.l.) placed along the northern slopes of the crystalline Argentera Massif. Unfortunately nearly 30 years ago the lake area was almost entirely destroyed and modified by works associated with a hydroelectric power plant, and despite several attempts made by the authors during the Summer 2002, no new specimen of this species was found at the type locality. On the other hand, extrapolating from the known biology of almost all other species of *Meligethes* belonging to the *M. aeneus* species-group, very probably the larval host-plant of the new species could be represented by a member of the botanical family Brassicaceae (= Cruciferae). During the summer 2002 we located in the Mount Argentera middle altitude area (1200-2200 m a.s.l.) several genera and species of Brassicaceae (including a few rare species endemics or subendemics to the Western Alps), such as *Coincya richeri* (Vill.) Greuter & Burdet (= *Rhynchosinapis richeri*), *Coincya monensis* ssp. *cheiranthos* (Vill.) Aedo, Leadlay & Munoz Garmendia (= *Rhynchosinapis cheiranthos*), *Hugueninia tanacetifolia* (L.) Reichenb., *Cardamine asarifolia* L., and other more common species, without any success in finding the beetle. Other interesting Brassicaceae known to occur in the area are *Cardamine bellidifolia* L., *C. resedifolia* L., *C. plumieri* Vill., *C. amara* L., *Arabis alpina* L., *Hutchinsia alpina* (L.) R.Br., and *Thlaspi rotundifolium* (L.) Gaudin. One of these could likely represent the larval host-plant of the new species.

Geographic distribution and conservation problems. – This species is apparently very rare and local, known to have occurred at the type locality only. The discovery of *Meligethes salvan* sp.n. suggests to improve as soon as possible the entomological researches in the mountain areas of the Italian and French Western Alps, in order to discover elsewhere the species and to study its unknown natural history. This information is an obvious pre-requisite for any conservation plan able to preserve this exceptional new species and its natural habitats, especially within the present-day boundaries of the Maritime Alps Natural Park (Italy) and the Mercantour National Park (France).

Taxonomic notes. – Due to the need to check all the previously described taxa attributed to the *Meligethes aeneus* species-group, and especially those more closely related to *M. aeneus* (this species having a well-known plethora of synonyms, listed in Audisio, 1993), we tried to trace the type specimens of a rather mysterious taxon, *Meligethes asperrimus* Guillebeau, 1897, described from the Lyon area, not too far from the Italian Western Alps, and apparently sharing some external characters with the new species. This taxon, described as being closely related to *M. aeneus* (Guillebeau, 1897), was never studied by specialists after its description, due to difficulties in tracing the type material, preserved for several years in a small and almost inaccessible municipal museum of the SE France. The taxonomic position of *M. asperrimus* consequently remained uncertain, as doubtful synonym of *M. aeneus* (Audisio, 1993). In the most recent years, the Guillebeau's collection was happily acquired by the Natural history Museum, Lyon (MHL), and through the kindness of our colleague J. Clary, we had finally the chance to study one of the two syntypes of the species. The examined female syntype (designed as lectotype of the taxon: Audisio des., 2002, MHL) well fits the Guillebeau's original description, but it is certainly to be referred to a rather small specimen of *Meligethes flavimanus* Stephens, 1830. This species is a member of the *M. atratus* species-group, relatively closely related to *M. aeneus* and its allies, but including species (mostly from Eastern Palaearctic) associated with plants of the family



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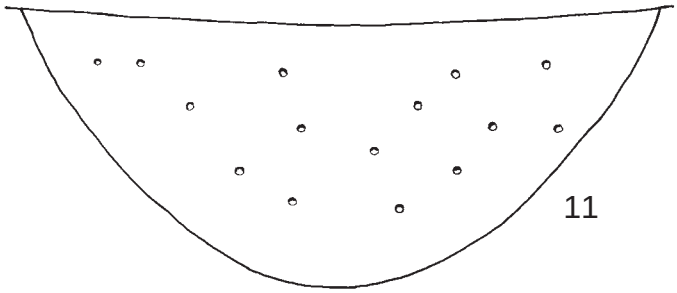

