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A REVISION OF THE MYRMECOFAUNA OF THE MALTESE ISLANDS
(HYMENOPTERA, FORMICIDAE)

INTRODUCTION

In 1924, Emery published a short paper in which he listed seven species of ants identified by him from a small collection made by Silvestri on Malta (EMERY, 1924). No further work was carried out until 1968 when Baroni Urbani published a comprehensive work on the ant fauna of the Maltese group in which he added another 23 species, bringing the total number to 30 (BARONI URBANI, 1968a). In a further paper, BARONI URBANI (1968b) discussed the biogeography of the Maltese myrmecofauna.

Collections made over the period 1975-1979 by one of us (SPS) have included 29 out of the 30 species previously recorded, and have added a further 14 to the Maltese list, bringing the total to 44 species. The present work discusses these new findings and extends the distribution records of BARONI URBANI (1968a). Many of the Maltese populations show interesting and sometimes puzzling morphological variations when compared to populations of the same species from the European mainland, and these are also discussed.

SPECIES LIST

The name of the species is given first followed by previous records from the Maltese Islands. Full data are included for the less common species. Notes on taxonomy and ecology are included where relevant. Species marked with an asterisk have not previously been recorded from the area.

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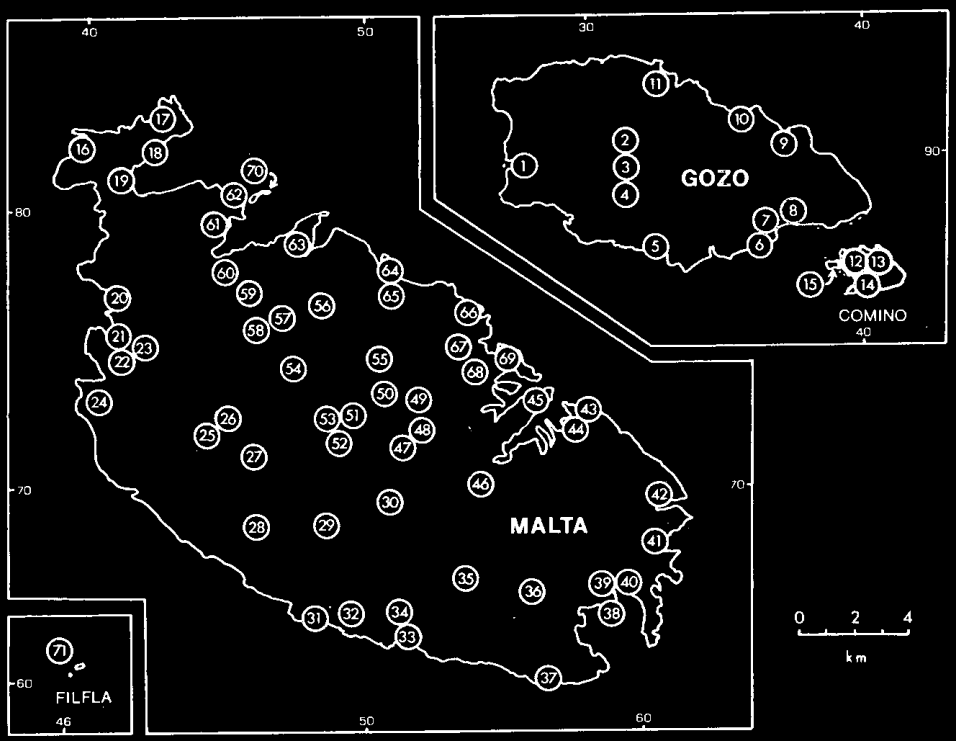

Fig. 1 - Map of the Maltese Islands showing stations searched for ants. Gozo: 1, Dwejra; 2, Wied Sara; 3, Rabat; 4, Wied tal-Lunzjata; 5, Ta' Cenc; 6, Fort Chambray; 7, Mgarr; 8, Iz-Zewwieqa; 9, San Blas; 10, Calypso Cave; 11, Wied l-Infern, Qbajjar, Qolla s-Safra; Comino: 12, San Niklaw Bay; 13, Santa Marija Bay; 14, Village, Tower, Central area; Cominotto, 15; Malta: 16, Paradise Bay; 17, Ramla tat-Torri; 18, Slugs Bay; 19, Ghadira; 20, Ghajn Tuffieha; 21, Wied Gnejna; 22, Wied il-Hmar; 23, Gnejna; 24, Bahrija; 25, Fiddien; 26, Chadwick Lakes; 27, Rabat; 28, Buskett; 29, Wied il-Hesri; 30, Wied Qirda; 31, Ghar Lapsi; 32, Hagar Qim; 33, Wied Babu; 34, Il-Maqluba; 35, Kirkop; 36, Wied Has-Sabtan; 37, Ghar Hasan; 38, Fort St. Lucian (Marsaxlokk); 39, Marsaxlokk; 40, Il-Ballut (Marsaxlokk); 41, St. Thomas Bay; 42, Marsascala; 43, Wied Ghammieq; 44, Kalkara; 45, Valletta; 46, Marsa; 47, Wied is-Sewda; 48, Fleur-de-Lys; 49, Birkirkara; 50, Balzan; 51, Attard; 52, Wied Incita; 53, Ta'Qali; 54, Wied Ta'l-Isperanza; 55, L-Iklin; 56, Wied il-Ghasel; 57, Bidnija; 58, Ghajn Rihana; 59, Wied Qannotta; 60, Wardija; 61, Mistra; 62, Tal-Blata (Selmun); 63, Salina; 64, Bahar ic-Caghaq; 65, Wied il-Faham; 66, St. George's Bay; 67, Wied il-Kbir (Spinola); 68, Gzira; 69, Sliema; St. Paul's Is., 70; Filfla, 71.

PONERINAE

1. **Hypoponera eduardi** (Forel, 1894)

Hypoponera eduardi For., Baroni Urbani, 1968a: 416
Hypoponera eduardi (Forel), Baroni Urbani, 1971: 15

Malta: Fort St. Lucian (Marsaxlokk) 26.VIII.75 ♀♀, 26.VII.76 ♀♀, 9.VIII.76 ♀♀; Wied il-Ghasel 17.IX.75 ♂ (ergatoid); Birkirkara

VII.76 ♀♀, VIII.76 ♀♀; Chadwick Lakes VI.77 ☿☿, VIII.77 ☿☿; Wied Qirda 6.VII.77 ☿☿; Ghajn Rihana IX.77 ☿☿; Wied Qannotta 25.III.78 ☿☿.

This is an uncommon but widespread species. A series of workers from a single colony was first taken by Baroni Urbani at Buskett. The only colony discovered during the present collections was situated in humid soil beneath thick plant cover. Workers, either singly or in small groups, were found under stones and in leaf litter but did not appear to be associated with a colony. A single ergatoid male was taken from soil under a stone; no attendant workers were present. Alate females were taken variously during the months of July and August. *H. eduardi* has a discontinuous distribution from North West Spain, South Europe, North Africa to the Middle East. Its biology has been studied by Le Masne (1956), who found that colonies of morphologically identical workers and queens may produce either ergatoid or normally winged males.

2. ***Proceratium melinum** (Roger, 1860); (Fig. 2)

Two males were collected separately, one flying at dusk at Birkirkara and the other from under a stone at Chadwick Lakes, both during September 1976. The specimens are only tentatively identified as *P. melinum* as the males of this genus are little known.

