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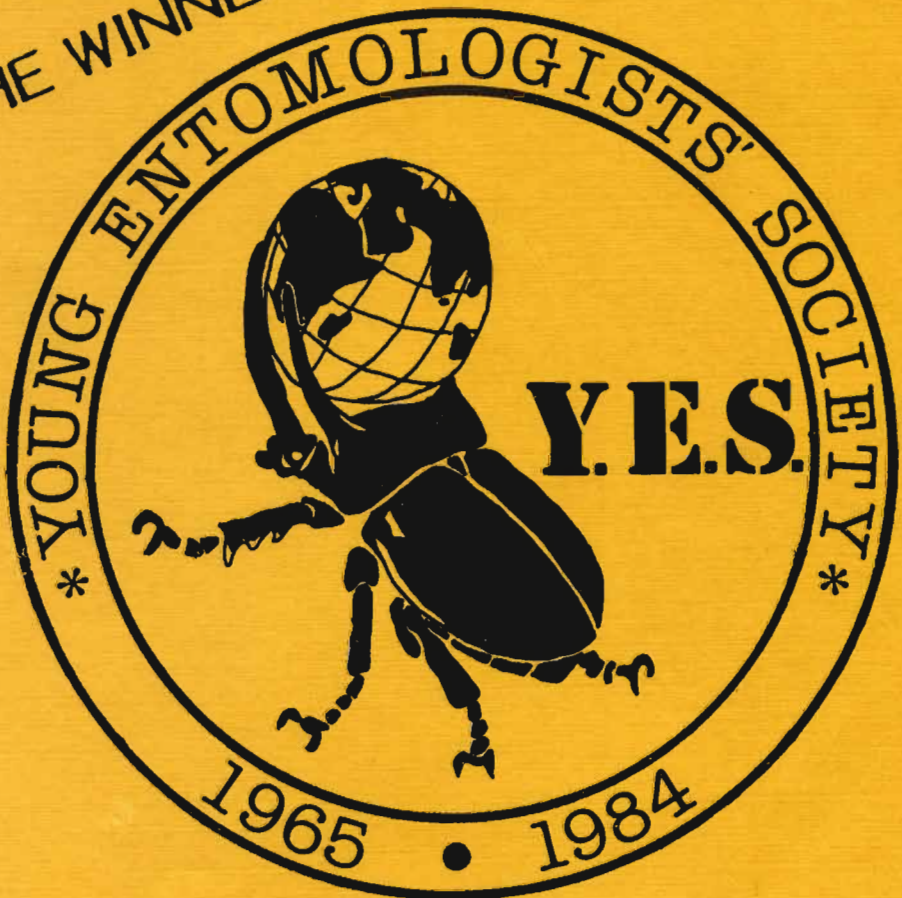
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ITALIAN TIGER BEETLES (COLEOPTERA: CICINDELIDAE)

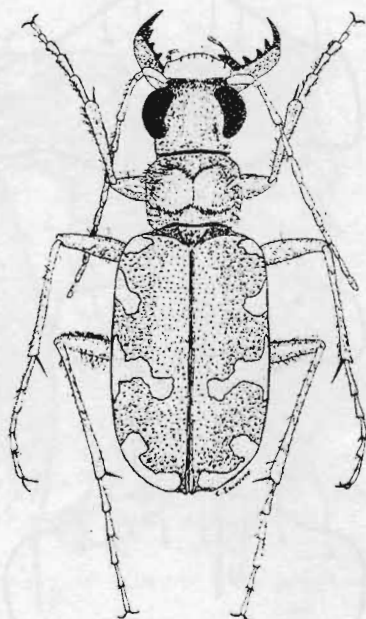
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The family Cicindelidae is represented by more than 1700 species. In Italy there are 17 species of Cicindelidae including one endemic species and several endemic subspecies. This article contains information on habitats and geographical distribution of Italian tiger beetles, with illustrations and maps (Figs. 1 and 2).

Biological Notes

Tiger beetles are one of the most interesting families of Coleoptera. They are elegant beetles with large eyes, strong mandibles, and predaceous habits, feeding on small insects and other small animals. Most species are brilliantly colored. They are very fast; the easiest way to catch them is with a butterfly net. Many cicindelids are found in open, sandy places, such as paths, stream banks, and beaches. However, there are tropical species with arboreal habits, such as members of the Collyrinae.

