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(Nicoletiidae, Thysanura, Insecta)

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ABSTRACT

The genus *Nicoletia* Gervais is restricted to the type, *phytophila* Gervais, a tropical and subtropical species also found in European greenhouses. A new genus, *Coletinia* (type: *Nicoletia maggii* Grassi) is proposed for the European species formerly placed in *Nicoletia*. *Coletinia capolongoi* (Spain), *mendesi* (Portugal) and *setosula* (Sicily) are described as new; the first is a troglobiont. *Coletinia maggii* (Grassi), new combination (Italy and Jugoslavia), and *C. subterranea* (Silvestri), new combination (Italy), are redescribed. The

highly asymmetrical structure of the antennae of the male of *subterranea* is confirmed. *Nicoletia bulgarica* Kozaroff (Bulgaria), *N. corsica* Chopard (Corsica), and *N. jeanneli* Silvestri (France) are transferred to *Coletinia*. *Lepidospora escherichi* Silvestri (Ionian and Aegean seas) is redescribed, and *Nicoletia grassii* Escherich (Sicily) is transferred to *Lepidospora*. Keys are given to the genera of the Nicoletiinae of the world and of Europe and to the species of *Coletinia*.

INTRODUCTION

The Nicoletiinae are blind, not or only weakly pigmented, elongate subcylindrical or slightly flattened Thysanura. They occur in leaf litter, under rocks, in rotten wood, in soil at various depths, and in caves. Nicoletiinae are found in all zoogeographical regions.

My original interest in the European Nicoletiinae was awakened by Dr. Ing. D. Capolongo of Roccarainola, Italy, who collected nicoletiines in a cave in Spain and asked me for their identification. Nicoletiinae had

never before been reported from the Pyrenean peninsula, and the identification and correct generic placement of this species provided the initial challenge for the present work.

There exist adequate descriptions of most genera and species of the subfamily, but some are not well defined. One example is the type-genus of the Nicoletiinae, *Nicoletia* Gervais, briefly described in the last century from France. *Nicoletia* has served as a repository for numerous species from Europe

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and from North and South America, but it has never been well understood. The present paper clears up the doubts regarding the genus *Nicoletia*, and facilitates the correct generic placement of some of the species attributed to it.

ACKNOWLEDGMENTS

My thanks are due to several European entomologists who provided me with information or who kindly lent me the specimens upon which this paper is based, namely: Dr. Carmen Bach, Universidad Autonoma de Barcelona; Dr. J. Carayon, Muséum National d'Histoire Naturelle, Paris; Dr. Ing. D. Capolongo, Roccarainola, Italy; Dr. Bernd Hauser, Muséum d'Histoire Naturelle, Geneva; Dr. C. A. W. Jeekel, Zoologisch Museum, Amsterdam; Dr. Luis F. Mendes, Museu Bocage, Lisbon, and Dr. E. Tremblay, Istituto di Entomologia Agraria, Portici, Italy.

Mr. Robert Koestler, of the American Museum of Natural History, took the SEM pictures, and Mrs. Kathleen Schmidt, of the Entomology Department of the Museum, helped with the illustrations.

KEY TO THE GENERA OF NICOLETIINAE OF THE WORLD

1. Scales absent 2
Scales present 11
2. Stylets present only on urosternites VIII and IX, or on IX only; exsertile vesicles absent; coxites IX of male free; subgenital plate of female not developed *Trinemophora*
Stylets more numerous; exsertile vesicles present or absent; coxites IX of male free or fused; subgenital plate of female well developed 3
3. Stylets present on urosternites IV–IX; coxites IX of male fused *Subnicoletia*
Stylets more numerous 4
4. Stylets present on urosternites III–IX; coxites IX of male fused 5
Stylets present on urosternites II–IX; coxites IX of male fused or not 6
5. Tarsi with three claws *Trinemura*
Tarsi with two claws *Trinemurodes*
6. Exsertile vesicles absent *Protrinemura*
Exsertile vesicles present 7

7. Most urosternites divided into a medium sternal plate and 1+1 lateral coxites; pedicellus of male without conspicuous process ... 8
Urosternites entire; pedicellus of male with distinct simple or complex projection
..... *Coletinia*
8. Submentum with lateral lobes, bearing numerous glandular pores *Prosthecina*
Submentum without such lobes 9
9. Urosternite IV of male with 1+1 articulated submedian appendages *Anelpistina*
Urosternite IV of male without such appendages 10
10. Parameres of male subdivided subapically; tenth urotergum with 1+1 large apical macrochaetae *Nicoletia*
Parameres of male entire; tenth urotergum with several apical macrochaetae, none conspicuously longer than the others
..... *Cubacubana*
11. Most urosternites subdivided into a median sternal plate and 1+1 lateral coxites; coxites IX of male fused *Texoreddellia*
Urosternites entire; coxites IX of male not fused 12
12. Stylets present on urosternites III–IX; head without scales *Lepidina*
Stylets present on urosternites II–IX; head with or without scales 13
13. Head with scales
..... *Lepidospora* (*Lepidospora*)
Head without scales
..... *Lepidospora* (*Brinckina*)

KEY TO THE GENERA OF EUROPEAN NICOLETIINAE

1. Scales present (fig. 15C); general body shape flattened, lepisma-like (fig. 14F); thorax distinctly wider than abdomen, the former not conspicuously constricted at level of limits between nota (fig. 14F)
..... *Lepidospora*
Scales absent; body subcylindrical, campodeiform (figs. 2A; 9A) 2
2. Ventral abdominal sclerites II–VII divided into median sternite and lateral coxites (fig. 1A); apical segment of maxillary palp fusiform (fig. 1C); parameres of male subdivided subapically; known European populations thelytokous *Nicoletia*
Ventral abdominal sclerites II–VII entire (fig. 11J); apical segment of maxillary palp slender, subparallel (fig. 8D); parameres of

male not subdivided subapically; known populations bisexual. *Coletinia*

NICOLETIA GERVAIS

Nicoletia Gervais, 1844, p. 454.

REDESCRIPTION: Body subcylindrical, thorax not distinctly wider than abdomen, conspicuously constricted at level of limit between nota. Scales absent. Antennae and caudal filaments shorter than body.

Head emarginated laterally at level of insertion of antennae. Scapus of male with fields of unicellular glands but without projection. Mandibles strongly sclerotized apically and with fully developed teeth. Galea apically with two large sensory pegs. Lacinia heavily sclerotized distally; first process of lacinia pectinate. Last segment of maxillary palp suboval, with sensory rods and subrectangular cuticular sensillae. Labium without prominent lateral lobes.

Thorax conspicuously constricted at level of limits between nota.

Praetarsi with three simple claws; median claw glabrous, slender, about half as long as lateral claws.

Lateral portions of urotergites separated from central portion by distinct suture. Urostermite I divided into sternite and coxites, as are urostermites II–VII, of both sexes. Stylets present on segments II–IX. Urostermites II–VI with exsertile vesicles, VII with pseudovesicles. Coxites IX of male completely fused. Parameres short and stout, widest at base, subdivided subapically. Opening of penis longitudinal. Subgenital plate of female well developed. Ovipositor extending beyond apex of coxites IX.

Spermatolophids not known.

TYPE SPECIES: *Nicoletia phytophila* Gervais

The name *Nicoletia* was first introduced in the entomological literature by Gervais (1843) who very briefly described his new genus in which he included two species, *Nicoletia geophila* and *Nicoletia phytophila*; both were *nomina nuda*. In 1844 Gervais published an identical generic diagnosis for *Nicoletia* and accompanied it by one short

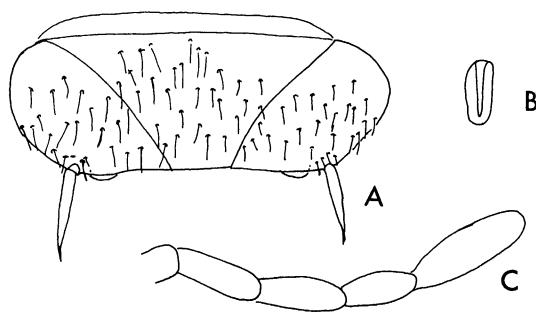


FIG. 1. *Nicoletia phytophila*. A. Fifth urostermite. B. Sensillum of terminal segment of maxillary palp. C. Maxillary palp, schematic.

paragraph each for *Nicoletia geophila* and *phytophila*. *Nicoletia geophila* was again neither diagnosed nor described, but *N. phytophila* was diagnosed in two short sentences ("Blanc jaunâtre. Tête et corps, 0.004 [4 mm.] en longueur"). Furthermore, the species was abundantly illustrated, with one good habitus figure and seven additional detailed illustrations. *Nicoletia phytophila* thus became validated and with it, the genus *Nicoletia*, which now had one valid species that automatically became the type of *Nicoletia*.

All other species described under *Nicoletia* are here either transferred to *Coletinia*, a new genus, or are temporarily regarded as of *incertae sedis*.

Nicoletia phytophila Gervais Figure 1

Nicoletia phytophila Gervais, 1844, p. 454.

Nicoletia (Anelpistina) meinerti Silvestri 1905, p. 114 (NEW SYNONYM).

Nicoletia meinerti: Silvestri, 1912, p. 218.

This species was first validly described by Gervais in 1844 (see discussion under generic heading). The author stated that he had collected the species in the [Paris] Museum's greenhouses.

The description and illustrations alone, although excellent for the era they were published in, are not sufficient to place the species in the modern system of the Nicoletiinae. As early as 1912, Silvestri suggested

that *Nicoletia phytophila* and his *Nicoletia meinerti* might be identical. He stated, "Se nelle serre di Parigi non si troverà qualche altra specie diversa dalla *N. meinerti* dovrà accettarsi senz'altro tale sinonimia."

Considering the special importance of *Nicoletia phytophila* as the type species of the type genus of the family Nicoletiidae the need for its integration in the modern system of these insects is obvious. I tried to obtain type material but was informed by Dr. J. Carayon, of the Muséum National d'Histoire Naturelle in Paris, that Gervais's types of *Nicoletia phytophila* could not be found and that nicoletiines do not exist any more in the Paris Museum greenhouses. Fortunately, I have been able to examine a slide made from a specimen labeled "Serres du Muséum de Paris, 1-XII-1895." This is the first (and last) time a nicoletiine was collected in the Museum's greenhouses after the original material was obtained. It is reasonable to assume that this more recent material is specifically identical with Gervais's material obtained earlier at the same location.

Examination of the slide mentioned showed the mounted specimen to be identical with what has been described as *Nicoletia meinerti*. The latter thus becomes a synonym of *Nicoletia phytophila*.

The species is now known from greenhouses in several European countries, and also from Cuba, Venezuela, Ecuador, the Amazonian region of Brazil, Hawaii, the Marquesas, and from West Africa.

COLETINIA, NEW GENUS

DIAGNOSIS: Elongate, subcylindrical Nicoletiidae without scales. First process of lacinia pectinate. Thorax conspicuously constricted at level of limits between nota. Urosternites II–VII entire and with exsertile vesicles; stylets on segments II–IX. Coxites IX of male separated. Median sternal plate of segment VIII of female well developed.

DESCRIPTION: Body slender, elongate, approximately parallel-sided, only very slightly tapering posteriorly. Scales absent.

Head emarginate laterally at level of insertion of antennae. Antennae of male with

pedicellus bearing simple or complex process.

Mandibles strongly sclerotized apically and with fully developed teeth. Galea apically with two large sensory pegs. Lacinia heavily sclerotized distally; first process of lacinia pectinate. Last segment of maxillary palp subcylindrical with sensory rods and subcircular cuticular sensillae. Labium without prominent lateral lobes.

Thorax conspicuously constricted at level of limits between nota.

Praetarsi with three simple claws; median claw glabrous, slender, almost as long as lateral claws.

Lateral portions of urotergites separated from central portion by distinct suture. Urosternite I divided into sternite and coxites. Urosternites II–VII of female and II–VIII of male entire. Stylets present on segments II–IX. Urosternites II–VI with exsertile vesicles; VII with pseudovesicles. Coxites IX of male free, not fused. Tenth tergite, cerci and median filament of male with sensory pegs or spines. Parameres elongate, cylindrical, not subdivided. Opening of penis longitudinal. Subgenital plate of female well developed. Ovipositor elongate, extending beyond apex of coxites IX.