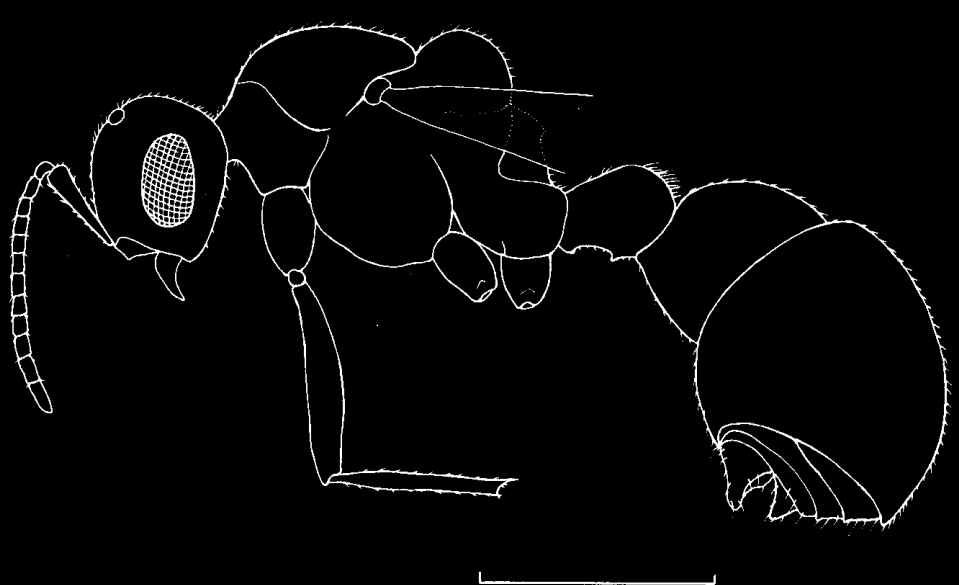

Fig. 2 - *Proceratium melinum* (Roger): male from Chadwick Lakes, Malta; lateral aspect; scale bar, 1 mm.

3. *Amblyopone denticulatum (Roger, 1859)

A single worker was taken from leaf litter in shade at Wied il-Ghasel on 29.III.78. This species is widely but sparsely distributed from Spain through South Europe to the Balkans and the Middle East.

DOLICHODERINAE

4. Iridomyrmex humilis (Mayr, 1868)

Iridomyrmex humilis (Mayr), BARONI URBANI, 1968a: 474; 1971: 166

M a l t a : Ghajn Rihana ☿☿; Chadwick Lakes ☿☿; Mistra ♀♀ ☿☿; Buskett ♀♀ ☿☿; Balzan ♀♀ ☿☿; Salina ☿☿; Wied il-Ghasel ♀♀ ☿☿; Birkirkara ♂♂; Ghar Hasan area ☿☿.

C o m i n o : Santa Marija Bay ☿☿.

G o z o : Dwejra ☿☿; Wied tal-Lunzjata ☿☿.

This is a widespread species, occurring in various habitats with a marked preference for shade and is usually abundant where it is found. BARONI URBANI (1968a) found it in several localities on Malta and Gozo where it continues to flourish and it was also taken on Comino at Santa Marija Bay. Its distribution seems to be extending.

Tapinoma

Tapinoma erraticum (Latr.) was the only species of the genus recorded by BARONI URBANI (1968a) which he found plentifully on all three Maltese Islands visited. However, in the present study two of

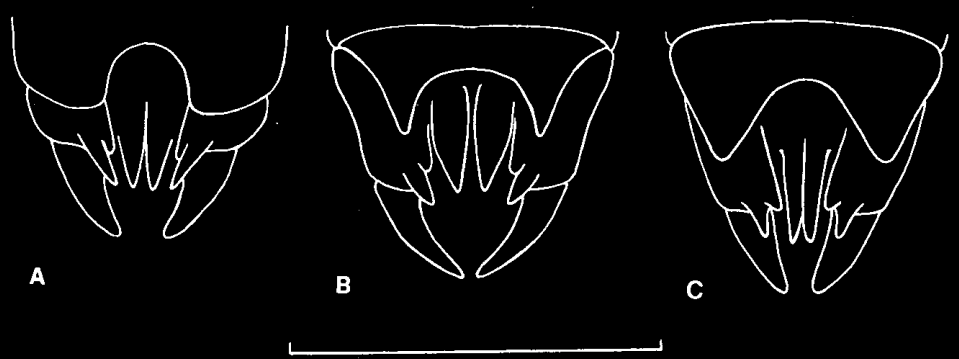

Fig. 3 - Genitalia of male *Tapinoma* spp.; ventral aspect; A, *T. erraticum* (Latr.) from Devon, England; B, *T. simrothi* Krausse from Comino, Malta; C, *T. nigerrimum* (Nyl.) from Birkirkara, Malta; scale bar, 1 mm.

the other common South European/North African species have been recognised.

The species can be distinguished in the male and queen castes as follows:

Males

1. Stipes long, narrow and sharply curved inwards towards their tips (Fig. 3B); third funicular segment x2.5 as long as broad ..... *simrothi* Krausse
— Stipes broad not sharply curved (Figs. 3A & C); third funicular segment x2 as long as broad or less 2
2. Stipes voluminous; lateral lobes of subgenital plate narrower than enclosed space (Fig. 3C); scape shorter than head width behind eyes; head width 1.1 mm ..... *nigerrimum* (Nylander)
— Stipes not conspicuously enlarged; lateral lobes of subgenital plate wider than enclosed space (Fig. 3A); scape longer than maximum head width behind eyes; head width less than 1 mm ..... *erraticum* (Latreille)

Females

1. Clypeal incision shallow, not deeper than wide (Fig. 4A) .... *erraticum* (Latreille)
— Clypeal incision deeper than wide (Fig. 4B) 2
2. Head width 1.3-1.5 mm; pubescence thick overlapping scape margin as a subdecumbent fringe .... *nigerrimum* (Nylander)
— Head width 1.1-1.25 mm; scape pubescence thin and decumbent ..... *simrothi* Krausse

5. **Tapinoma erraticum** (Latreille, 1798)

Tapinoma erraticum (Latr.), BARONI URBANI, 1968a: 475; 1971: 159

The only species of the genus *Tapinoma* recorded by BARONI URBANI (1968a) from various localities on Malta, Gozo and Comino.

6. **Tapinoma simrothi** Krausse, 1909

M a l t a : Wied il-Kbir; Wied il-Ghasel; Buskett; Wardija; Wied Qannotta, all ♂♂, taken singly or away from nests.