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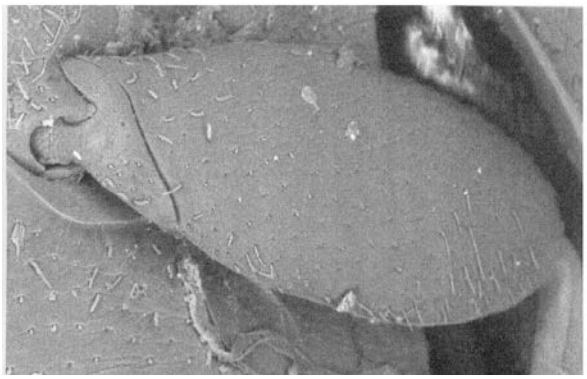

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Figure 10-12. SEM photograph of the scutellum of *M. aeneus* (Fabricius), ♂ from Piedmont (Cuneo Province), Mount Argentera massif, Valdieri, 1100 m (10); outline of the scutellum with position of punctures (hairs not considered) of *Meligethes salvan* sp. n., ♂ holotype from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m (11). SEM photograph of the middle femur of *M. salvan* sp. n., ♀ paratype from Italy, Piedmont (Cuneo Province), Mount Argentera massif, Rovina lake, 1600 m (12). Scale bar = 0.07 mm (Fig. 10); = 0.11 mm (Fig. 11); = 0.19 mm (Fig. 12).

Rosaceae for their larval development. We introduce thus the following synonymy: *Meligethes asperrimus* Guillebeau, 1897 = *Meligethes flavimanus* Stephens, 1830, **syn. n.**

Provisional key to the identification of *Meligethes aeneus* and allied species

1 (2) Punctures of pronotum and elytra exceptionally fine and sparse, distance separating punctures about 2-4 times their diameter. Body relatively large and wide (fig. 119i in Audisio 1993), blackish with more or less distinct dark green or bluish-olivaceous reflections; legs and antennae dark, blackish-brown to brown. Male and female genitalia: figs. 135s, t and 154a in Audisio 1993. Length: 2.0-3.0 mm. Mountains of central and southern Europe, Alps. Larval host-plants: hygrophilous *Cardamine* spp. ..... 8. *humerosus* Reitter

2 (1) Punctures of pronotum much denser, distance separating punctures never exceeding 1.5 times their diameter 3

3 (4) Posterior tibiae wider, their inner edge slightly but distinctly sinuate in both sexes (barely more distinctly in male than in female) (Figs 1, 8). Habitus as figured (Fig. 1); scutellum with only 14-15 very fine and sparse punctures (Fig. 11). Male and female genitalia as figured (Figs. 2-3, 6-7). Maritime Alps. Larval host-plants: unknown ..... 5. *salvan* sp.n.

4 (3) Posterior tibiae slender, their inner edge nearly straight, never sinuate in both sexes (Fig. 9). Scutellum with at least 16-20 well distinct punctures (Fig. 10). 5

5 (6) Posterior third of the exposed portion of the scutellum impunctate or nearly so, punctures present only in its anterior two-thirds. Tentorial pits (frontal impressions) on head particularly evident and relatively deeply impressed. Body usually dark green to dark bluish, bright, with yellowish to dark brown legs and antennae. Dorsal punctures on pronotum and elytra relatively coarse and strongly impressed 7

6 (5) The whole exposed portion of the scutellum is more or less uniformly punctate, including its posterior third 9

7 (8) Male genitalia with slightly shorter tegmen and aedeagus (figs 2a and 2b in Easton 1947). Eastern areas of Northern America. Larval host-plants: unknown .... 6. *simplipes* Easton

8 (7) Male genitalia with slightly longer tegmen and aedeagus (figs 135i, l in Audisio 1993). Eastern Pontic Chain, Caucasus, N Iran. Larval host-plants: hygrophilous *Cardamine* spp. ..... 7. *prometheus* Jelínek