Spermatolophids with a few scattered spermatozoa (only observed in *C. subterranea*).

TYPE SPECIES: *Nicoletia maggii* Grassi.

ETYMOLOGY: *Coletinina* is an anagram of *Nicoletia*, type genus of the family Nicoletiidae.

KEY TO THE SPECIES OF COLETINIA

1. Frons with very numerous subequal long setae (figs. 7E, 15E); antennae of male symmetrical, apex of appendage of pedicellus as shown in figures G, C, D; 7B, C 2
- Frons with fewer setae, both distinct macrochaetae and short bristles (figs. 2I, 3B); antennae of males symmetrical or asymmetrical, apex of appendages of pedicellus as shown in figures 2C, D; 3B, C; 4A, B; 6C, D; 7B, C; 9 3
2. Apical emargination of urotergite X of male unusually wide and shallow (fig. 7D); apex

- of appendage of pedicellus as shown in figure 7B, C; parameres of male reaching level of apex of stylets IX (fig. 7E); macrochaetae of under surface of tibiae of second pair of legs not larger than those of third pair *setosulus*
- Apical emargination of urotergite X of male well developed (fig. 6L); parameres of male not attaining level of apex of stylets IX (fig. 6K); macrochaetae of under surface of tibiae of second pair of legs distinctly longer than those of third pair (fig. 6H) *mendesi*
3. Males 4
Females 8
4. Antennae asymmetrical, left pedicellus with simple triangular process, right pedicellus with two elongate ribbon-like prolongations (fig. 9), posterior portion of body conspicuously pigmented with brown (fig. 8A) ... *subterranea*
- Antennae symmetrical, left and right side pedicellus with identical, comparatively short processes; body of almost uniform yellow or light brown color 5
5. Bottom of emargination of tenth urotergite straight across (fig. 2N, Q); sensory pegs of underside of apical portion of urotergite X lightbulb-shaped (fig. 2O, Q); distal portion of process of pedicellus with two lamellar appendages (fig. 2C, D); central portion of hind margin of urosternite VIII slightly convex (fig. 2K) *capolongoi*
- Emargination of tenth urotergite with bottom not straight across, emargination semicircular or semielliptical (figs. 3K, M); sensory pegs of tenth urotergite not lightbulb-shaped (fig. 3M); appendage of pedicellus either completely without, or with one or two hook-shaped processes; central portion of urosternite VIII conspicuously protruding (fig. 3L) 6
6. Appendage of pedicellus simply rounded apically, only with short glandular cone (fig. 3C) *maggii*
- Appendage of pedicellus with one or two hook-shaped apical or subapical processes 7
7. Appendage of pedicellus with one conspicuously hook-shaped apical process *bulgarica*
- Appendage of pedicellus with two subapical slightly hook-shaped processes .. *jeanneli*
8. Apex of urotergite X straight across (fig. 5B) *maggii*
- Apex of urotergite X distinctly emarginated (figs. 2P; 12P) 9
9. Posterior portion of body conspicuously pigmented with brown (fig. 8A); ovipositor very long and slender, with ± 25 articles, extending beyond apex of stylets IX by three times the length of the latter *subterranea*
- Body uniformly yellowish or pale brown, posterior portion not conspicuously darker; ovipositor extending beyond apex of stylet IX by less than three times the length of the latter 10
10. Subgenital plate rounded apically; setae of lateral margin of urotergite X apparently arranged in a single row parallel to margin of sclerite; central area, between apical macrochaetae, glabrous *bulgarica*
- Subgenital plate rounded or truncate apically; setae of lateral margin of urotergite X variously arranged, but area between 1+1 apical macrochaetae setose 11
11. Subgenital plate rounded behind (fig. 2L); setae of area between subapical macrochaetae of urotergite X arranged in an irregular field advancing on disc of tergite (fig. 2P) *capolongoi*
- Subgenital plate truncate behind; setae of area between 1+1 apical macrochaetae of urotergite X apparently arranged in one or two series parallel and close to hind margin of sclerite *jeanneli*

Nicoletia corsica is not included in the above key because of its insufficient description.

Coletinia bulgarica (Kozaroff),
new combination

Nicoletia bulgarica Kozaroff, 1939, p. 45.

I have not seen this species but as its described characters fit those of *Coletinia* I am including *bulgarica* in this genus.

Coletinia capolongoi, new species
Figure 2

Nicoletia capolongoi Capolongo, 1977, p. 7 (*nomen nudum*).

DIAGNOSIS: This species is distinguished from others of the genus by unique secondary sexual characters of the male, viz., the structure of the two lamellar appendages of

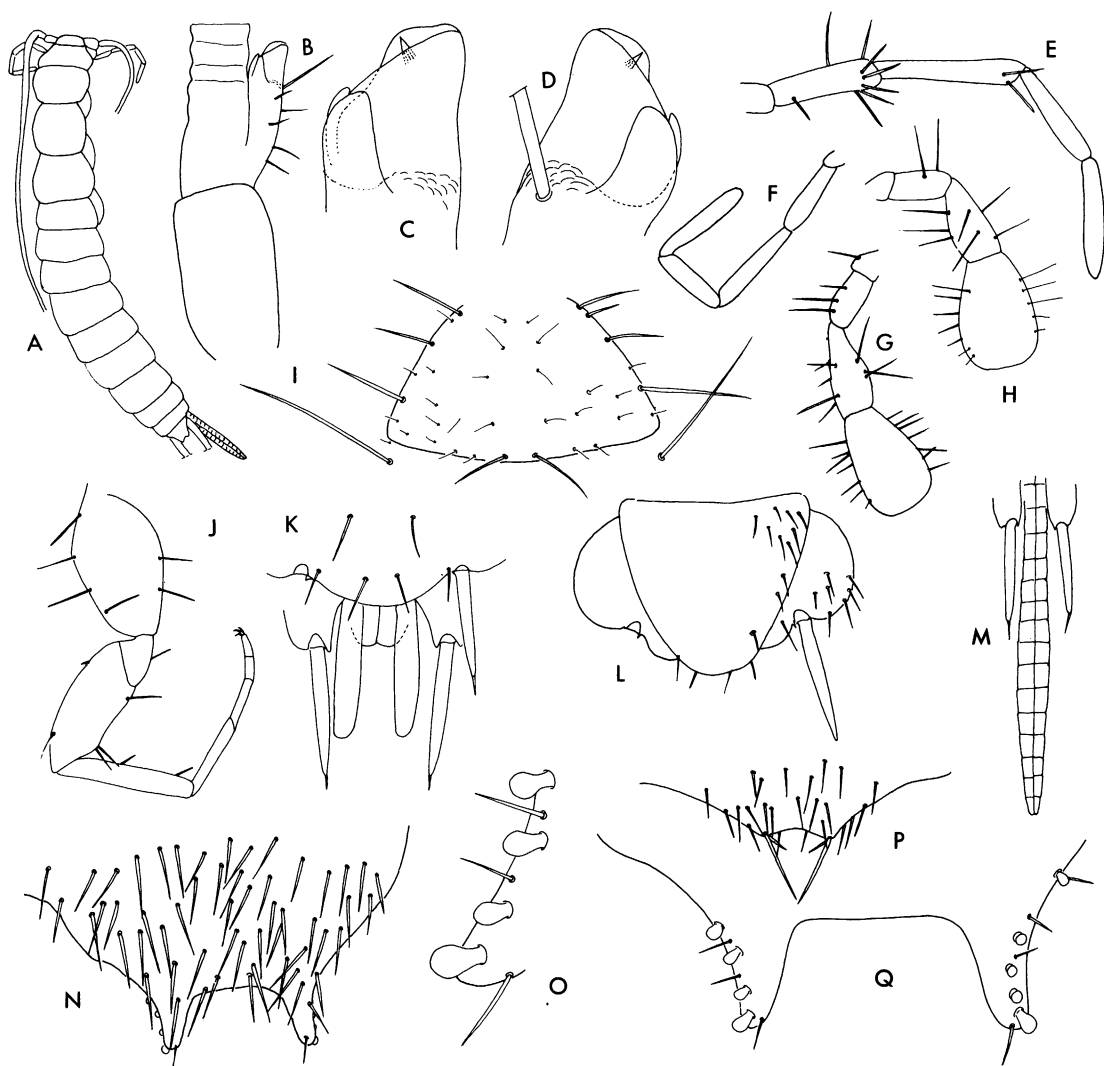


FIG. 2. *Coletinia capolongoi*. A. Habitus, female. B. Basal articles of antennae of male. C. Apex of appendix of pedicellus of left antenna of male, from above. D. *Idem*, right antenna. E. Maxillary palp of female. F. *Idem*, male, schematic. G. Labial palp of female. H. *Idem*, male. I. Chaetotaxy of frons, male. J. Posterior leg of male, with macrochaetae. K. Genital area of male. L. Subgenital plate of female, with gonocoxites VIII. M. Apex of gonocoxites IX of female, with ovipositor. N. Urotergite X of male. O. Apex of posterior lobe of urotergite X of male, with sensilla. P. Apex of urotergite X of male. Q. Under surface of apical portion of urotergite X of male.

the process of the pedicellus, the straight bottom of the apical emargination of the tenth urotergite, and the lightbulb-shaped sensory pegs on the tenth urotergite.

DESCRIPTION: Body length approximate-

ly 19.5 mm. Overall color pale yellowish brown, appendages whitish. Shape and relative size of body parts as shown in figure A. Macrochaetae simple or bifid apically.

Head with scattered short setae and reg-

ularly arranged macrochaetae (fig. 2I). Antennae of male symmetrical. Pedicellus of male with subconical process bearing apically a small glandular cone, and subapically on outer surface two lamellar projections closely adpressed to process (fig. 2B–D). Mouthparts as in *subterranea* (see fig. 8B–F, H, J–L). Labial and maxillary palps as illustrated (fig. E–H).

Thoracic nota as shown in figure 2A and as in *subterranea* (see fig. 11A). Legs slender (fig. 2J).

Urotergites I–VIII posterolaterally with 4–6 subequal macrochaetae. Urotergite X of male deeply emarginated posteriorly, bottom of emargination straight across (fig. 2O, R). Sides of emargination only slightly diverging, almost perpendicular to bottom of emargination. Lobes of tenth urotergite narrow. Upper surface of urotergite X completely covered with uniformly medium-sized, randomly arranged setae (fig. 2O) also present on surface of lobes but apical macrochaeta not developed. Under surface of lobes with 4–5 lightbulb-shaped peglike sensillae arranged in a single arched row (fig. 2P, R); apical sensilla larger than remaining. Urotergite X of female with small shallow apical emargination (fig. 2Q). Setae of urotergite X of female forming small irregularly shaped field (fig. 2Q). Posterior emargination limited on each side by distinct macrochaeta.

Urosternites as in generic description and similar to those of *subterranea* (see fig. 11C, J). All macrochaetae well developed. Genital area of male as illustrated (fig. 2K). Uroster-nite VIII protruding between stylets, distinctly rounded posteriorly (fig. 2K). Parameres elongate cylindrical, attaining level of apical fourth of stylet IX. Subgenital plate of female semielliptical (fig. 2L), broadly rounded apically. Ovipositor (fig. 2M) long and slender, extending beyond level of apex of stylet IX by a distance equal to twice the length of stylet. Gonapophyses with 15 articles.

Base of cerci of male and median surface with approximately six sensory pegs; base of terminal filament dorsally with sensory spines aligned in a single row.

MATERIAL EXAMINED: SPAIN: Valencia: Llombay, Cueva de las Maravillas, Aug. 2 and 4, 1973 (D. Capolongo; American Museum of Natural History), one male, holotype, one female, allotype.

ETYMOLOGY: The species is named for its collector, Dr. Ing. D. Capolongo, of Roccarainola, Italy.

BIOLOGY: The large size (almost 20 mm.) of the specimens observed suggests that *capolongoi* is a truly troglomorphic species; no free-living nicoletiids of this size are known, but troglomorphic ones are.

Dr. Capolongo stated (in a letter) that he collected the above specimens in the dark and humid zone of the cave, in detritus and in the ground under stones.