C o m i n o : San Niklaw Bay; near Village; near Tower, all ♂♂,

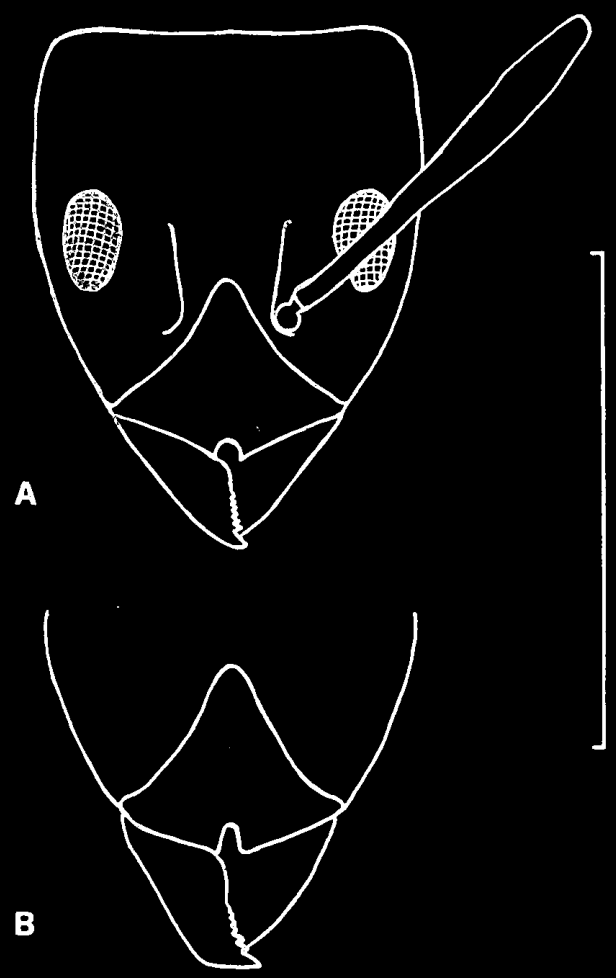

Fig. 4 - Heads of *Tapinoma* workers; frontal aspect; A, *T. erraticum* (Latr.) from Dorset, England; B, *T. simrothi* Krausse from Comino, Malta; scale bar, 1 mm.

taken singly or away from nests. A colony containing ♀♀ ♂♂ and ☿☿ was discovered in the central part of the island.

The males have the characteristic genital configuration of *T. simrothi* with long strongly inward curving stipes and narrow subgenital plate lobes and are quite unlike those of Central and North European populations of *T. erraticum* which have short stipes and broad subgenital plate lobes (Fig. 3B). Most of the females and workers have the narrow clypeal incision characteristic of *T. simrothi*.

The *T. simrothi* colonies contained abundant workers nesting in soil and under stones mainly in garigue communities. In places where

human interference is minimal, the nest is extended above the ground as a fragile earth dome with numerous chambers and supported by woody shrubs. Males identified as *T. simrothi* were taken in March and April.

7. *Tapinoma nigerrimum (Nylander, 1856)

Two typical males of this species were taken near human habitations on 19.V.78 at Birkirkara (Malta). Males of *T. nigerrimum* are much larger than those of *T. erraticum* and are easily distinguished by the genitalia which have broad and weakly curving stipes (Fig. 3A & C).

MYRMICINAE

8. *Stenamma petiolatum Emery, 1897

A single worker of this species was taken foraging above ground at Wied il-Ghasel (Malta) on 19.V.78. This is a rare species, so far only recorded from Italy. A single record from San Nazarro in Switzerland also exists (KUTTER, 1978).

9. Aphaenogaster splendida (Roger, 1859)

Aphaenogaster splendida (Rog.), BARONI URBANI, 1968a: 418; 1971: 54

Malta: Chadwick Lakes ♀; Kalkara ♀♀♂♂☿☿; Buskett ♀♀♂♂☿☿; Gzira ♀; Rabat ☿; Fiddien ☿; Marsaxlokk ♀☿; Birkirkara ♀♂☿☿; Bahrija ☿☿; Mistra ♀☿☿.

Comino: Santa Marija Bay ♀☿; near Village ☿☿.

This species occurs in a variety of habitats, occassionally also close to human habitations. It is a shade-loving species nesting in soil under deeply embedded stones, flower pots and in crevices. It is aggressive, the workers foraging singly during the evening and predating small soft bodied insects such as aphids which are seized by the mandibles and stung. The alates fly during the evening in July and are frequently attracted to light.

10. Aphaenogaster sicula Emery, 1908 Nov. comb.

Aphaenogaster crocea sicula Em., BARONI URBANI, 1968a: 417; 1971: 48

Malta: Tal-Blata (Selmun) 4.IX.78 ☿☿; Buskett VI.75, VI.76, IX.76 ☿☿; Ghajn Tuffieha 27.XII.75 ☿☿; Wied Qannotta 25.III.78 ☿.

All workers collected were taken from deeply embedded stones in shady situations. This species was taken on both Malta and Gozo by BARONI URBANI (1968a) and so far is elsewhere known only from Sicily. There is a complex of forms allied to *A. crocea* (André) and *A. subterranea* (Latr.) in North Africa and South Europe, but *A. sicula* is sufficiently different from *A. crocea* in sculpture and the shape of the propodeum and petiole, to be regarded as a separate species.

11. **Aphaenogaster ionia** Emery, 1915 Nov. comb.

Aphaenogaster testaceo-pilosa semipolita var. *melitensis*, EMERY, 1924: 12
Aphaenogaster semi-polita ionia, BARONI URBANI, 1968a: 422
Aphaenogaster semipolita ionia Emery, BARONI URBANI, 1971: 43

M a l t a : Wied Qirda 6.VII.77 ☿☿; Paradise Bay 7.VII.76 ☿☿; Salina 20.IX.75 ♀ ☿☿; 16.IV.77 ☿; Wied Incita 4.VIII.77 ☿☿, 7.IV.77 ☿; Wied is-Sewda 26.IV.75 ☿, 28.VII.77 ☿☿; Wied il-Hesri 2.IX.78 ☿☿; Marsascala 26.VII.77 ☿; Wied il-Ghasel 17.IX.75 ♀.

C o m i n o : central area 19.III.78, 23.V.76 ☿☿.

This species was found nesting under stones in dry situations. The workers are aggressive, foraging singly during daytime. Alate females were observed to emerge singly during late morning in September. The *A. ionia* populations on Malta compare well with those on Crete and differ from the Italian populations of *A. semipolita* (Nyl.). The Maltese populations have longer propodeal spines and higher petioles than the Italian *A. semipolita*.

12. **Aphaenogaster inermis** Emery, 1908 Nov. comb.

Aphaenogaster semi-polita ionia, BARONI URBANI, 1968a: 422
Aphaenogaster semipolita ionia var. *inermis* Emery, BARONI URBANI, 1971: 44

M a l t a : Ramla tat-Torri 12.I.77 ☿☿; Mistra 22.IV.75 ☿☿; St. Paul's Is. 20.IV.75 ☿☿, 27.VII.75 ☿☿.

C o m i n o : San Niklaw Bay 26.IX.77 ☿; Cominotto 12.VIII.75 ☿, 13.VII.76 ☿☿; near Tower 23.IV.78 ☿☿; central area 19.III.78 ☿☿.

This species has similar habits to *A. ionia*, hunting singly during daytime and nesting under stones in arid coastal areas. It differs from *A. ionia* in the complete absence of propodeal spines and the somewhat lower petiole node. It is also consistently smaller in size. BARONI URBANI (1968a) after finding a single mixed colony of *A. inermis* and *A. ionia* at Xlendi (Gozo) concluded that *A. inermis* might be a teratological

form of *A. ionia*. However, in the 13 series of *A. ionia* and the 9 of *A. inermis* collected during the present study, no mixed colonies were found and it seems safe to conclude that with such a distinct morphological difference these two entities are indeed distinct species. *A. inermis* and *A. ionia* occur in Central Comino, often in adjacent nests. BARONI URBANI (1968a) took both species on Gozo, including the mixed colony, but did not find any *A. inermis* on Malta. In the present study, *A. inermis* was found in North-West of Malta. Both species have been found in Calabria, Italy.

13. **Aphaenogaster campana** Emery, 1878

Aphaenogaster campana Em., BARONI URBANI, 1968a: 426; 1971: 40

This is an uncommon Italian species recorded also from the Maltese Islands where it was taken by BARONI RRBANI (1968a) on Comino, but which was not found in the present study.