9 (10) Posterior angles of pronotum slightly directed backwards. Male genitalia with apex of aedeagus rounded (Fig. 12 in Jelínek 1997); ovipositor with small styli inserted rather far from its acutely pointed apex (Fig. 14 in Jelínek 1997). Dorsal surface of body exceptionally brightly metallic and shining, uniformly emerald green, with spaces between the sparse elytral punctures completely smooth. Length: 2.4-2.5 mm. Mountain of southern China (Tibet). Larval host-plants: unknown .... 4. *audisioi* Jelínek

10 (9) Posterior angles of pronotum not directed backwards. Male genitalia with apex of aedeagus more or less distinctly sinuate (Fig. 5). Ovipositors differently shaped, with styli inserted very close to the apex (Fig. 154g in Audisio 1993). Dorsal surface of body never so strongly brightly metallic and shining, with more or less distinct traces of reticulation between the much denser elytral punctures (the *Meligethes aeneus* species-complex) 11

11 (12) Pronotum widest close to its posterior third or to the middle, at least slightly narrowed also in posterior third. Body colour quite variable (green to bluish or violet), usually uniformly olivaceous metallic green, sometimes with pronotum blackish, contrasting with metallic green elytra. Legs and antennae variable in colour, usually brown to blackish-brown, rarely yellowish to pale brown, with darker antennal club. Male metasternum with only very shallow and barely distinct longitudinal furrow in the middle, absent in female. Male genitalia as in figs 4-5; female genitalia as in fig.154g in Audisio 1993. Length: 1.5-2.9 mm. Palaearctic and Nearctic regions. Larval host-plants: several different genera and species of Brassicaceae and Capparaceae ..... 1. *aeneus* s.l.

12 (11) Pronotum widest close to posterior angles, almost regularly narrowed distally, or subparallel in the posterior third. Legs and antennae (if the case, club excluded) always yellowish to pale brown 13

13 (14) Pronotum brown to blackish-brown, without metallic reflections, in contrast to metallic olivaceous green elytra. Antennal club usually brown to nut-brown. Male metasternum with rather deep longitudinal furrow in the middle (fig. 125q in Audisio, 1993), weaker but still distinct in females. Pronotum widest close to posterior angles, and usually subparallel in the posterior third. Male genitalia as in figs 135m, n in Audisio 1993. Length: 1.4-2.2 mm. SW Europe. Larval host-plants: *Iberis* spp. .... 2. *gracilis* C.Brisout de Barneville

14 (13) Dorsal surface of body uniformly metallic green to bluish. Antennal club usually yellowish to pale brown. Male metasternum with only shallow longitudinal furrow in the middle. Pronotum widest close to posterior angles, and regularly narrowed distally (Fig. 8 in Jelínek 1982b). Male and

female genitalia as in figs 10-12 in Jelínek 1982b. Length: 2.1-2.7 mm. China. Larval host-plants: unknown ..... 3. *affinis* Jelínek

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References

Audisio, P. (1993) Coleoptera Nitidulidae - Kateretidae. *Fauna d'Italia, vol. 32, Calderini ed., Bologna,* XVI + 971 pp.

Audisio, P., Belfiore, C., De Biase, A. & Antonini, G. (2001a) Identification of *Meligethes matronalis* Audisio and Spornraft, 1990 and *M. subaeneus* Sturm, 1845, based on morphometric and bionomic characters (Coleoptera: Nitidulidae). *European Journal of Entomology* 98: 87-97.

Audisio, P. & De Biase, A. (1999) Bionomic and morphological evidence of a new southern European species of the *Meligethes viridescens* complex (Coleoptera: Nitidulidae). *Folia Heyrovskyana* 7 (2): 99-113.

Audisio, P., De Biase, A., Antonini, G., Belfiore, C. & Oliverio, M. (2001b) Morphological, molecular, and ecological evidence of a new Euro-Anatolian species of the *Meligethes coracinus* complex (Coleoptera: Nitidulidae). *Insect Systematics and Evolution* 31: 361-385.

Audisio, P., De Biase, A., Antonini, G., Oliverio, M., Ketmaier, V. & De Matthaeis, E. (2002) Specific distinction by allozymic data of sympatric sibling species of the pollen-beetle genus *Meligethes* (Coleoptera: Nitidulidae). *Italian Journal of Zoology* 69 (1): 65-69.