OBSERVATIONS: With a length of almost 20 mm., this is the largest *Coletinia* known.

Coletinia corsica (Chopard, 1924),
new combination

Nicoletia corsica Chopard, 1924, p. 174.

This species is known from the female only. The described characters fit well with those of *Coletinia* in which it is here included.

Coletinia jeanneli Silvestri,
new combination

Nicoletia jeanneli Silvestri, 1938, p. 189.

This species from the south of France (Var) has not now been examined, but the detailed illustrations and description leave no doubt about the generic assignment of this species.

Coletinia maggii (Grassi),
new combination
Figures 3–5

Nicoletia maggii Grassi, 1887, p. 59.

REDESCRIPTION: Male. Shape campo-deiform (fig. 3A). Maximum observed body length 9.2 mm.; head 0.8 mm., thorax 3.0 mm., abdomen 5.4 mm. Head, thorax and appendages ivory white, abdomen pale

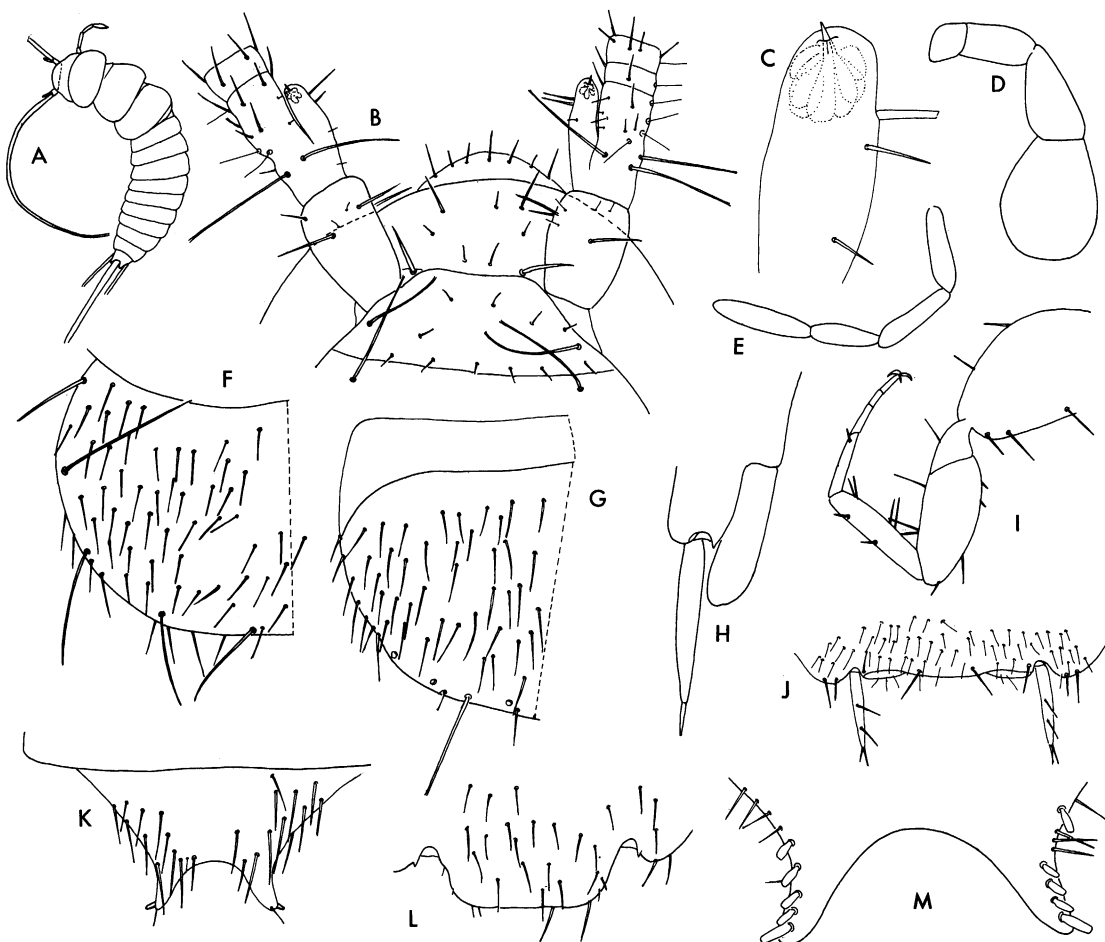


FIG. 3. *Coletinia maggii*, Monte Maggiore, male. A. Habitus. B. Anterior portion of head with basal section of antennae, seen from above. C. Appendage of pedicellus. D. Labial palp. E. Maxillary palp. F. Left half of metanotum. G. Left half of urotergite IV. H. Portion of gonocoxite IX, with paramere and stylet. I. Hind leg. J. Posterior portion of urosternite V. K. Apical portion of urotergite X. L. Posterior portion of urotergite VIII. M. Posterior portion of urotergite X, seen from below.

brown. Antennae about as long as body. Macrochaetae simple or bifid apically.

Head with scattered short setae and regularly arranged macrochaetae (fig. 3B). Antennae symmetrical. Pedicellus (figs. 3B, C; 4A, B, G; 5E) distally with subcylindrical, apically rounded process, the latter with well-developed apical glandular cone (fig. 4G) but without appendages. Mouthparts as illustrated (figs. 3D, E; 4E, F); mandibles, galea, and lacinia as in *subterranea* (see figs. 8F, J, K).

Coeloconic sensilla of apical segment of maxillary palp subcircular.

Thoracic nota as illustrated in figures 3A and F. Legs as illustrated (fig. 3I; 4D).

Urotergites I–VIII posterolaterally with 4–6 subequal macrochaetae (fig. 3G). Urotergite X (figs. 3K, M; 4H, I; 5C) deeply emarginated apically, emargination subcircular, its sides forming an angle of about 70–90°. Lobes thus formed elongate, narrow. Upper surface of urotergite X with 1+1

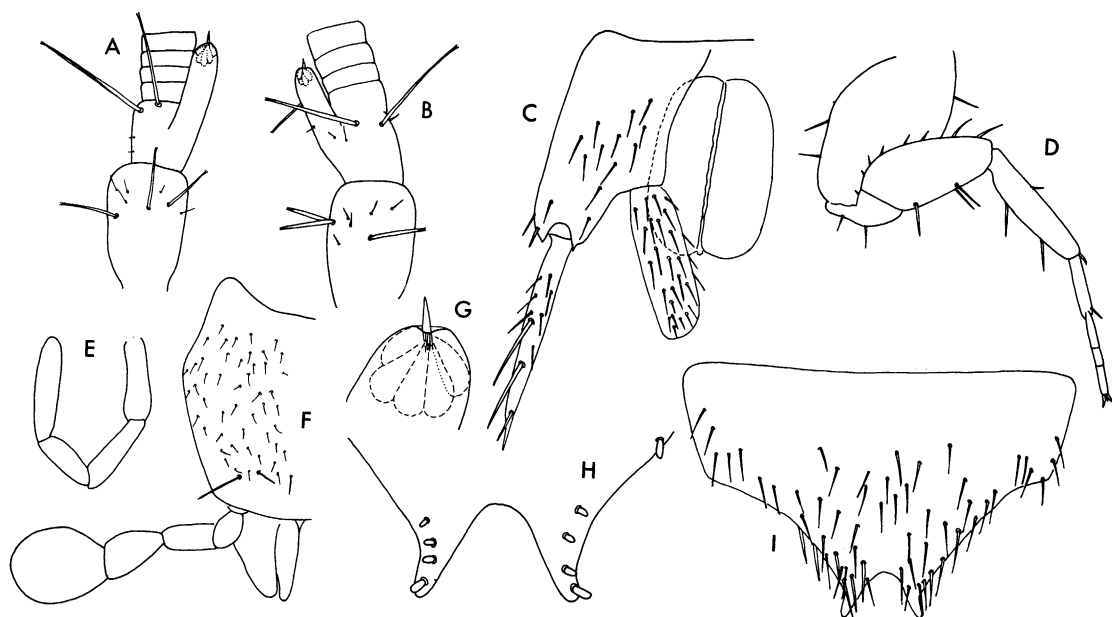


FIG. 4. *Coletinia maggii*, Ombla Valley, male. A. Base of left antenna, dorsal. B. Base of right antenna, dorsal. C. Genital area. D. Hind leg. E. Maxillary palp, schematic. F. Portion of labium, with palp, schematic. G. Glandular area of apex of pedicellus appendage. H. Under surface of portion of urotergite X. I. Urotergite X, dorsal view.

groups of irregularly arranged long setae, extending from base of lobes along lateral margin to near base of urotergite; disc with or without setae. Apical macrochaeta absent. Under surface of lobes (figs. 3M; 4H; 5G) each with an arched row of four to eight heavily sclerotized, subcylindrical or subglobular sensory pegs, apical peg slightly longer than the remaining, and one or two isolated subbasal pegs.

Urosternites as in generic description and figure 3J, L. Urosternite I as in *subterranea* (see fig. 11C). Urosternites II–IX with stylets, II–XXVI with exsertile vesicles, VII with pseudovesicles. Disc of urosternites with 1+1 anteromedian macrochaetae; 1+1 posterosubmedian macrochaetae at hind border of urosternite, and 1+1 posterosublateral at insertion of stylets. Urosternites VIII distinctly protruding at middle behind (fig. 3L), its posterior margin straight across. Genital area as shown in figure 4C. Parameres subcylindrical or widened subapically, not pro-

jecting beyond basal two-fifths of stylet IX (figs. 3H; 4C; 5D).

Caudal appendages two-thirds as long as body. Cerci with four or five sensory pegs along medial surface subbasally (fig. 5C). Basal portion of terminal filament medially above with one short sensory spine on each segment (fig. 5C).

Female examined 8 mm. long, its color as in male. General morphological characters as in male. Urotergite X as in figure 5B, F, its posterior margin straight across, dorsally with lateral vestiges of emargination (fig. 5B), ventrally as in figure 5F. Ovipositor long and slender, extending beyond styli IX by twice the length of the latter, with 25 articles.

MATERIAL EXAMINED: ITALY: Lagonegro, Potenza, April 23, 1921 (Istituto di Entomologia Agraria), one male, one female, one additional male; Monte Maggiore, June 16, 1933 (Istituto di Entomologia Agraria), one male. JUGOSLAVIA: Dalmatia: eastern end of Ombla valley, limestone slope

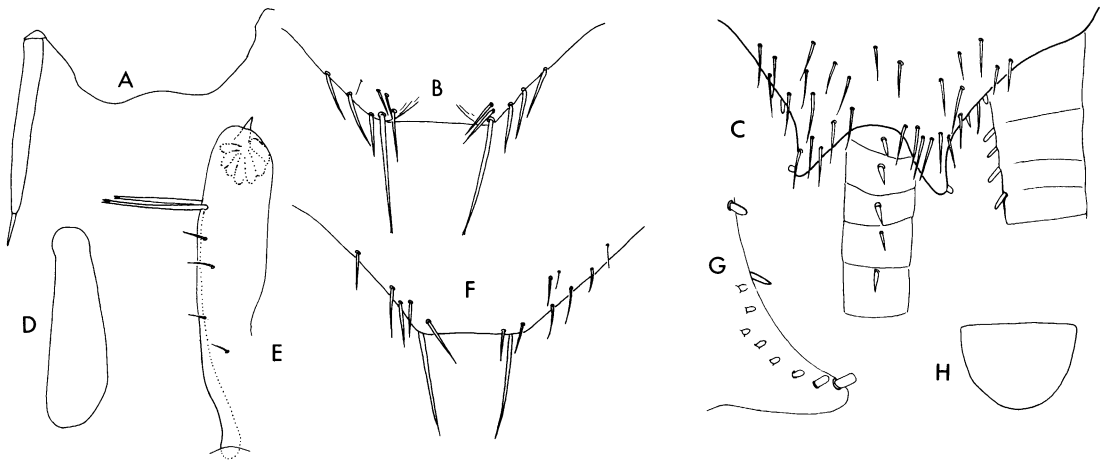


FIG. 5. *Coletinia maggii*, Lagonegro. A. Posterior portion of urosternite VIII of male. B. Posterior portion of urotergite X of female, from above. C. Posterior portion of urotergite X of male, seen from above, with bases of terminal filament and of one cercus. D. Outline of paramere. E. Process of pedicellus of male. F. Posterior portion of urotergite X of female, seen from below. G. Left apical lobe of urotergite X of male, seen from below.

with *Quercus* and *Pinus*, May 16–17, 1954 (C. A. W. Jeekel, Mus. Amsterdam), one male.