14. **Messor capitatus** (Latreille, 1798)

Messor barbarus barbarus var. *capitatus* Latr. (*nigra* Er. André), EMERY, 1924: 12
Messor capitatus Latr., BACCETTI, 1967: 20, 22
Messor capitatus (Latr.), BARONI URBANI, 1968a: 427; 1971: 57

M a l t a : Wied Incita ☿☿; Wied il-Ghasel ☿☿; Wied il-Qoton ☿☿; Wied Qirda ☿☿; Wied is-Sewda ♀♀ ☿☿; Wied il-Kbir (Spinola) ☿☿; Wied Qannotta ☿☿; Marsaxlokk ☿☿; Ghajn Rihana ☿☿; Ta'Qali ☿☿; Buskett ☿☿; St. Thomas Bay ☿☿; Il-Maqluba ☿☿; Hagar Qim ☿☿; Wied Ghammieq ☿☿; Birkirkara ♀♀; Ghajn Tuffieha ☿☿; Salina ☿☿; Mistra ☿☿; Bahrija ☿☿; St. Paul's Is. ☿☿.

C o m i n o : Santa Marija Bay ☿☿; Village ☿☿; near Tower ☿☿; Cominotto ♀ ☿☿.

G o z o : Wied Sara ☿☿; Mgarr ☿☿; Iz-Zewwieqa ☿☿; Wied l-Infern ☿☿; Qbajjar ☿☿; Rabat ☿☿.

Large numbers of this species were taken from numerous localities on all three Maltese Islands. BARONI URBANI (1968a) also found it to be abundant. It is a South-western species not extending further eastwards than Jugoslavia and not found in North Africa. On Malta alates were observed swarming after rain showers in November, December and January. Nests are deep and extensive and are constructed mainly in exposed situations. A few workers from one nest were small and

brown as in the workers of *M. ibericus* Em. of Spain, but this was probably because these came from a small incipient colony.

15. **Messor caducus** (Motschulsky, 1839)

Messor meridionalis wasmanni Krausse, BARONI URBANI, 1968a: 434; 1971: 59
Messor semirufus (Ern. André), BARONI URBANI, 1974: 226

C o m i n o : San Niklaw Bay 23.IV.78 ♀ ☿☿; Central area 19.III.78 ☿☿, 23.IV.78 ☿☿.

This species was also taken on Comino by BARONI URBANI (1968a) who recorded it as *M. meridionalis* ssp. *wasmanni* Krausse 1909. However, the Maltese form compares well with some series from Turkey named *M. caducus* on the basis of the original descriptions of this species by MOTSCHULSKY (B.S. Bolton, personal communication). The species differs from the *M. meridionalis* populations of Spain, Italy, the Balkans and the Middle East by the more numerous hairs on the occiput (Fig. 5) and the near absence of hairs on the first gastral segment. The subdecumbent-suberect hairs on the antennal scape are more prominent and numerous in *M. caducus* than in *M. meridionalis*. Nests from Comino were found in hard packed soil.

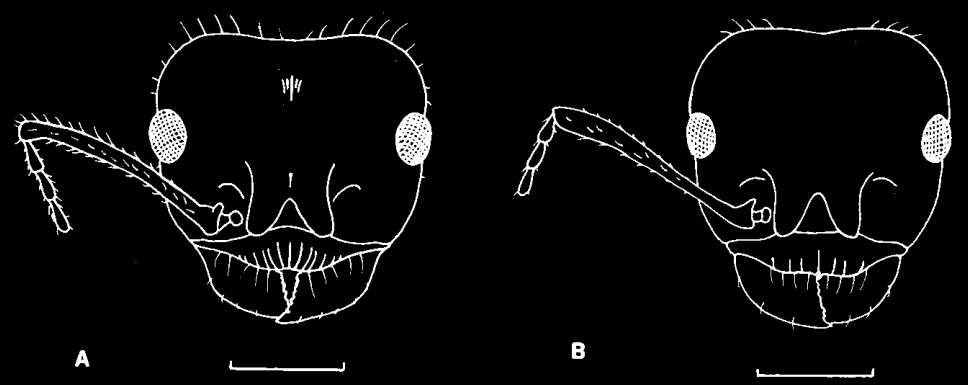

Fig. 5 - Heads of *Messor* workers; frontal aspect; A, *M. caducus* (Motsch.) from Comino (Central Area), Malta; B, *M. meridionalis* André from Crete; scale bar, 1 mm.

16. **Messor bouvieri** Bondroit, 1918 Nov. comb.

Messor sanctus bouvieri Bondr., BARONI URBANI, 1968a: 430; 1971: 65

M a l t a : Wied Ghammieq; St. Thomas Bay; Slugs Bay; Mistra; Fiddien; Ghadira; Ramla tat-Torri; Wied Qannotta; Paradise Bay; St. Paul's Is., all workers.

C o m i n o : Santa Marija Bay; San Niklaw Bay; near Tower, all workers.

G o z o : Fort Chambray; Qbajjar; Qolla s-Safra, workers only.

BARONI URBANI (1968a) also took this species in many localities on Malta and Gozo. He pointed out the variability in sculpture amongst the Maltese series. In some, the propodeum is finely striated, unlike *M. bouvieri* populations from Spain and Southern France. Nests are constructed under stones as well as in the open in arid localities.

17. **Messor structor** (Latreille, 1798)

Messor barbarus structor Latr., EMERY, 1924: 12
Messor structor Latr., BACCETTI, 1967: 20
Messor structor (Latr.), BARONI URBANI, 1968a: 436; 1971: 66

M a l t a : Wied is-Sewda; Wied Qirda; Buskett; Bahrija; Valletta; Wied Gnejna; L-Iklin; Fiddien; Wied Qannotta; Mistra, all workers.

C o m i n o : Santa Marija Bay ☿☿.

This common European species occurred in a variety of habitats, but unlike other *Messor* species, it showed no preference for arid situations. Nests are constructed both under stones and in soil, frequently in the shade. BARONI URBANI (1968a) also took this species from numerous localities on Malta and Comino.

18. **Pheidole pallidula** (Nylander, 1848)

Pheidole pallidula Nyl., EMERY, 1924: 12; BACCETTI, 1967: 20
Pheidole pallidula (Nyl.), BARONI URBANI, 1968a: 446; 1971: 70

M a l t a : Wied il-Faham ☿☿; Ghadira ☿☿; Mistra ♀♀ ☿☿; Birkirkara ♀♀ ♂♂ ☿☿; Chadwick Lakes ♀♀ ♂♂ ☿☿; Wied is-Sewda ♀♀ ☿☿; Buskett ☿☿; Wied Incita ☿☿; Wied Qirda ☿☿; Hagar Qim ☿☿; Wied il-Qoton ☿☿; Bahrija ☿☿; Wied Ghammieq ☿☿; Il-Maqluba ☿☿; Ramla tat-Torri ☿☿; Gzira ☿☿; Ghajn Rihana ☿☿; Wied Qannotta ☿☿; St. George's ☿☿; Paradise Bay ☿☿; St. Paul's Is. ☿☿.

C o m i n o : Santa Marija Bay ☿☿; near Village ☿☿; near Tower ☿☿.

G o z o : Ta'Cenc ☿☿; Mgarr ☿☿; Rabat ☿☿; Qbajjar ☿☿; Wied l-Infern ☿☿; Marsalforn ☿☿; Wied Sara ☿☿.

This widespread and common species occurred in a variety of habitats both in the wild and near human habitations on Malta, Gozo and Comino. It was found nesting in soil or under stones. Alates swarmed during the evening in May, June and July.