The larvae of the tiger beetles have an efficient method of capturing their prey. They dig little holes in the ground, where they wait for their prey to walk by. The small humps on the fifth abdominal segment allow them to stay in their vertical tunnels (Fig. 3).



Cicindela majalis Mandl

1. Cicindela campestris Linne 1758

Distribution—The range of this species includes all Europe, extending from Great Britain and Ireland to southern Siberia to oriental China, North Persia, Turkey, Syria, and North Africa.

Individuals of this species are among the most variable of the genus in the Palearctic zone.

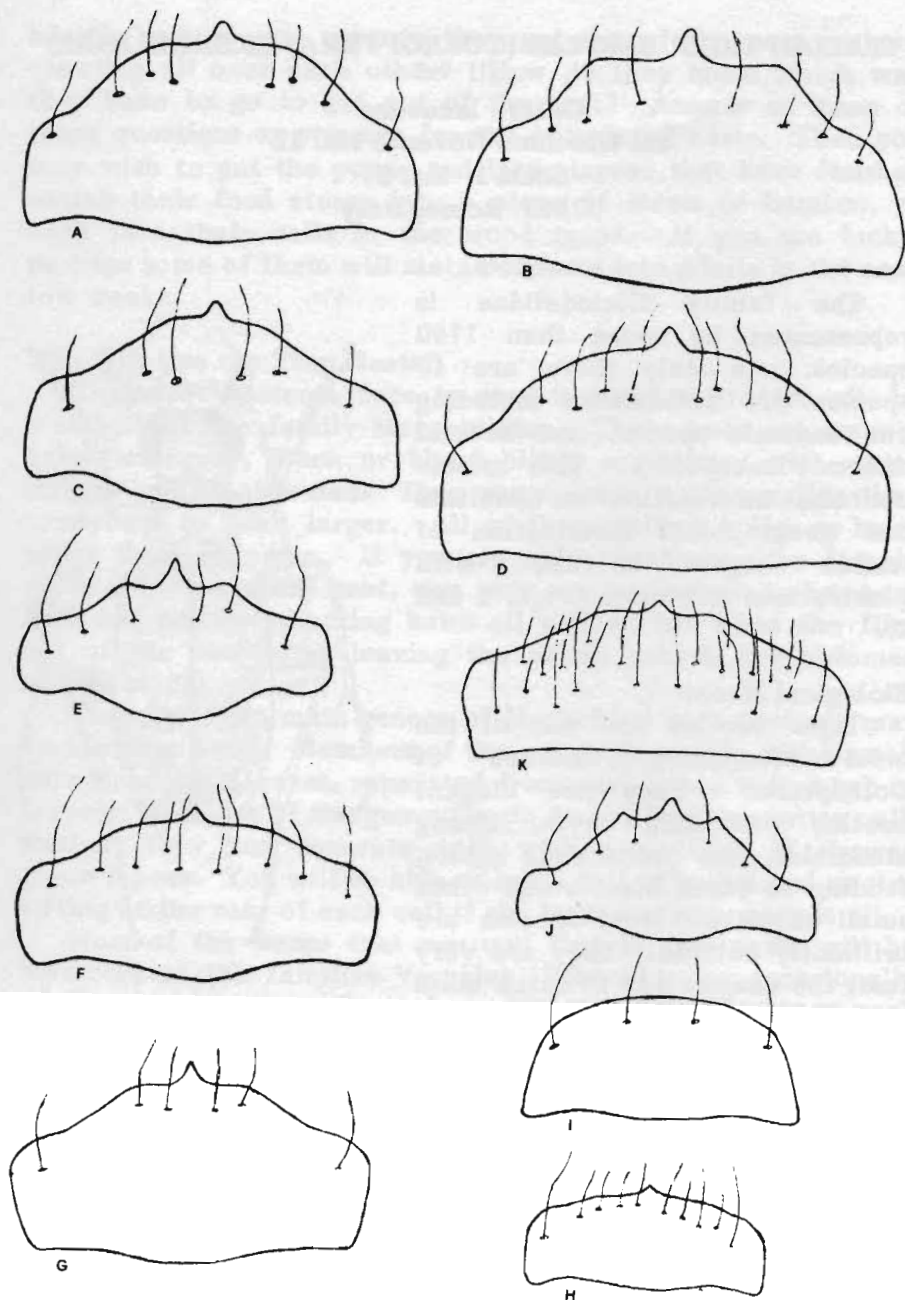


Figure 1. Diagrammatic representation of elytral patterns of: a) *Cicindela campestris campestris* L. o; b) *Cicindela silvicola* Dej. o; c) *Cicindela gallica* Brulle o; d) *Cicindela hybrida riparia* Dej. o; e) *Cylindera (Eugrapha) arenaria* Fuess. o; f) *Cylindera germanica germanica* L. o; g) *Cephalota litorea goudoti* Dej. o; h) *Cephalota circumdata imperialis* Klug. o; i) *Cylindera trisignata trisignata* Dej. o; j) *Myriochile melancholica* F. o; k) *Lophyra flexuosa sardea* Dej. o; l) *Lophyridia littoralis nemoralis* Dej. o.

Italy has the subspecies (Map 1): (a) ssp. campestris Linnaeus—found throughout all of continental Italy; (b) ssp. corsicana Roeschke—endemic subspecies of Sardinia and Corsica; (c) ssp. saphyrina Gene—endemic subspecies found only on the island of San Pietro (Sardinia) has bluish elytra and is one of the most beautiful cicindelids of Italy; (d) ssp. siciliana Luigioni—an endemic subspecies of Sicily; and (e) ssp. calabrica Mandl.—endemic subspecies of Calabria.