OBSERVATIONS: *Nicoletia maggii* was described (as *maggi*) by Grassi (1887) from Catania, Sicily, in two lines. This description does not furnish characters now useful on the specific level, but in 1888 Grassi illustrated the base of the antenna of the male, clearly showing the appendage of the pedicellus, much as this structure illustrated here (fig. 5B, F). The appendage is of simpler shape in *maggii* than in any other species of the genus, but the size of Grassi's specimens (11–12 mm.) is that of morphologically adult specimens, viz., he examined specimens with what I assume are fully developed pedicellus appendages.

I could not locate any types or Sicilian specimens; the redescription is made from mainland specimens.

The simple subcylindrical process of the pedicellus of the male serves to distinguish *C. maggii* from all other species of the genus.

The differences between the males of the above allopatric populations are not greater than could be expected from the size differences of the specimens examined: the spec-

imen from Lago Negro is 9.2 mm. long, the others 7.2 and 6.0 mm. It should not go unmentioned, however, that the smallest male contained abundant spermatozoa (no spermatolophids were found); thus, the specimen was mature sexually. The main differences between the males are in the shape of the posterior emargination of urotergite X, deeper in the Yugoslavian specimen (fig. 4H) and more shallow in the others (figs. 3K, M; 5C). The setae of the tenth urotergite invade the disc of the tergite in the largest specimen (fig. 5C) and the specimen from the Ombla valley (fig. 4I), forming one continuous if not uniform field, while they are less numerous and form two separate fields in the specimen from Monte Maggiore (fig. 3K). In order to make additional comparisons possible I have illustrated the three specimens separately (figs. 3–5).

The female is identified as belonging to *maggii* because it was found associated with individuals of that species.

Coletinia mendesi, new species

Figure 6

DIAGNOSIS: This species is distinguished from the other species of *Coletinia* with nu-

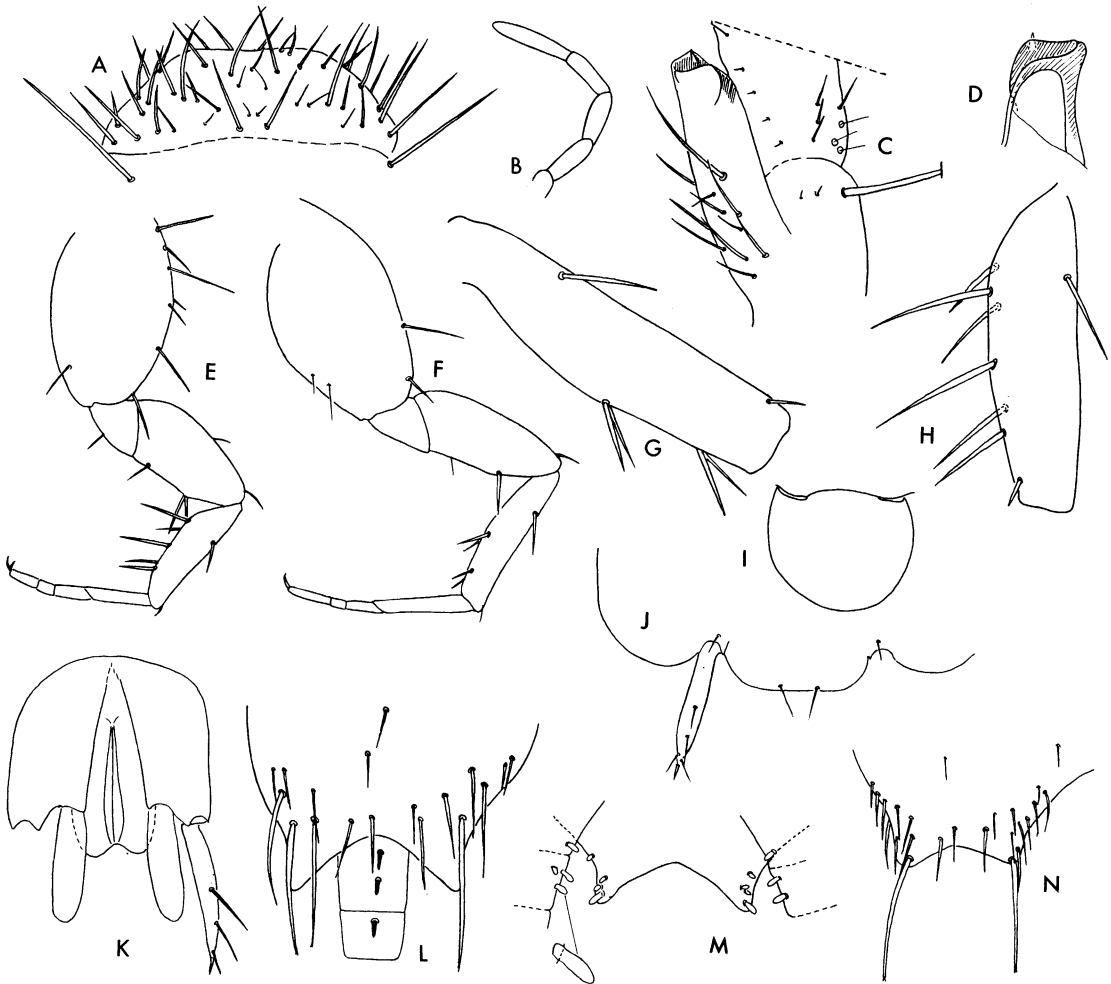


FIG. 6. *Coletinia mendesi*. A. Frons. B. Maxillary palp, schematic. C. Apex of pedicellus of right antenna, dorsal view. D. Distal portion of apex of appendage of pedicellus, under surface. E. Fore leg of male, with macrochaetae. F. Hind leg of male, with macrochaetae. G. Distribution of macrochaetae on posterior tibia. H. Distribution of macrochaetae of tibia of second pair of legs. I. Subgenital plate of female. J. Portion of urosternite VIII of male. K. Genital region of male. L. Apical portion of urotergite X of male, with base of terminal filament. M. Under surface of tenth urotergite of male, with base of cerci, all with their sensory pegs. N. Apical half of urotergite X of female.

merous long setae on the vertex, by the slightly different structure of the apex of the pedicellus and the more deeply emarginated urotergite of the male, as well as the unusually elongate macrochaetae of the under surface of the tibia of the second pair of legs.

DESCRIPTION: Campodeiform. Body length of male 6.7 mm., of female 8.2 mm.

Length of head of male 0.8 mm., of female 1.0 mm., length of thorax of male 2.0 mm., of female 2.7 mm., length of abdomen of male 3.8 mm., of female 4.5 mm. Overall color yellowish white, appendages entirely white, abdomen faintly brownish. Macrochaetae simple or bifid apically.

Head with numerous subequal long and

strong setae as shown for frons (fig. 6A), as well as with scattered short bristles. Length of antennae of male 4.9 mm., of female 4.8 mm. Antennae of male symmetrical. Process of pedicellus of male (fig. 6C, D) subcylindrical, with apical glandular cone and distal platelike structures as illustrated. Mouthparts as usual for genus; maxillary palp as illustrated (fig. 6B).

Thorax as in *C. subterranea*. Legs as illustrated (fig. 6E–H).

Macrochaetae of under surface of tibia largest on second pair (fig. 6E, H), shortest on third pair (fig. 6F–G), intermediate on first pair of legs.

Urotergites I–VII as illustrated for *subterranea*. Tergite X of male (fig. 6L, M) distinctly although not deeply emarginated apically, its apical lobes short. Upper surface of urotergite X with continuous but scattered setae along posterior margin (fig. 6L), apical angles with 1–3 macrochaetae. Under surface of lobes of tenth urotergite with 4 or 5 short, subcylindrical sensory pegs arranged in an irregular row, with apical peg larger than the others (fig. 6M). Urotergite X of female emarginated apically (fig. 6N), posteriorly with 1+1 groups of short setae connected across area of posterior margin by scattered setae; apices of urotergite with 1+1 macrochaetae.

Urosternites as in generic description. Urosternite VIII of male distinctly protruding at middle posteriorly, its posterior margin straight across (fig. 6J). Genital area as shown in figure 6K. Parameres subcylindrical, falling short of level of apex of stylets IX. Caudal appendages shorter than body; length of cerci of male 3.5 mm., terminal filament of female 3.6 mm. Cerci of male at base with 3–5 sensory pegs. Basal segments of terminal filament of male dorsally with three cylindrical sensory pegs arranged in one longitudinal row (fig. 6L).

Female with subgenital plate semicircular (fig. 6I). Ovipositor long and slender, parallel-sided, projecting beyond level of apex of stylets IX by a distance equal to twice the length of stylets. Gonapophyses with 18 articles.

MATERIAL EXAMINED: PORTUGAL: Algarve: Castro Marim, 3 km. north of Vila Real de Santo António, March 13, 1979, (Luis F. Mendes; Museu Bocage), one male, holotype, one female, allotype; Silves, Aug. 25, 1976 (Luis F. Mendes; Museu Bocage), one male, juvenile.

ETYMOLOGY: This species is named for its collector.

OBSERVATION: *Coletinia mendesi* differs from the other species with strongly hirsute head as indicated in the keys and diagnosis.

BIOLOGY: According to data provided by the collector, the types occurred in the deepest portion of a nest of a species of the ant genus *Messor*. The specimen from Silves was taken under a calcareous rock in red clay soil, in a plowed field.

***Coletinia setosula*, new species**

Figure 7

DIAGNOSIS: *Coletinia setosula* differs from its congeners by the presence of very numerous long and strong setae on the anterior portion of the head capsule, combined with a very shallow emargination of the tenth tergite of the male.

DESCRIPTION: Male. Body length approximately 9 mm. Overall color pale yellowish brown. Macrochaetae single or bifid apically.

Head with numerous subequal long and strong setae, those on frons illustrated (fig. 7M). Process of pedicellus subcylindrical, with apical glandular cone and distal platelike formations shown in figure 7B, C. Mouthparts as illustrated (fig. 7F, J); mandibles, galea, and lacinia as in *subterranea*. Coeloconic sensillae of last segment of maxillary palp subrectangular.

Thorax and legs as in *subterranea*.

Urotergites as illustrated for *subterranea* (fig. 11I). Urotergite X widely but shallowly emarginated, its posterior lobes short (fig. 7D, L). Upper surface of tenth urotergite with continuous band of setae along lateral and posterior margins, with 2+2 apical macrochaetae (fig. 7D). Under surface of lobes of tenth urotergite each with three or four

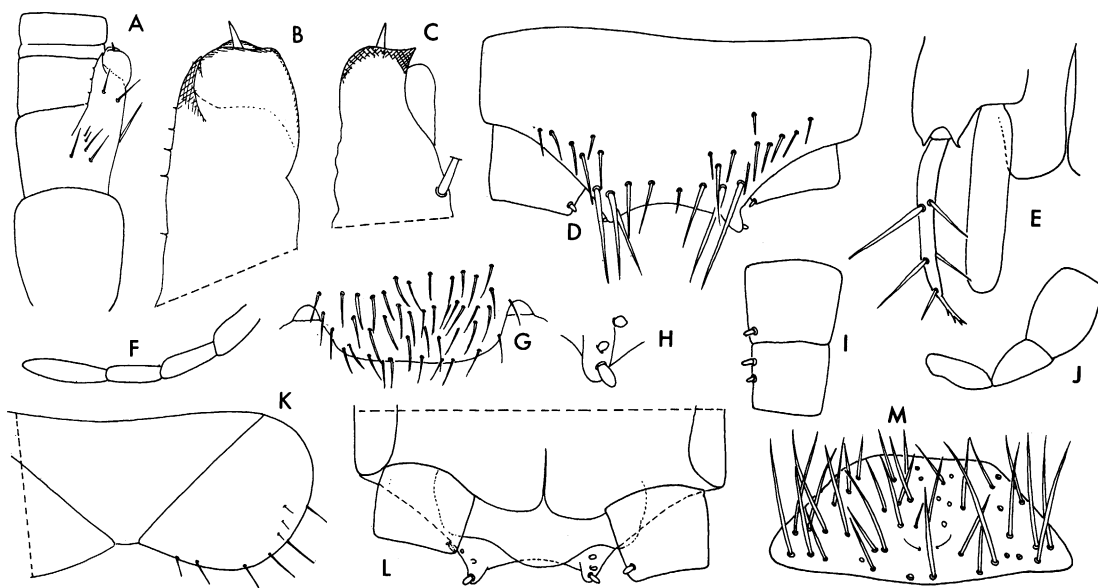


FIG. 7. *Coletinia setosula*, male. A. Basal segments of antenna. B. Apical portion of appendage of pedicellus. C. *Idem*, different view. D. Urotergite X with basal segment of cerci, dorsal view. E. Genital area of male. F. Maxillary palp of male, schematic. G. Posterior portion of urotergite VIII of male. H. Posterior lobe of urotergite X of male, seen from below. I. Basal articles of cercus, with sensory pegs. J. Labial palp, schematic. K. Urosternite I of male. L. Posterior portion of body, ventral view. M. Frons.

subcylindrical short sensory pegs arranged in one row, apical peg slightly longer than remaining (fig. 7H, L).