19. **Pheidole teneriffana** Forel, 1893

Pheidole teneriffana For., BARONI URBANI, 1968a: 438; 1971: 73

M a l t a : Fort St. Elmo (Valletta) 8.10.75 ☿☿; Chadwick Lakes 31.VII.76 ♂; Buskett 19.VI.76 ☿☿; Marsaxlokk 21.VIII.76 ☿; Marsa 17.IX.76 ☿.

This species is not frequent. Only one nest was found in a fissure in the ground. Workers were seen to forage during daylight. The only male found was taken in July. BARONI URBANI (1968a) also took this species on Malta at L-Iklin. Elsewhere, it is found sporadically throughout Northern Africa, on the island of Teneriffe but does not occur on the European mainland.

20. ***Cardiocondyla nigra** Forel 1905 Nov. comb.

Cardiocondyla batesii var. *nigra* FOREL 1905: 174

M a l t a : Ghar Lapsi 9.XI.77 ☿☿; Salina 20.IX.75 ☿☿, 19.IX.77 ☿☿; Ramla tat-Torri 22.VIII.75 ☿☿.

Cardiocondyla elegans Nyl. is the only species of the genus recorded from Italy. The Maltese populations are clearly different from the Italian *C. elegans* in having narrower petioles, blunter propodeal spines and coarser sculpture (Figs. 6 & 7). The identification of the Maltese populations as *C. nigra* is only tentative, being based on the description given by EMERY (1909), but the shape of the petiole and postpetiole correspond well with Emery's drawings of *C. nigra* and are nearer to *C. batesii* Forel than to the *C. stambouloffi* group of species. The dorsal surfaces of the alitrunk and head have irregular coarse shallow punctures arranged in an approximately linear pattern giving a rugose appearance. The type form was described from Tunisia and has not hitherto been recorded outside that country.

Workers were taken foraging in small numbers around the nests which were constructed in packed soil or sand on or near the coast.

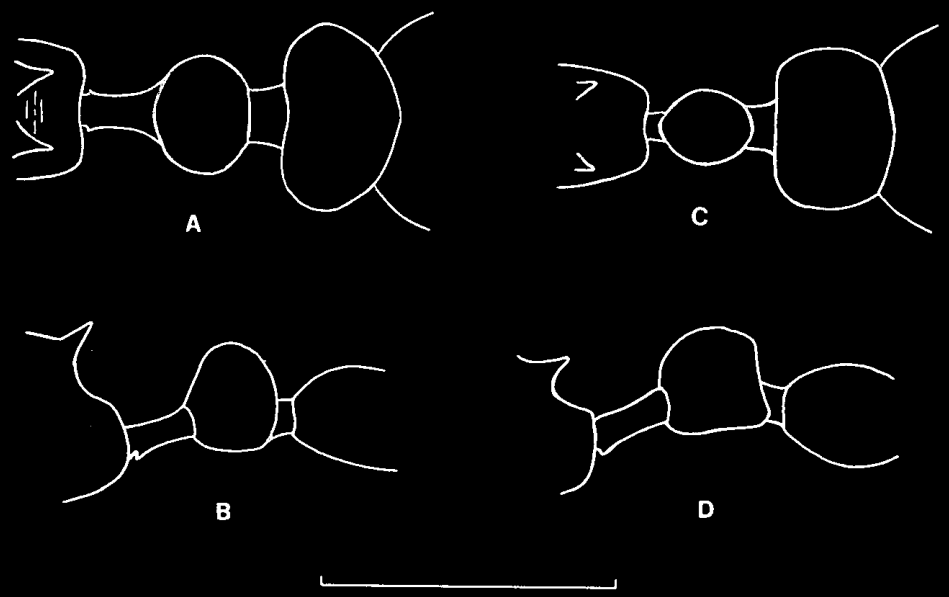

Fig. 6 - Petioles and postpetioles of *Cardiocondyla* workers; A & B, *C. elegans* Nyl. from Aranquez, Spain; C & D, *C. nigra* For. from Malta; top figures, dorsal aspect, bottom figures, lateral aspect; scale bar, 0.5 mm.

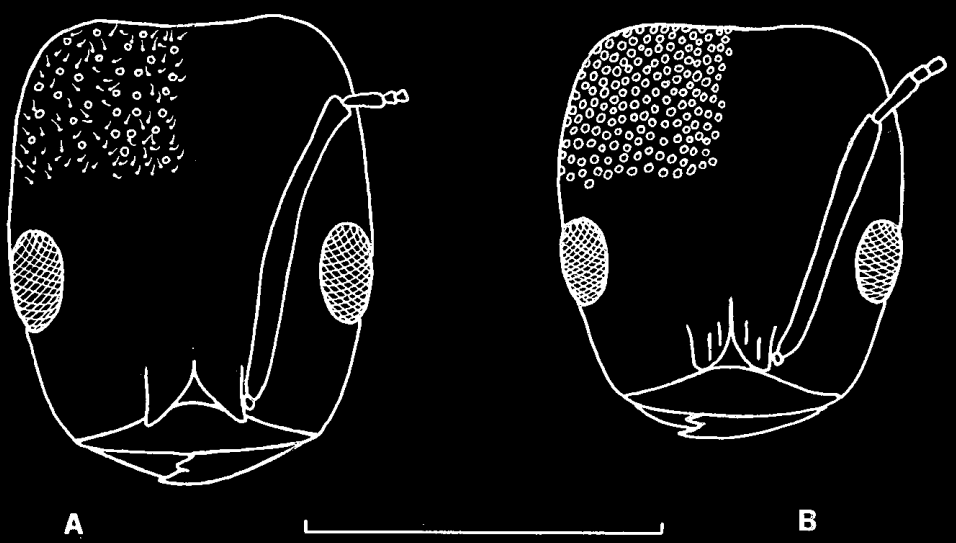

Fig. 7 - Heads of *Cardiocondyla* workers; frontal aspect; A, *C. elegans* Nyl. from Aranquez, Spain; B, *C. nigra* For. from Malta; scale bar, 0.5 mm.

21. **Cremastogaster scutellaris** (Olivier, 1791)

Crematogaster (sic!) *scutellaris scutellaris* Ol., EMERY, 1924: 12
Cremastogaster scutellaris (Ol.), BARONI URBANI, 1968a: 449; 1971: 79

M a l t a : Buskett ☿☿; Birkirkara ♂; Wied Incita ♀☿☿; Wied is-Sewda ♂♂☿☿; Chadwick Lakes ☿☿; Kirkop ☿; Wied Qirda ☿☿; Il-Maqluba ☿☿; Fleur-de-Lys ♂♂; Bahrija ☿☿.

C o m i n o : Santa Marija Bay ☿☿.

G o z o : Mgarr ☿☿; Wied l-Infern ☿☿; Qolla s-Safra ☿☿.

Nests were found in cavities and hollows of trees although one was found under lichen encrusting a wall. This is a common South European aphidicolous species. An alate female was taken in October and males were captured at Fleur-de-Lys in late September.

22. **Diplorhoptrum orbula** (Emery, 1875)

Solenopsis orbula Em., BARONI URBANI, 1968a: 457
Diplorhoptrum orbulum (Emery), BARONI URBANI, 1971: 88

M a l t a : Wied il-Faham 3.XI.75; Il-Maqluba 10.IX.77; Wied is-Sewda 26.III.75; Ghajn Rihana 13.IX.75; Buskett 19.VI.76; Wied il-Ghasel 26.III.77, workers only.

C o m i n o : Santa Marija Bay 4.IV.76 ☿☿.