Note: The subspecific validity of ssp. siciliana and ssp. calabrica needs confirmation.

Bionomics—This common species is found in open fields, short-grass prairie and paths. It is also found at high altitudes (2000 meters above sea level).

2. Cicindela maroccana

Fabricius 1801

Distribution—North Africa, Spain, south of France (Maritime Alps), and Italy. In Spain, France, and Italy this species is represented by the subspecies

pseudomaroccana

Roesch which is very similar to C. campestris L. and has been confused as a subspecies of campestris. In 1950, Rivalier demonstrated the differences between C. campestris and C. maroccana pseudomaroccana Roesch.

This subspecies is known only from Liguria in Italy (Cassola 1978) (Map 2), but because of the similarity with campestris, the distribution of C. maroccana pseudomaroccana must be accurately examined.

Bionomics—It prefers the same habitats C. campestris, but is rare at elevations above 500 meters above sea level.

3. Cicindela silvicola Dejean 1822

Distribution—The known range of this species extends from eastern France to northern Balkanic peninsula and Carpathians. Italy: all northern and part of central Italy (Maps) (Val d'Aosta,

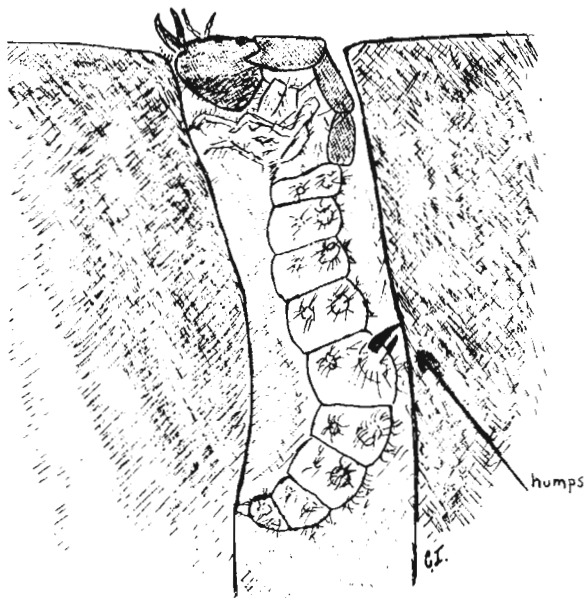


Figure 3. Tiger beetle larva in its burrow.

Piedmont, Lombardy, Trentino alto Adige, Venetia, Friuli Venezia Giulia, Liguria, Emilia Romagna, Tuscany, Latium). The presence in Tuscany and Latium are represented by old records and the presence of this species in these regions must be confirmed.