Urosternites as in generic description and figure 7G, K. Urosternite VIII distinctly protruding at middle behind (fig. 7G). Portion of genital area as shown in figure 7E. Parameres subcylindrical, elongate, attaining level of apex of stylets IX.

Caudal appendages probably shorter than body. Cerci subbasally with three or four short sensory pegs on medial surface (fig. 7I). Terminal filament not seen.

MATERIAL EXAMINED: ITALY: Sicily: Catania (I.E.A.), one male, holotype, dissected, on slide.

ETYMOLOGY: The specific name is taken from the Latin *setosus*, bristly, in allusion to the large number of setae on the head.

OBSERVATIONS: The above specimen agrees well with other *Coletinia* in most characters, but differs from them by the se-

tae of the head, with the frons beset with a large number of irregularly arranged macrochaetae (fig. 7M). The armature of the apex of the process of the pedicellus (fig. 7B, C) is species-specific. The emargination of the tenth urotergite is unusually wide and shallow (fig. 7D, L).

Coletinia subterranea (Silvestri),
new combination
Figures 8–12

Nicoletia subterranea Silvestri, 1902, p. 223.

REDESCRIPTION: Maximum body length 11 mm. General body shape campodeiform, proportions of body parts as shown in figure 8A. Head and appendages white, thorax pale brown, abdomen from pale brown to contrastingly dark brown, only first segment pale (fig. 8A). Transition from pale to dark gradual. Macrochaetae simple or bifid api-

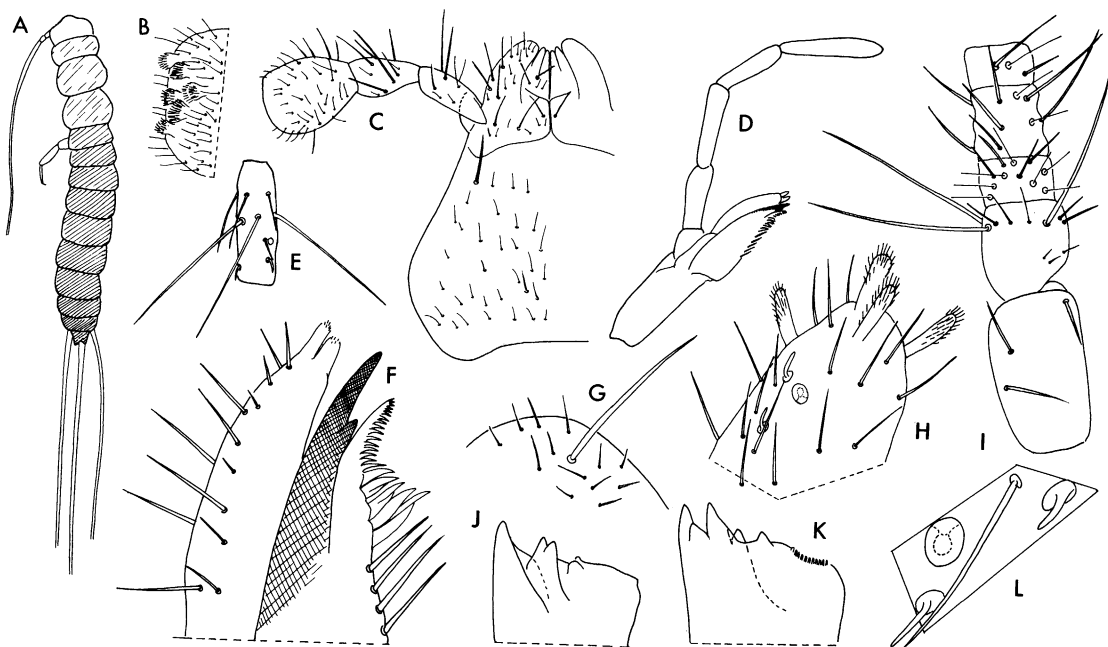


FIG. 8. *Coletinia subterranea*. A. Habitus. B. Apical portion of terminal segment of labial palp of male. C. Portion of labium with palp. D. Maxilla with palp. E. Article of flagellum. F. Apical portion of maxilla. G. Posterolateral portion of head. H. Apical portion of maxillary palp. I. Basal portion of antenna of female. J. Apex of mandible. K. Apex of other mandible. L. Detail of sensilla of apical portion of maxillary palp of male.

cally. Cuticular microstructure as shown in figure 10D.

Head with scattered short hairs and regularly arranged macrochaetae as in figures 2I and 8G. Antennae of male asymmetrical. Pedicellus of right antenna with short triangular process, without glands, glandular cone or other specialized structure (fig. 9A). Pedicellus of left antenna (fig. 9B, D-I) enlarged, with two lateral directed ribbon-shaped elongate projections. Dorsal prolongation very narrow, distally widened to form a roughly ladle-shaped structure with irregularly serrate margin (fig. 10). Ventral prolongation slightly wider, distally with approximately fork-shaped structure consisting of five "tines" and two shorter basal projections (fig. 10). Ventral prolongation subapically with perpendicular triangular process associated with piston-like retractable spine-shaped structure. Antennae of female symmetrical, not modified (fig. 8I). Mouthparts

in both sexes as illustrated (fig. 8B-F, H, J-L). Coeloconic sensillae of maxillary palp subcircular (fig. 8L).

Thoracic nota as shown in figure 11A. Legs as illustrated (fig. 11B). Claws as in generic description and figure 11E.

Urotergites I-VIII (fig. 11I) posterolaterally with a row of subequal macrochaeta. Urotergite IX shorter. Urotergite X of male widely but shallowly emarginated posteriorly, dorsally with 1+1 distinctly separate fields of setae of subequal length (fig. 12P). Under surface of apical lobes of urotergite X with four to seven subcylindrical sensory pegs (fig. 12G, K) arranged along outer margin of sclerite in a single arched row. Apical sensilla larger than remaining. Urotergite X of female (fig. 12D) shallowly emarginated posteriorly, its setae arranged in 1+1 fields situated on apicolateral portions of sclerite, each group of setae including one macrochaeta.

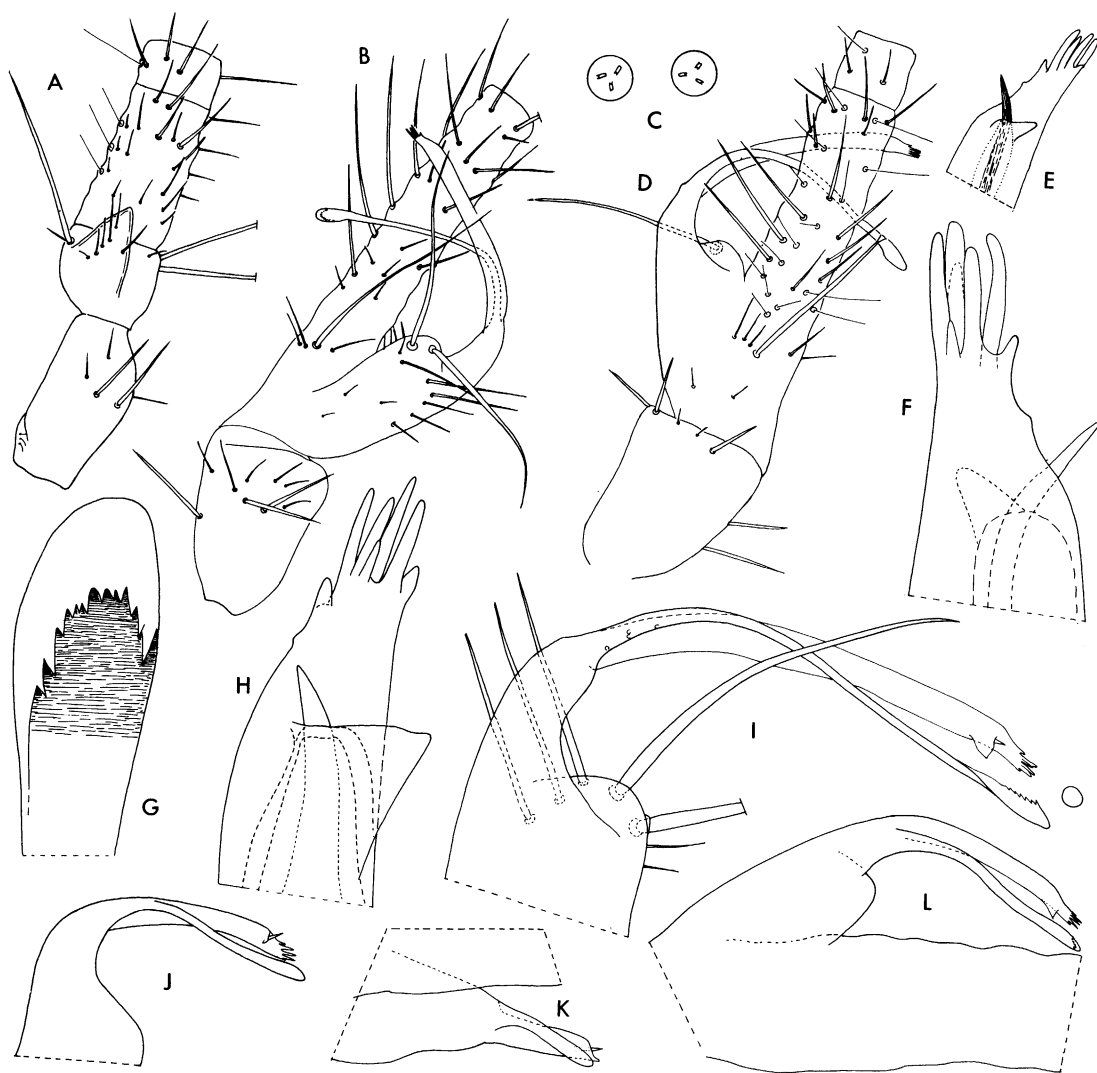


FIG. 9. *Coletinia subterranea*, male. A. Basal articles of right antenna. B. Basal articles of left antenna, dorsal aspect. C. Spermatophids. D. Basal articles of antenna, under surface. E, F. Apex of ventral prolongation of pedicellus of left antenna. G. *Idem*, dorsal prolongation. H. As E and F. I. Apex of projection of pedicellus of left antenna with (at right) outline of spermatophid drawn to same scale. J-L. Prolongation of pedicellus of left antenna of three 6 mm. long specimens.

First urosternite as illustrated (fig. 11C). Urosternites II-VII as shown in figure 11J with 1+1 distinct anterosubmedian, posterosubmedian and posterosublateral macrochaetae. Exsertile vesicles and pseudovesicles as in generic description and figure 11F, G. Urosternite VIII of male (fig. 12C) dis-

tinctly protruding at middle behind. Genital area of male as illustrated (fig. 12A). Parameres subcylindrical, slightly thickened on apical half (fig. 12A), attaining but not surpassing level of basal third of stylets IX. Apices of parameres and of penis lobes glandular (fig. 12E). Subgenital plate of female (fig.