G o z o : San Blas 11.IV.76 ☿☿; Fort Chambray 10.IV.76 ☿☿.

This species nests in soil under stones and often near nests of other myrmicines (*Pheidole*, *Tetramorium*, *Messor*). Individual workers were found in leaf litter in shady situations and in soil, under trees. Swarms of close flying males have been observed during early morning flying at a height of one to one and a half metres above the ground. BARONI URBANI (1968a) took this species from two localities, Wied il-Ghasel and Valletta, on Malta.

23. **Diplorhoptrum santschii** (Forel, 1905)

Solenopsis santschii For., BARONI URBANI, 1968a: 451
Diplorhoptrum santschii (Forel), BARONI URBANI, 1971: 88

M a l t a : Wied il-Ghasel 17.IX.75, 17.IV.76, 25.VI.76; Birkirkara III.77; Wied il-Hesri 2.IX.78, workers only.

C o m i n o : near Tower 26.IX.77 ♀♂♂☿☿.

This species is less frequent than *D. orbula* on the Maltese Islands but has very similar habits. BARONI URBANI (1968a) gives a full description of the worker caste from a series taken at Wied il-Ghasel (Malta). *D. santschii* males differ from those of *D. orbula* by having a very slightly wider head and mesothorax, more numerous striae on the head and mesonotum and in having more prominent eyes and appendage hairs. In this respect they are intermediate between the *D. orbula* and *D. latro* Emery of South Europe.

24. **Monomorium subopacum** (Smith, 1858)

Monomorium salomonis L., BACCETTI, 1967: 20, 22
Monomorium subopacum (F. Smith), BARONI URBANI, 1968a: 450; 1971: 92

M a l t a : Wied tal-Isperanza ☿☿; Il-Ballut (Marsaxlokk) ☿☿; Bahar ic-Caghaq ☿☿; Wied Qirda ☿☿; Ghadira ♀♀ ☿☿; Bahrija ☿☿; Ramla tat-Torri ☿☿; St. Georges ☿☿; Gnejna ☿☿; Wied Qannotta ♀♀ ☿☿; Wied Ghammieq ☿☿; Wied il-Qoton ☿☿;Mistra ☿☿; Wied is-Sewda ☿☿; Ghajn Rihana ☿☿; Chadwick Lakes ☿☿; Slugs Bay ☿☿.

C o m i n o : Santa Marija Bay ☿☿; Village ☿☿.

G o z o : Qbajjar ☿☿; Wied l-Infern ☿☿.

This species is very abundant in Malta and was also found in considerable numbers on Comino (Santa Marija Bay) and on Gozo (Qbajjar and Wied l-Infern). BARONI URBANI (1968a) also found it to be common on Malta. This is a wide ranging Mediterranean species. Shallow nests were constructed in soil or sandy substrata in rocky wasteland and in valleys. The nests usually contain more than one queen.

25. **Myrmecina graminicola** (Latreille, 1802)

Myrmecina graminicola (Latr.), BARONI URBANI, 1968a: 458; 1971: 94

A single worker of this species was found under a stone in humid ground a Buskett (8.II.78) in the same locality where it was previously recorded by BARONI URBANI (1968a). This species is widely distributed throughout Central and South Europe, from Portugal to the Caspian and from Tunis to Denmark and Southern Sweden.

26. ***Leptothorax angustulus** (Nylander, 1856)

M a l t a : Buskett 19.VI.76 ☿; Wied Babu 11.II.78 ☿.

The two workers found were taken singly during daylight while foraging. This species is sparsely distributed throughout Mediterranean Europe, from Majorca to the Adriatic, and is generally associated with trees as a bark inhabitant.

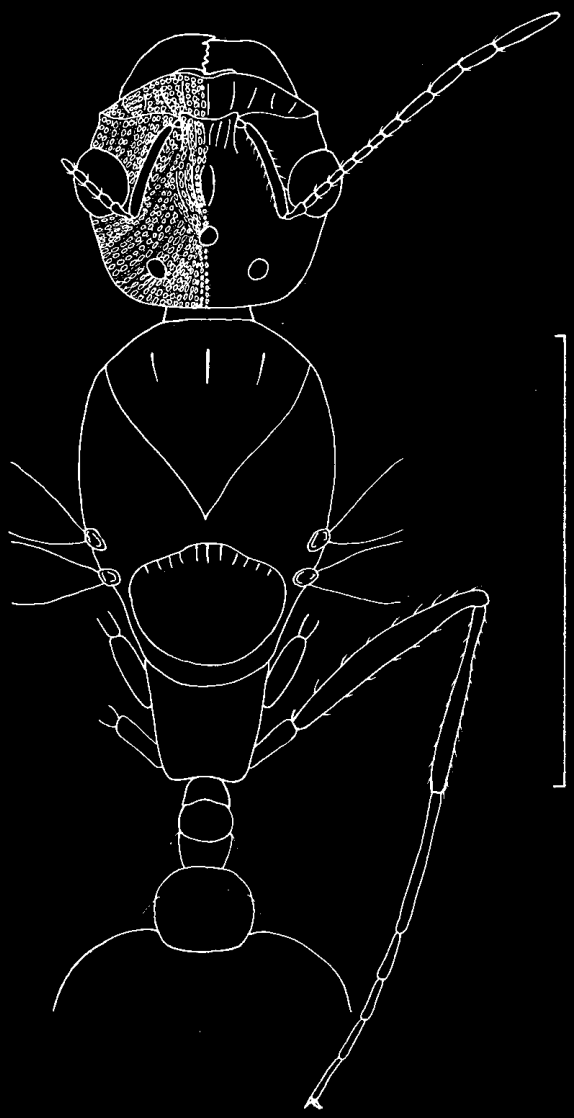

Fig. 8 - *Leptothorax laestrygon splendidiceps* Baroni Urbani: male from Wied is-Sewda, Malta; dorsal aspect; scale bar, 1 mm.

27. ***Leptothorax rabaudi*** Bondroit, 1918

M a l t a : Il-Maqluba 10.IX.77 ☿☿; Buskett 16.IX.76 ☿☿.

Workers from Il-Maqluba were extracted from leaf litter from under trees in a ravine. At Buskett, the species was found under moss growing on soil. This is a Southwest-European species which also occurs in North Africa. It is characterised by the petiole, which seen in profile has the flat anterior and dorsal faces meeting at a right angle. This species is moderately common in Southern France and Spain but has not been recorded from Italy.

28. **Leptothorax laestrygon splendidiceps** Baroni Urbani, 1968 (Fig. 8)

Leptothorax niger splendidiceps, BARONI URBANI, 1968a: 458
Leptothorax laestrygon splendidiceps Baroni Urbani, BARONI URBANI, 1971: 112

M a l t a : Wied is-Sewda 15.XI.76 ♀☿☿; 13.V.78 ♂♂☿☿; Fort St. Lucian (Marsaxlokk) 11.IX.76 ☿.

C o m i n o : Santa Marija Bay 23.III.76 ☿.

BARONI URBANI (1968a) found this ant in several localities on Malta and Gozo. It is very similar to *Leptothorax l. laestrygon* Santschi, which has been recorded only from Sicily. *L. l. splendidiceps* differs from the nominal subspecies in the female caste which has a very shiny head with reduced sculpture. Both the nominal form and the Maltese subspecies differ from *L. specularis* Em. of Southwest Europe in having short curved hairs on the antennal scape in the worker and queen castes, but are similar in this respect to the more coarsely sculptured *L. iberica* Menozzi of Spain.