Bionomics--This species is found in mountainous and submountainous areas in open fields. It prefers sunny, sandy paths. It occurs at high altitudes (2000 meters above sea level).

4. Cicindela gallica Brulle 1834

Distribution--The known range of this species extends from the Bassess Alps into Tirolo, southern Bavaria and some localities in Carinthia. In Italy, it is found in the Alps, from Piedmont to Val d'Adige (Map 2) (Val d'Aosta, Piedmont, Lombardy, and Trentino Alto Adige)

Bionomics--Most frequent in sunny grazing grounds, fields and prairies. It also occurs at high altitudes (2700 meters above sea level).

5. Cicindela hybrida Linne 1758

Distribution--Euro-Asiatic species, inhabiting all of Europe and Caucasus, Turkey, Siberia, and Mongolia. In Italy, it is represented by the subspecies riparia Dejean. It occurs in part of north and central Italy (Map 4) (Piedmont, Lombardy, Val d'Aosta, Trentino Alto Adige, Venetia, Friuli Venezia Giulia, Emilia Romagna, Tuscany, and Latina)

Bionomics--Frequently found near streams at all altitudes (up to 2000 meters above sea level).

6. Cicindela majalis Mandl 1935

Distribution--This endemic Italian species (Fig. 4) is found in Piedmont, Lombardy, Emilia Romagna, Marche, Abruzzo, Molise, Campania, Apulia, Basilicata, and Calabria (Map 4). It was once considered a subspecies of hybrida (Cassola 1973).

Bionomics--Same habitats as hybrida and in some regions (Piedmont, Lombardy, Emilia Romagna) it lives sympatrically with hybrida

7. Cylindera germanica Linne 1758

Distribution--Middle Europe, including England and northern Spain to Balkanic peninsula, Turkey, Persia, Siberia, and China. In Italy (Map 5) there are two subspecies: (a) ssp. germanica Linnaeus--northern and central Italy (Piedmont, Lombardy, Trentino Alto Adige, Venetia, Friuli Venezia Giulia, Liguria, Emilia Romania, Tuscany, Umbria, Latium, and Abruzzo); and (b) ssp. muelleri Magistretti--South Italy (Apulia, Basilicata, Calabria and probably Sicily).