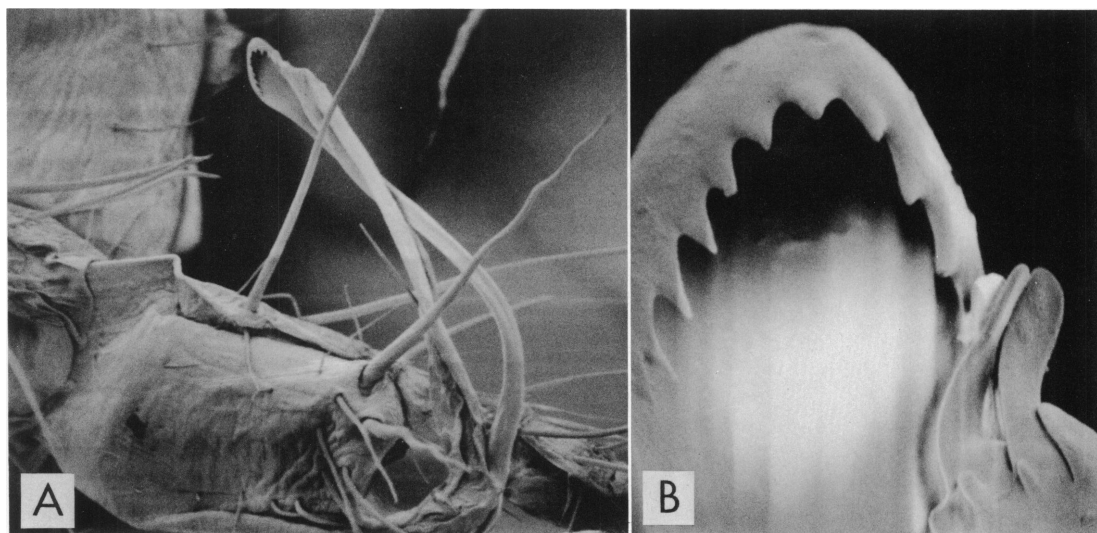


FIG. 10. *Coletinia subterranea*, male. A. Projections of process of pedicellus of left antenna. B. *Idem*, apical portions under high magnification.

12O) subsemicircular. Genital area of female and chaetotaxy of gonapophyses as illustrated (fig. 12I–O, Q). Gonapophyses with ± 25 articles, slender, parallel-sided. Ovipositor projecting beyond level of apex of stylets IX by about three times the length of the latter (fig. 12I).

Caudal appendages slightly shorter than body, simple in female. Basal portion of cerci of male on median surface with about six subcylindrical sensory pegs, the distal one the largest (fig. 12G). Dorsal surface of terminal filament with four or five sensory spines along midline (fig. 12P, J).

MATERIAL EXAMINED: ITALY: Basilicata: Lagonegro, Potenza, April 23, 1931, two males, two females; *ibid.*, April 1938, three males, three females, three juveniles. Campania: Piaggine, Salerno, June 1932, two males; Pisciotta, Salerno, October 26, 1941, two males, one female; Bagnoli Irpino, Avellino, December 29, 1932; Monteforte, Avellino, May 1, 1931, one female (Silvestri det.); Mercogliano, Avellino, July 3, 1933, one male, one juvenile; Casamicciola, Napoli, one male, one female, four juveniles; Umbria: Bevagna, many juveniles of both

sexes; Lippiano, Perugia, Alta Val Tiberina, July 1934, D. A. Andreini, one female. Sicily: Lentini, Siracusa, December 1934, one female; December 1936, one male, one juvenile. Sardinia: Bosa, Nuoro, November 1938, very numerous males and females; *ibid.*, November 1940, one female.

Most of the above are in the Istituto di Entomologia Agraria; a few specimens have been retained for the collections of the American Museum of Natural History.

OBSERVATIONS: *Coletinia subterranea* is distinguished from its congeners and indeed all Nicoletiinae by the peculiar structure of the pedicellus processes of the left antenna of the male. The function of these structures is not known but is probably one of sperm transfer. This hypothesis is strengthened by the fact that the size of the spermatolophid (fig. 9I) is such that it would rather precisely fit the lumen of the "ladle."

The pedicellus and its processes are fully developed in males 7 mm. long and longer. Males of 6 mm. show the processes as rather undifferentiated structures (fig. 9K) with only the piston-like mechanism developed, or with the processes with their full comple-

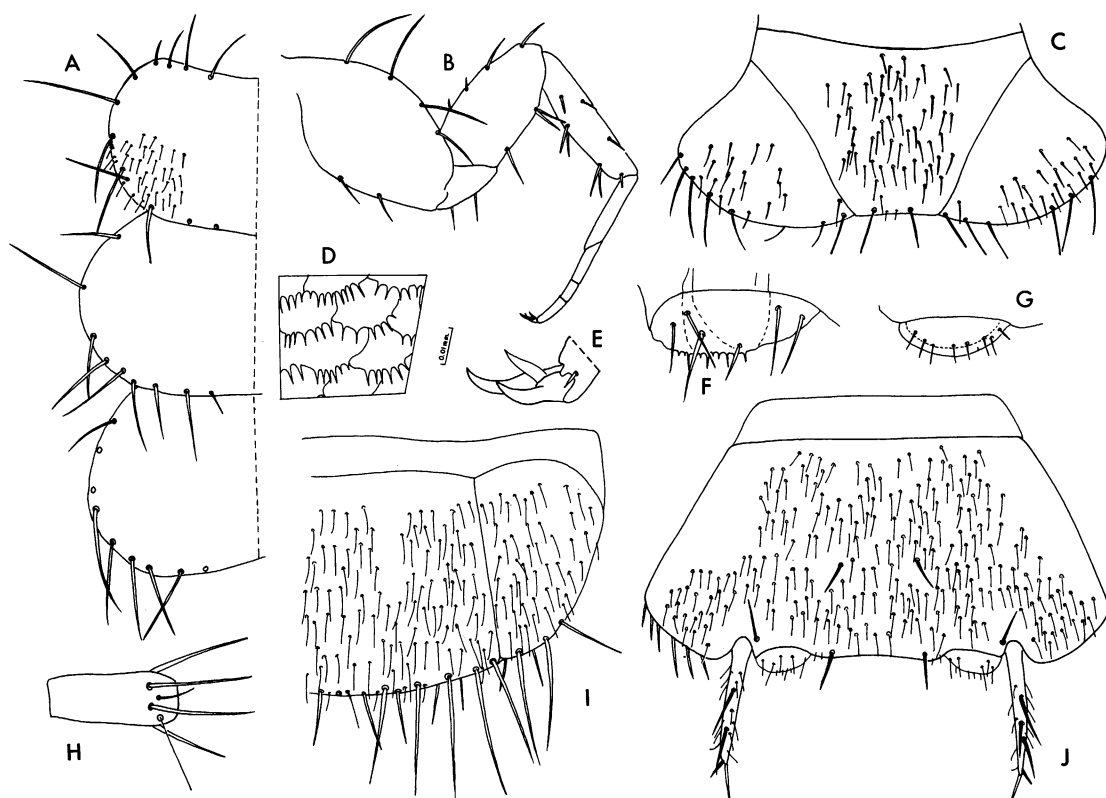


FIG. 11. *Coletinia subterranea*. A. Thoracic nota with macrochaetae; microchaetae shown on small area only. B. Hind leg of male. C. Urosternite I. D. Cuticular microstructure, high magnification. E. Pretarsus with claws. F. Exsertile vesicle of urosternite IV. G. Pseudovesicle of urosternite VII. H. Article of distal portion of cercus. I. Lateral portion of urotergite IV. J. Urosternite IV.

ment of apical structures (fig. 9J, L) but still short as compared to the adult condition. All specimens 6 mm. long are completely unpigmented; specimens 7 mm. long are faintly pigmented.

BIOLOGY: Nothing is known about the biology of *Coletinia subterranea*. The amazing structural modification of the left pedicellus of the male of this species suggests an unusual reproductive behavior. On the other hand, the reproductive behavior of nicoletiine species with bilaterally symmetrical male antennae is not known either, and equally worthy of study.

One vial with randomly collected *C. subterranea* (from Bosa) contained 51 males and 44 females, suggesting a normal sex ratio.

Coletinia spp.

I have seen specimens probably representing new species not mentioned in this paper. I shall enumerate a few of them which are of special interest geographically and/or morphologically in order to stimulate further collecting and research of these insects.

Coletinia sp. I Figure 13A, C

MATERIAL EXAMINED: SPAIN: Catalonia: Vall de Uxó, Cueva San José, Nov. 1976 (Borrás; Museu Bocage), one female.

OBSERVATIONS: This female, a troglóbiont, is superficially similar to that of the equally cavernicolous *C. capolongoi*, includ-

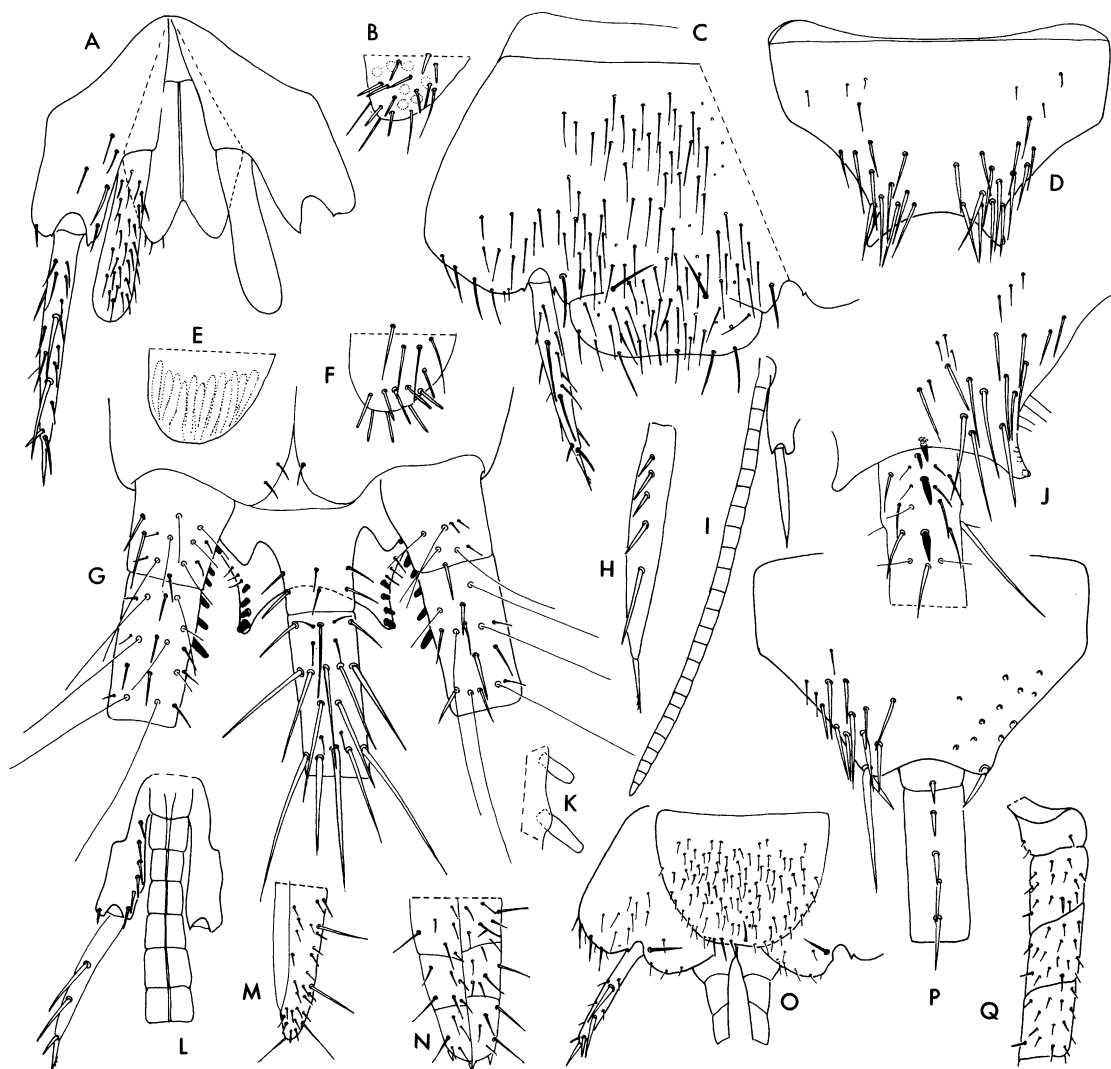


FIG. 12. *Coletinia subterranea*. A. Genital region of male. B. Apex of one penis lobe. C. Urosternite VIII of male. D. Urotergite X of female, dorsal view. E. Glandular structures of apex of paramere. F. Setae of apex of paramere. G. Distal portion of body of male, with basal articles of appendages, under surface. H. Stylet of ninth abdominal segment. I. Coxite IX of male, with gonapophysis. J. Apical portion of urotergite X of male, with basal portion of median filament, dorsal view. K. Sensory pegs of cercus, high magnification. L. Gonocoxite IX of female, with base of gonapophysis. M. Terminal portion of posterior gonapophysis. N. *Idem*, anterior gonapophyses. O. Subgenital plate, gonocoxites VIII, and base of anterior gonapophysis. P. Urotergite X of female, with base of median filament. Q. Base of anterior gonapophysis.