29. ***Leptothorax* (Temnothorax) recedens** (Nylander, 1856)

C o m i n o : near Village 14.VII.76 ☿.

The single worker of this species found was taken during the evening. This species is common throughout Southwest Europe and the Mediterranean area and has been recorded from Sicily, Sardinia and Corsica as well as from the Italian mainland (BARONI URBANI, 1971). It nests in the ground amongst stones and moss.

30. ***Leptothorax* (Temnothorax)** sp. ?

M a l t a : Buskett 19.VI.76 ☿.

A single worker was found at Buskett (Malta). The Santschi collection in Basel does not contain any *Leptothorax* species to which the Maltese specimen can be assigned. The Maltese species is clearly allied to *L. recedens*, but is larger than the average size of workers of this species (head width across eyes 0.75 mm; head width of *L. recedens* 0.625 mm) and may be a North African species. In sculpture, colour and pilosity it resembles *L. recedens* but the petiole node has a short flattened dorsal surface and is not sharply angled as in *L. recedens*.

31. ***Smithistruma baudueri** (Emery, 1875)

M a l t a : Wied il-Ghasel 17.IX.75 ☿☿; Birkirkara 2.IX.78 ☿☿.

Workers from Wied il-Ghasel were taken in soil under a deeply embedded stone. Those from Birkirkara were found nesting in the soil in semi-shade. Workers were seen to emerge during the evening and did not wander far from the nest. This cryptic hypogoeic species has a patchy distribution from Spain to Turkey and also occurs in Tunisia. It has been recorded from Corsica and Sardinia as well as from the Italian mainland (BARONI URBANI, 1971).

32. ***Triglyphothrix lanuginosum** (Mayr, 1870)

M a l t a : Birkirkara 2.IX.78 ☿☿; St. Anton Gardens 8.IX.78 ☿☿; Tal-Blata (Selmun) 5.II.78 ☿☿.

C o m i n o : Santa Marija Bay 25.V.76 ☿☿.

This is a common tramp species in the tropics and subtropics and has evidently been introduced into Malta probably with plant material. It has been previously referred to as *T. striatidens* (Smith) but BOLTON (1977) has shown that the latter name refers to a *Pheidole* species and that *T. lanuginosum* is the correct name. It has not yet been recorded from Italy.

33. **Tetramorium caespitum** (Linné, 1758)

Tetramorium caespitum caespitum L., EMERY, 1924: 12
Tetramorium caespitum (L.), BARONI URBANI, 1968a: 464; 1971: 135

M a l t a : Salina ☿☿; Birkirkara ♀♀♂♂; Buskett ☿☿; Fort St. Lucian (Marsaxlokk) ☿☿; Wied is-Sewda ☿☿; Wied il-Kbir (Spinola) ☿☿; Ghadira ☿☿; Gnejna ☿☿; Wied il-Ghasel ☿☿; Marsaxlokk ☿☿; Filfla ☿☿.

This common, wide-ranging species was taken from eleven localities in Malta on a number of occasions. BARONI URBANI (1968a) has

recorded it as frequent in Malta and on Gozo. Males and females taken in June and July at Birkirkara corresponded in all details with samples from North Europe. Males were seen to form compact swarms.

34. **Tetramorium semilaeve** André, 1881

Tetramorium semilaeve Er. André, BARONI URBANI, 1968a: 465
Tetramorium semilaeve semilaevis André, BARONI URBANI, 1971: 141

M a l t a : Mistra ☿☿; Buskett ☿☿; Wied il-Ghasel ☿☿; Ghajn Rihana ♂♂; Birkirkara ☿☿♂♂; Chadwick Lakes ☿☿; Bahrija ☿; Wied Qannotta ☿☿; St. Paul's Is. ☿.

C o m i n o : Santa Marija Bay ☿☿; Central ☿☿: near Village ☿☿.

G o z o : Calypso Cave ☿☿.

This species was found in a number of localities on Malta and also on Comino and Gozo. It occurs mostly in garigue communities and in valleys where it nests under stones in exposed or semi-shaded positions. In behaviour it is very similar to *T. caespitum*. Males were taken flying in compact swarms in June and July.

35. **Tetramorium diomedaea** Emery, 1908 [provisional name]

Tetramorium sp. (gruppo *ferox* Ruzsky?), BARONI URBANI, 1968a: 469

M a l t a : Wied Qannotta 25.III.78 ☿☿; Birkirkara VI.77 ♂.

The Maltese specimens have the wide petiole of the *T. ferox* group. The single male captured was taken after a swarming flight, among males of *T. semilaeve* from which it is easily distinguished. The workers of *T. diomedaea* compare well with examples of this same species from Israel and the Middle East. BARONI URBANI (1968a) found this species at Wied Qannotta, Buskett and at Mellieha Bay. Workers were taken from moist soil under stones. This species is only provisionally named *diomedaea* pending a revision of the palaearctic *Tetramorium* species complex. *T. diomedaea* has also been recorded from Sicily, Sardinia and Tremiti Islands.

36. **Strongylognathus insularis** Baroni Urbani, 1968

Strongylognathus insularis, BARONI URBANI, 1968a: 470
Strongylognathus insularis Baroni Urbani, BARONI URBANI, 1969: 156

M a l t a : Wied il-Ghasel VI.79 ☿☿.

The type locality of this species is Comino Island (Maltese Islands). The only nest found during the present study was constructed in hard packed soil in full sunlight. Workers were taken together with those of the host species, *T. semilaeve*, near the nest entrance. Alate queens and males of the host species were taken from the superficial layers of the nest. This contrasts with the majority of cases reported in the literature which suggest that production of host alates is normally suppressed by the parasitic *Strongylognathus*.

FORMICINAE

37. **Plagiolepis pygmaea** (Latreille, 1798)

Plagiolepis pygmaea (Latr.), BARONI URBANI, 1968a: 479; 1971: 169

M a l t a : Birkirkara ♂♂; Ghadira ♂♂; Wied is-Sewda ♀♀♂♂; Fiddien ☿☿; Bahrija ☿☿; Ghajn Tuffieha ☿☿; Buskett ☿☿; Ramla tat-Torri ☿☿; Wied il-Kbir (Spinola) ☿☿; Wied Qirda ☿☿; Wied Qannotta ☿☿; Attard ☿☿; Chadwick Lakes ☿☿; Ghajn Rihana ☿☿; Bahar ic-Caghaq ☿☿; Ta'Qali ☿☿; Mistra ☿☿; Wied Ghammieq ☿☿; Wied il-Qoton ☿☿; Il-Maqluba ☿☿; Wied Babu ☿☿; St. Paul's Is. ♀♀☿☿.

C o m i n o : Santa Marija Bay ♀♀☿☿; near Tower ♂♂☿☿; San Niklaw Bay ♀♀☿☿.

G o z o : Mgarr ☿☿; Qbajjar ☿☿; Rabat ☿☿; Wied tal-Lunzjata ☿☿.

This species is widely distributed all over the Maltese Islands. It is common throughout Central and Southern Europe, including Italy, from Portugal to the Caspian. It was found in many different habitats, nesting under stones or in rock fissures. Several queens were present in each nest. Workers were usually found foraging singly or in small groups and were sometimes taken from flower heads.