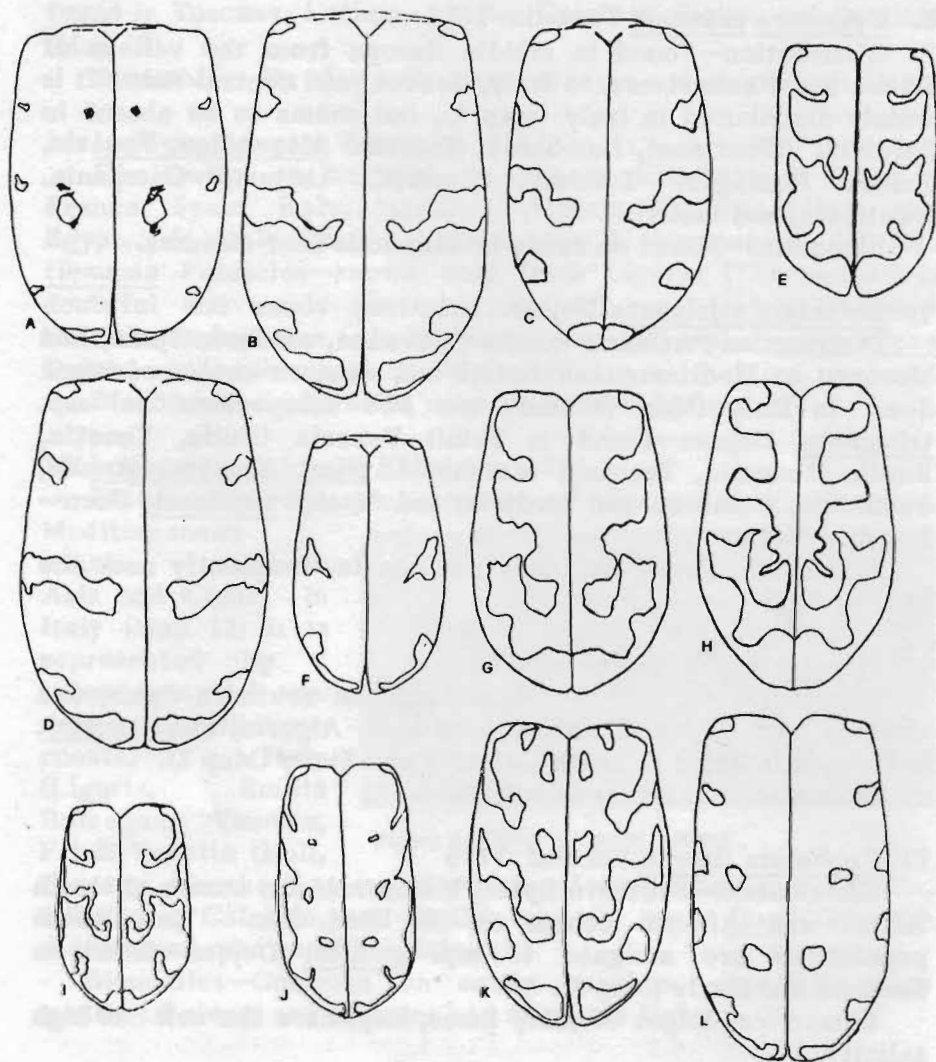


Figure 2. Diagrammatic representation of labrum of: a) *Cicindela campestris campestris* L. o; b) *Cicindela silvicola* Dej. o; c) *Cicindela gallica* Brulle o; d) *Cicindela hybrida riparia* Dej. o; e) *Cylindera germanica germanica* L. o; f) *Cephalota litorea goudoti* Dej. o; g) *Cephalota circumdata imperialis* Klug. o; h) *Cylindera trisignata trisignata* Dej. o; i) *Myriochile melancholica* F. o; j) *Lophyrina flexuosa sardea* Dej. o; k) *Lophyrina littoralis nemoralis* Dej. o;

Bionomics--Usually found in the plains, moist fields, and glades of forests, near short vegetation.

8. Cylindera arenaria Fuesslin 1776

Distribution--Found in middle Europe from the valleys of Rhone and Rhein rivers, to Italy, Greece, and central Asia. It is widely distributed in Italy (Map 6), but seems to be absent in Sardinia. (Piedmont, Lombardy, Trentino Alto Adige, Venetia, Emilia Romagna, Tuscany, Umbria, Latium, Campania, Basilicata, and Sicily).

Bionomics--Found on sandy or clay soils near streams.

9. Cylindera trisignata Dejean 1822

Distribution--Atlantic coasts of France, southern Spain, and Morocco to Mediterranean coasts and western coasts of Black Sea. In Italy (Map 9) there are two subspecies: (a) ssp. trisignata Dejean--found in Friuli Venezia Giulia, Venetia, Emilia Romania, Tuscany, Marche, Latium, Abruzzo, Apulia, Basilicata, Calabria, and Sardinia; and (b) ssp. siciliensis Horn--found in Sicily.

Bionomics--Found on sandy sea coasts, frequently near the mouths of rivers.

10. Spiralia maura Linnaeus 1758

Distribution--This species is found in southern Spain and western part of North Africa (Marocco, Algeria, and Tunisia). In Italy, it is found in South Calabria and Sicily (Map 2).

Bionomics--Common on salt flats.

11. Cephalota litorea Forskal 1775

Distribution--Southern Spain, Mediterranean coasts of North Africa and African coasts of the Red Sea. The Italian populations are assigned to ssp. goudoti Dejean--found in Sardinia and Sicily (Map 8).

Bionomics--Edges of salty lakes; anywhere the soil has high salinity.

12. Cephalota circumdata Dejean 1822

Distribution--The known range includes southern Spain, Algeria, Tunisia, Greece, and Turkey. In Italy (Map 7) there are 3 subspecies: (a) ssp. circumdata Dejean--found along the coasts of Golfo di Taranto (Apulia, Basilicata, Calabria); (b) ssp. imperialis Klug--Sardinia and Sicily; and (c) ssp. leonschaeferi Cassola--originally known only from southern coasts of Franco, but also has been found in Tuscany (Cassola 1972).