ing its pale brown color, but differs by the much smaller size (11.5 mm. versus 19.5 mm.), the larger number of articles of the gonapophyses (21 versus 15), and the apically truncate subgenital plate of the female

(apically rounded in *capolongoi*). There are also differences in the size and shape of the emargination of the tenth urotergite (figs. 2Q and 13B) and in the setal pattern of this tergite, but the taxonomic value of these rather

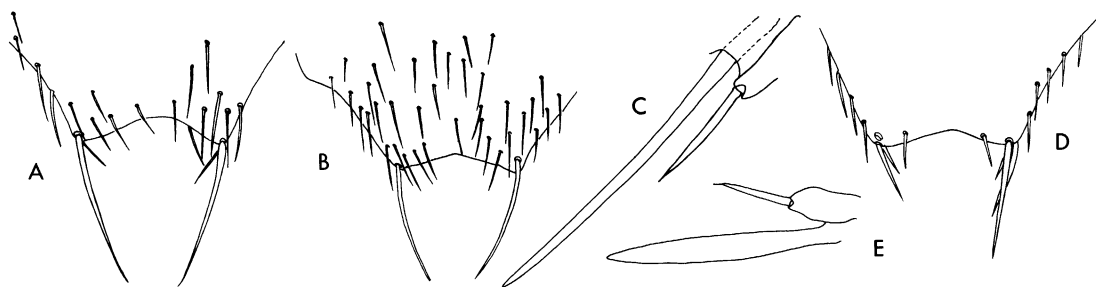


FIG. 13. *Coletinia* spp., females. A. *Coletinia* sp. I, urotergite X. B. *Coletinia* sp. II, urotergite X. C. *Coletinia* sp. I, posterior gonocoxite and outline of gonapophysis. D. *Coletinia* sp. III, urotergite X. E. *Coletinia* sp. II, posterior gonocoxite and outline of gonapophysis.

subtle characters is difficult to assess when only one specimen of each population is available.

Coletinia jeanneli Silvestri, a cavernicolous species found in the French Department Var, is not unlike *Coletinia* sp. I with which it shares, among other characters, an apically truncate subgenital plate and the long and slender ovipositor with the gonapophyses consisting of 21 articles. The setal pattern of urotergite X, however, shows differences: in *jeanneli* the setae are arranged in one or two irregular series closely accompanying the margins of the sclerite, but they form two narrowly connected fields in the specimen from Uxó (fig. 13A).

The female specimen described from a cave as *Nicoletia corsica* by Chopard (1924) is 8 mm. long, and shows an apically truncate median sternal plate of the eighth segment and an "oviscapte long et grele," but the taxonomically so important setal pattern of the tenth urotergite is not illustrated or described. The differences between the single female of *Coletinia* sp. I and those of the morphologically close, named species are not sufficiently weighty to describe a new species, especially as the taxonomically crucial male is not known.

Coletinia sp. II
Figure 13B, E

MATERIAL EXAMINED: SPAIN: Catalonia: Cv. dels Ensenalls, S. Mateu, Dec. 29, 1976, (Belles; Barcelona Museum), one female.

OBSERVATIONS: This troglobiont is represented by one female of 12 mm. in length with an overall pale brown color. The specimen differs from the other troglobiont *Coletinia* of the Iberian peninsula by the distinctly fusiform and relatively short ovipositor (fig. 13E) with the gonapophyses consisting of 17 articles, and the almost completely setose urotergite X (fig. 13B). The emargination of the tenth urotergite is wide, and the subgenital plate is semielliptical. The above combination of characters also serves to distinguish this female from that of all other species of *Coletinia*.

Although probably new, the present species is not described here because the male is not known, but it is mentioned because it represents one of the only three distinct populations of cavernicolous *Coletinia* known from the Iberian peninsula.

Coletinia sp. III
Figure 13D

MATERIAL EXAMINED: ITALY: Sistiana-Duino, Jan. 1929 (G. Mueller; IEA), one female.

This female is 6 mm. long and appears immature. The head chaetotaxy is as in *capo-longoi*. The tenth urotergite is characterized by the large gap between the two groups of setae (fig. 13D).

Coletinia sp. IV

MATERIAL EXAMINED: YUGOSLAVIA: Istria, Rovinj: Punta Corrente, forest of Pi-

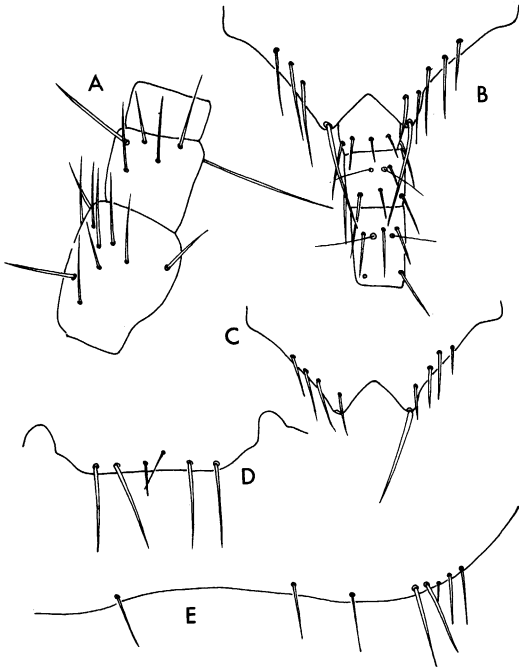


FIG. 14. *Lepidospora escherichi*, types. A. Base of antenna of male. B. Urotergite X and base of terminal filament of male. C. Urotergite X of female. D. Posterior region of urosternite VIII of male. E. Posterolateral region of urotergite IV of male.

nus sp. near coast (50 m.), June 18, 1972 (B. Hauser, Mus. Genève), one juvenile male.

This specimen is only 5 mm. long, and although it has parameres which identify it as a male, secondary sexual characters are not developed and no specific determination is possible. The chaetotaxy of the head is as in *capolongoi* (fig. 2I).

LEPIDOSPORA ESCHERICH

Lepidospora is a wide-ranging Old World genus, reported from the eastern Mediterranean, eastern and southern Africa, the Oriental region and the Seychelles, a probably incomplete picture considering how rarely nicoletiids are collected. Paclt (1963) cataloged the described species.

Lepidospora Escherich, the closely related *Lepidina* Silvestri and *Texoreddellia* Wy-

godzinsky are the only nicoletiines possessing scales. These scales (fig. 15C) are in many cases extremely difficult to observe, unless a special effort is made to discover their presence. This can become important when judging older descriptions made without the aid of modern optical equipment (see under *L. grassii*).

Lepidospora escherichi Silvestri

Figures 14, 15, 16A–J, L, N–P

Lepidospora escherichi Silvestri, 1908, p. 382.

REDESCRIPTIONS: Maximum body length 6 mm. Antennae and caudal appendages approximately half as long as body. Overall color of mature specimens ivory; immatures white. Shape and ratios of length and width of head, thoracic nota and urotergites as shown in figure 15F. Macrochaetae simple or bifid apically. Scales multiradiate (fig. 15C, D).

Head with numerous strong setae on frons (fig. 15E). Antennae of female simple. Pedicellus of male (fig. 15H) seemingly cup-shaped, with apically strongly tapering elongate, distally rounded projection, with minute apical glandular cone. Lateral groove of pedicellus distinct, shallow. Mouth parts as illustrated (fig. 15A, B, G–I, J, M). Coelonic sensilla of apical article of maxillary palp subcircular (fig. 15K).

Thoracic nota as in figures 15F and 16D. Anterolateral and posterolateral angles each with one long macrochaetae; smaller macrochaetae along lateral borders and hind margin of nota. Disc of nota with scattered very short hairs. Legs as illustrated (fig. 15L); pretarsus shown in figure 15N.

Urotergites I–VIII (fig. 14E) with 2+2 closely spaced large posterolateral, 2(–3)+2(–3) infralateral and 2+2 wider spaced sublateral macrochaetae. Urotergite X of male (fig. 16H, P) deeply emarginated, sides of emargination forming angle of $\pm 40^\circ$. Lobes thus formed elongate, narrow. Upper surface of lobes with scattered long setae, extending also along lateral margin of sclerite; apical macrochaetae absent. Ventral surface of lobes (fig. 16P) with 1+1 arched rows of ± 7 heavily sclerotized sensory pegs,

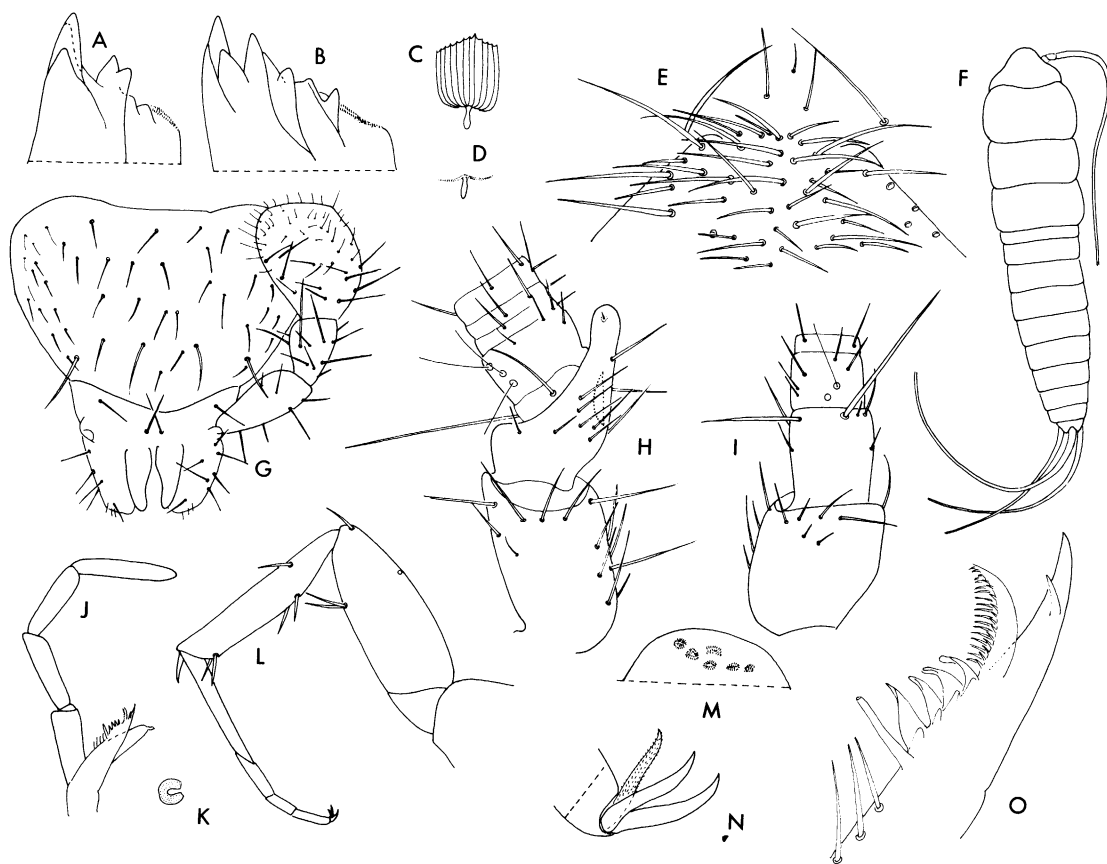


FIG. 15. *Lepidospora escherichi*, Kos. A, B. Apex of mandibles. C. Scale. D. Cuticular scar of scale insertion. E. Frons. F. Habitus. G. Labium with palp. H. Basal articles of antenna of male. I. *Idem*, female. J. Maxilla with palp. K. Sensilla of apical portion of terminal portion of maxillary palp. L. Hind leg of male. M. Sensilla of terminal area of labial palp. N. Praetarsus with claws. O. Lacinia.

apical peg the largest. Urotergite X of female (fig. 16N) conspicuously emarginated, sides of emargination forming an angle of $\pm 90^\circ$; disc of urotergite glabrous, sides with 1+1 rows of 2–5 setae each, apices of lobes each with one long macrochaeta.