Audisio, P., De Biase, A., Romanelli, P., Angelici, M.C., Ketmaier V. & De Matthaeis, E. (1999) Molecular reexamination of the taxonomy of the *Meligethes viridescens* species-complex (Coleoptera: Nitidulidae). *Biochemical Systematics and Ecology* 28: 1-13.

Audisio, P., Jelínek, J., Mariotti, A. & De Biase, A. (2000) The Coleoptera Nitidulidae and Kateretidae from Anatolian, Caucasian and Middle East regions. *Biogeographia, Lavori della Società italiana di Biogeografia* 21: 241-354.

Audisio, P., Jelínek, J. & Stevanovic, M. (1999) Morphological and biogeographical reexamination of the *Meligethes squamosus* species complex (Coleoptera: Nitidulidae: Meligethinae). *Folia Heyrovskyana* 7 (1): 61-71.

Audisio, P. & Spornraft, K. (1990) Taxonomie, Ökologie und Verbreitung von *Meligethes coracinus* auctt. mit Beschreibung einer neuen Art (Coleoptera: Nitidulidae). *Nachrichtenblatt der bayerischen Entomologen* 39: 70-75.

Chemini, C. & Vigna Taglianti, A. (2002) Gli animali delle alte quote. Pp. 46-73 *in: La fauna in Italia* (A. Minelli, C. Chemini, R. Argano & S. Ruffo eds), Touring Club Italiano, Milan, and Ministero dell'Ambiente e della Tutela del Territorio, Rome, 448 pp.

De Biase, A., Antonini, G., Mancini, E. & Audisio, P. (2003) Molecular taxonomy of two sympatric sibling species of the pollen-beetle genus *Meligethes* (Coleoptera: Nitidulidae). *Zootaxa* 190: 1-16.

Easton, A. M. (1947) An addition to the Nearctic Nitidulidae (Coleoptera). *Annals and Magazine of Natural History, Ser. 11* 14: 60-64.

Easton, A. M. (1955) A revision of the Nearctic species of the beetle genus *Meligethes* (Nitidulidae). *Proceedings of the United States National Museum* 104: 87-103.

Easton, A. M. (1957) The *Meligethes* of Japan (Coleoptera: Nitidulidae). *Transactions of the Royal Entomological Society of London* 109 (14): 395-420.

Easton, A. M. (1959) A new Nearctic species of *Meligethes* (Col., Nitidulidae). *Entomologist's Monthly Magazine* 95: 58-61.

Jelínek, J. (1982a) New and little known species of the genus *Meligethes* from Turkey and neighbouring countries (Coleoptera, Nitidulidae). *Türkiye Bitki Koruma Dergisi* 5 (1981) (4): 201-214.

Jelínek, J. (1982b) New palaearctic species of the genus *Meligethes* (Coleoptera, Nitidulidae). *Acta entomologica bohemoslovaca* 79: 289-300.

Jelínek, J. (1997) New descriptions and records of Brachypteridae and Nitidulidae from the Palaearctic region (Coleoptera). *Folia Heyrovskyana* 5 (3): 123-138.

Judd, W.S., Sanders, R.W. & Donoghue, M.J. (1994) Angiosperm family pairs: preliminary cladistic analyses. *Harward Papers of Botany* 5, 1-51.

Kirejtshuk, A.G. (1992) The Insects of the USSR far East. III, Coleoptera, 2. Nitidulidae, Kateretidae. *Russian Academy of Sciences, St.Petersburgh, "Nauka"* 1992: 114-216 (in Russian).

Kirejtshuk, A. G. (1997) New Palaearctic nitidulid beetles, with notes on synonymy and systematic position of some species (Coleoptera: Nitidulidae). *Zoosystematica Rossica* 6: 255-268.

Vigna Taglianti, A. (2000) Fauna d'Oc. *Quaderni di Primealpi, Centro di Documentazione Comunità Montana Valle Stura, Cuneo* 3, 94 pp.

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