Bionomics--Lives in the same habitats of Cephalota (Taenidia) litorea Forsk.

13. Myriochile melancholica Fabricius 1798

Distribution--Found in southern Europe, all Africa and Madagascar into Western Asia including India. In Italy, it is found in Tuscany, Latium, Apulia, Calabria, Sicily, and Sardinia (Map 10).

Bionomics--On clay soils, near streams and also in salt flats.

14. Lophyra flexuosa Fabricius 1787

Distribution--Atlantic/Mediterranean distribution: found in France, Spain, Italy, Morocco, Algeria, Tunisia, Libya, and Egypt. In Italy (Map 11) there are 3 subspecies: (a) ssp. flexuosa Fabricius--known only from Liguria (This record is doubtful and needs confirmation); (b) ssp. sardea Dejean--endemic subspecies of Sardinia; and (c) ssp. circumflexa Dejean--endemic subspecies of Sicily.

Bionomics--Sandy soils, near streams and pools.

15. Lophyridia littoralis Fabricius 1781

Distribution--Atlantic coasts of Europe and Morocco, Mediterranean

coasts, northern Asia and China. In Italy (Map 12) it is represented by 2 subspecies: (a) ssp. nemorialis Olivier--coastal Italy (Liguria, Emilia Romagna, Venetia, Friuli Venetia Giulia,



Figure 4. Cicindela majalis Mandl.

Tuscany, Marche, Latium, Abruzzo, Molise, Campania, Apulia, Basilicata, Calabria, and Sicily); and (b) ssp. fiorii Grandi--endemic subspecies of Sardinia.

Bionomics--Common on sandy beaches, especially near mouths of rivers and streams and near salt flats.

16. Lophyridia aphrodisia Baudi 1864

Distribution--Found on the coasts of Ayria, Cipro, and Rodi Island. In Italy (Map 12) there is an endemic subspecies: ssp. panormitana Ragusa which occurs only in Sicily.

Bionomics--Prefers rocky coasts.

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Map 1. Distribution of *Cicindela campestris* L.

- ||||| *ssp. campestris* L.
- ==== *ssp. corsicana* Horn.
- ▣▣▣ *ssp. siciliana* Luig.
- ◆ *ssp. saphyrina* Gene
- *ssp. calabrica* Mand.



Map 2. Distribution of *Cicindela gallica* Brull., *Spiralia maura* L. and *Cicindela maroccana* ssp. *pseudomaroccana* Roesch.

- *Cicindela gallica* Brull.
- ==== *Spiralia maura* L.
- ||||| *Cicindela maroccana* ssp. *pseudomaroccana* Roesch.



Map 3. Distribution of *Cicindela silvicola* Dej.



Map 4. Distribution of *Cicindela hybrida riparia* Dej. and *Cicindela majalis* Mand.

- ==== *C. hybrida riparia* Dej.
- ||||| *C. majalis* Mand.



Map 5. Distribution of *Cylindera germanica* L.
 ≡ ssp. *germanica* L.
 ||| ssp. *muelleri* Mag.



Map 6. Distribution of *Cylindera (Eugrapha) arenaria* Fuesslin



Map 7. Distribution of *Cephalota (Taenidia) circumdata* Dej.
 ≡ ssp. *circumdata* Dej.
 ||| ssp. *imperialis* Klug
 ■■ ssp. *leonschaeferi* Cass.



Map 8. Distribution of *Cephalota (Taenidia) litorea goudoti* Dej.



Map 9. Distribution of *Cylindera trisignata* Dej.
 ≡ ssp. *trisignata* Dej.
 ||| ssp. *siciliensis* Horn



Map 10. Distribution of *Myriochile melancholica* Fabr.



Map 11. Distribution of *Lophyr a flexuosa* Fabr.
 ▨ ssp. *flexuosa* Fabr.
 ≡ ssp. *sardea* Dej.
 ||| ssp. *circumflexa* Dej



Map 12. Distribution of *Lophyridia littoralis* Fabr.
 and *Lophyridia aphrodisia panormitana* Rag.
 ||| *L. littoralis fiorii* Grandi
 ≡ *L. littoralis nemoralis* Oliv.
 ● *L. aphrodisia panormitana* Rag