Urosternites as in figures 16B, E–G, J. Urosternite I (fig. 16B) with sternum large, triangular; coxites large, meeting posteriorly at middle, area of junction of sternum and coxites with group of short setae. Urosternites II–VIII of male and II–VII of female entire (fig. 16F). Urosternites II–IX with stylets, II–VI with exsertile vesicles, VII with pseudovesicles. Chaetotaxy of urosternites

II–VII as illustrated; disc without macrochaetae, but 1+1 submedian macrochaetae close to hind border of sclerite. Urosternite VIII of male (figs. 14D; 16J) somewhat protruding between stylets, with several macrochaetae. Genital area of male as shown in figure 16L. Parameres elongate cylindrical, extending along basal two-thirds of stylets IX. Subgenital plate of female subelliptical (fig. 16A). Ovipositor (fig. 16C) fusiform, slightly exceeding level of apex of stylets IX; gonapophyses consisting of 9 or 10 articles; chaetotaxy of apical articles of gonapophyses as shown in figure 16I, O.

Caudal appendages of female and cerci of

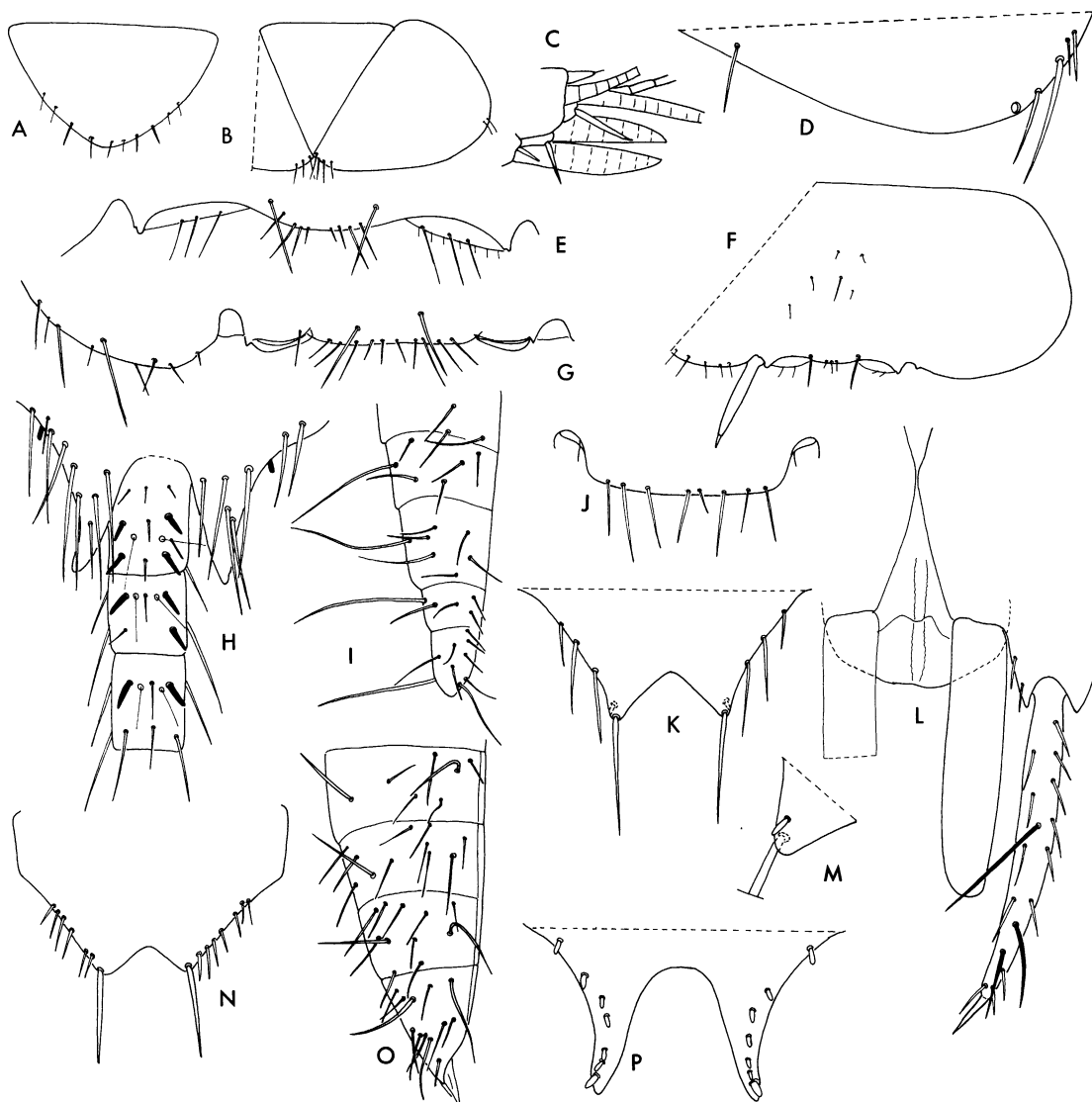


FIG. 16. A-J. *Lepidospora escherichi*, Kos. A. Subgenital plate of female. B. Portion of urosternite I. C. Apex of abdomen of female, side view. D. Posterolateral area of mesonotum. E. Posterior border of fifth urosternite of male. F. Fifth urosternite of female. G. Posterior border of urosternite VII of male. H. Apical portion of urotergite X of male, with base of terminal filament, dorsal view. I. Apex of posterior gonapophyses of female. J. Projection of posterior margin of urosternite VIII of male. K. *Lepidospora* sp., immature male, Marizza, urotergite X. L. *L. escherichi*, male, Kos, genital area. M. *Lepidospora* sp., immature male, Marizza, apex of lobe of urotergite X, from below. N-P. *L. escherichi*, specimens from Kos. N. Urotergite X of female. O. Female, apex of anterior gonapophysis. P. Male, urotergite X, seen from below.

male simple. Upper surface of the three basal articles of terminal filament of male each with 2–4 heavily sclerotized sensory pegs, arranged in two longitudinal rows (fig. 16H).

MATERIAL EXAMINED: GREECE: Corfu: Canon [Ionian Sea] (male holotype, female allotype, both on slides, several additional specimens, IEA); Kos [Aegean Sea], April 1932 (one male, one female, AMNH; 10 additional specimens, IEA); Rhodes, Cremostò [Aegean Sea], May 1932 (three immature specimens, IEA).

DISCUSSION: *Lepidospora escherichi* was described from Corfu. The original description and illustrations indicate characters that would give *L. escherichi* an unique position within the genus, viz., in the male, the absence of a process to the pedicellus, combined with the absence of sensory pegs on urotergite X and on the terminal filament, and in the female, the exceedingly short ovipositor not divided into articles. I have examined the types of *escherichi* and can confirm Silvestri's description of the male but not that of the female in its entirety, because segmentation of the ovipositor, although difficult to perceive, does exist. A few illustrations of the types are given here (fig. 14). Specimens collected with the types and preserved in alcohol are immature, as shown by their white color. The absence, in the types, of secondary sexual characters in the male and the unusually short ovipositor in the female can best be explained by the assumption that also the types are morphologically immature specimens. In order not to continue burdening the literature with names of unrecognizable species, I have re-described *Lepidospora escherichi* from adults of a population of *Lepidospora* collected on Kos which, although not topotypical, is reasonably close geographically and ecologically to the type locality to make specific identity a distinct possibility.

Lepidospora escherichi, as here redefined, resembles *L. silvestrii* Wygodzinsky (Israel) and *L. aquilonaris* Wygodzinsky, new status (Turkey), described originally as *Lepidospora silvestrii aquilonaris*. *Lepidospora escherichi* differs from *silvestrii* in the male,

among other characters, by the much less numerous sensory pegs on the tenth urotergite, and the apically tapering and much more elongate appendage of the pedicellus; the females of the two species differ by the structure of the tenth urotergite, shallowly emarginate in *silvestrii* but much deeper so in *escherichi*. *Lepidospora escherichi* differs from the only briefly described *aquilonaris* by the less numerous sensory pegs of the terminal filament (9 or 10 versus ± 17), the more numerous setae of the upper surface of urotergite X which also occupy a larger space, and the more strongly modified pedicellus.

Lepidospora grassii (new combination)

Nicoletia phytophila: Grassi and Rovelli, 1890, p. 57, pl. 1, fig. 8 (misidentification).

Nicoletia grassii Escherich, 1905, p. 134 (new name).

Escherich (1905) remarked that the species described by Grassi and Rovelli (1890) from Sicily as *Nicoletia phytophila* was different from the true *phytophila*, and therefore renamed it *grassii*. I concur with this opinion and further suggest that *grassii* does not belong in *Nicoletia* or *Coletinia* at all. The illustration provided by Grassi and Rovelli (*loc. cit.*) and reproduced by Escherich (1905) shows a *Lepisma*-like, subflattened insect very unlike any *Nicoletia* or *Coletinia*. The peculiar body shape of *grassii* agrees with that of the species of *Lepidospora* (fig. 15F) which strongly suggests that *grassii* belongs to that genus. The only difficulty encountered with this hypothesis is that the presence of scales has not been mentioned for *grassii*, a likely oversight because the scales in *Lepidospora* are very tenuous, not pigmented and very difficult to observe. It is thus quite imaginable that the scales had been overlooked by the original authors of the species. I therefore transfer *grassii* to *Lepidospora* although I have seen no actual material of *Lepidospora* from Sicily. Whether or not *Lepidospora grassii* (Escherich) and *L. escherichi* (Grassi and Rovelli) are different species can only be decided, if then,

when mature Sicilian *Lepidospora* identifiable as *grassii* can be examined.

Lepisma alba, described by Rafinesque-Schmaltz (1814) from Sicily, might actually be the earliest name for this species. The following is the short, original description of *alba*: "*Lepisma alba*. Entièrement blanche, glabre et écailleux, antennes de la longueur du corps, queue à 3 filets égaux, et également la moitié du corps, les latéraux divariquées." The possibility that this is *grassii* cannot be excluded, but the absence of illustrations and of certain characters in the description (size, absence or presence of eyes), combined with the loss of Rafinesque's Sicilian collections by shipwreck (Horn and Kahle, 1935-1937) suggests this matter best not be pursued any further.

Lepidospora sp.

Figure 16K, M

MATERIAL EXAMINED: ITALY: Tuscany: Massa Carrara, Merizza (four immatures, IEA).

These are small, white specimens, obviously immature. A male is 4 mm. long; and its pedicellus is not yet modified, but a single sensory peg makes its appearance at the apex of each of the lobes of urotergite X. A female is 5 mm. long, and its fusiform, segmented ovipositor approaches the level of the apex of stylets IX.

This is the first record of the genus *Lepidospora* from the northwestern Mediterranean and from the European mainland. The specimens belong to the *escherichi-silvestrii-aquilonaris* group, and are geographically closest to *escherichi* as here defined but I hesitate to identify them with that species because they are immature.

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