38. **Acantholepis frauenfeldi velox** Santschi, 1917

Acantholepis frauenfeldi integra var. *velox* Sant., EMERY, 1924: 12
Acantholepis frauenfeldi velox, BARONI URBANI, 1968a: 480
Acantholepis frauenfeldi velox Santschi, BARONI URBANI, 1971: 174

M a l t a : Wied Incita ♂; Wied il-Hmar (Gnejna) ☿☿; Wied Gnejna ☿☿; Wied il-Kbir (Spinola) ☿☿; Wied Qirda ☿☿; Wied il-Ghasel ☿☿; Wied is-Sewda ♀☿☿; Wied Babu ☿☿; Wied Ghammieq ☿☿; Buskett ♀☿☿; Ramla tat-Torri ☿☿; Il-Ballut (Marsaxlokk) ☿☿; Wied Qannotta ☿☿; Ghajn Rihana ☿☿; Chadwick Lakes ☿☿; Ta'Qali ☿☿; Ghajn Tuffieha

♀☿☿; Mistra ☿☿; Bahar ic-Caghaq ☿☿; Paradise Bay ☿☿; Fiddien ♀☿☿; Slugs Bay ☿☿; Birkirkara ♀♂☿☿; Salina ☿☿; Ghadira ☿☿; St. Thomas Bay ☿☿; Filfla ☿☿.

Comino: Santa Marija Bay ☿☿; Village ☿☿; San Niklaw Bay ☿☿; near Tower ☿☿; Cominotto ☿☿.

Gozo: Dwejra ☿☿; Iz-Zewwieqa ☿☿; Wied l-Infern ☿☿; Qolla s-Safra ☿☿; Qbajjar ☿☿; Rabat ☿☿.

This ant is very widespread and common and differs from the nominal form of *A. frauenfeldi* Mayr in its reddish colour. So far it has only been recorded from Tunisia and Malta. In the Maltese Islands it occurs mainly in dry valleys and arid situations nesting under stones in full sunlight. The workers are predatory, often hunting in groups. Alates were found in the nest in June and July.

39. **Camponotus barbaricus** Emery, 1904

Camponotus barbaricus Em., BARONI URBANI, 1968a: 482; 1971: 183

Malta: Wied Has-Sabtan ☿☿; Wied il-Ghasel ☿☿; Wied is-Sewda ☿☿; Wied Incita ♀♀♂♂☿☿; Wied Babu ☿; Wied Qannotta ☿☿; Wied il-Qoton ☿☿; Wied Qirda ☿☿; Wied il-Hmar (Gnejna) ☿☿; Wied Gnejna ☿☿; Wied Ghammieq ☿☿; Wied il-Kbir (Spinola) ☿☿; Fiddien ☿☿; Buskett ♀♂☿☿; Attard ☿☿; Birkirkara ♂♂☿☿; Ta'Qali ☿☿; Mistra ☿☿; Wardija ☿☿; Il-Qolla ☿☿; Bidnija ☿☿; Rabat ☿☿; Bahrija ☿☿; Bahar ic-Caghaq ☿☿; St. Thomas Bay ☿☿; Ghadira ♂☿☿; Chadwick Lakes ♀; Gzira ♀♀♂♂; Il-Ballut (Marsaxlokk) ☿☿; Ramla tat-Torri ☿☿; St. George's ☿☿; Paradise Bay ♀♀; L-Iklin ☿; Ghajn Rihana ♀♀♂♂☿☿.

Comino: Santa Marija Bay ☿☿; near Village ☿☿.

Gozo: Mgarr ☿☿; Iz-Zewwieqa ☿☿; Wied l-Infern ☿☿; Qolla s-Safra ☿☿; Qbajjar ☿☿; Rabat ☿☿.

This species is widely distributed on the Maltese Islands. Its range in Europe is restricted to Southern Spain and Italy but it is quite common in North Africa. The nests are constructed in soil, are usually deep and often extend under stones. The workers are mainly nocturnal and forage in small groups but some were seen attending aphids during the day. Large swarms of alates were observed during the morning at Wied Incita in June 1975. Males and alate females were seen to climb up plants and stones from which they took to the air.

40. **Camponotus lateralis** (Olivier, 1791)

Camponotus lateralis (Ol.), BARONI URBANI, 1968a: 486; 1971: 191

M a l t a : Wied il-Faham ☿☿; Wied Qannotta ☿☿; Wied Qirda ☿☿; Birkirkara ☿; Buskett ☿☿ ♂♂ ☿☿; Bahrija ☿☿; Fort St. Lucian (Marsaxlokk) ☿; Mistra ☿☿; Kirkop ☿; Ghajn Rihana ☿☿.

C o m i n o : Santa Marija Bay ☿ ☿☿.

G o z o : Mgarr ☿☿; Iz-Zewwieqa ☿.

This is a widespread species. BARONI URBANI (1968a) found it to be more common on Gozo than on Malta. In Europe it is widely distributed and common through the Centre and South including Italy and extends eastwards to the Balkans. It occurs also in North Africa. In the Maltese Islands it was found nesting in fallen branches and twigs usually in shade. Workers forage during the day. A single alate female was taken in June.

41. ***Camponotus (Colobopsis) truncatus** (Spinola, 1808)

M a l t a : Chadwick Lakes 15.VII.75 ☿☿; 31.VII.76 ☿ ☿☿.

This species is widely distributed throughout Southern Europe and North Africa and is here recorded from Malta for the first time. The single nest found was in a fallen poplar (*Populus alba*) branch. Alate queens were taken in July.

42. ***Paratrechina longicornis** (Latreille, 1802)

M a l t a : St. George's 14.IX.75 ☿☿, 8.VIII.76 ☿☿; Il-Maqluba 10.IX.77 ☿☿.

Workers of this very widely distributed, cosmopolitan species were found foraging in full sunlight from sheltered nests in rock fissures. In Italy and on the European mainland it does not nest in the open. Elsewhere it occurs in the Middle East and Japan, throughout most of tropical Africa and throughout tropical Asia.

43. **Lasius alienus** (Förster, 1850)

Formicina lasioides Em., BONDROIT, 1918: 27
Lasius alienus Först., BARONI URBANI, 1968a: 488; 1971: 200

M a l t a : Chadwick Lakes VII.75 ☿☿ ☿, VIII.77 ☿☿, VI.78 ☿☿;

Wied il-Faham 3.XI.75 ☿☿; Fort St. Lucian (Marsaxlokk) 11.IX.76 ☿☿; Birkirkara VIII.77 ♂, VI.78 ♀; Buskett VI.76 ☿.

Workers of this wide ranging, holarctic species appear quite typical. The queens however had narrower alitrunks compared with head width than in those from European populations and were similar in this respect to a light coloured *L. alienus* queen from Iran. The ratio, pronotal width to head width in European populations has an average value of 78.2. This ratio averaged 91.4 in the Maltese populations and approached that of *L. brunneus* (Fab.) in which the average ratio is 96.6. Moreover alate queens from the Maltese populations have darker wings than queens from European population. BARONI URBANI (1968a) found similar dark winged females at Birkirkara. The only putative *L. brunneus* worker taken in the present study was a dark nanitic individual found under a stone in humid soil at Buskett. In the absence of clearly determinate *L. brunneus* workers, it is therefore concluded that the dark winged queens with rather narrow alitrunks are probably a normal variation of southern populations of *L. alienus*. Nests of this species occurred commonly under stones in humid places.

44. **Lasius niger** (Linné, 1758)

Lasius emarginatus (Ol.), BARONI URBANI, 1968a: 487; 1971: 203

M a l t a : Chadwick Lakes 6.VIII.75 ♀, 31.VII.76 ♀♂; Birkirkara VIII.75 ☿☿, VIII.76 ☿☿, VI.78 ♀♀♂♂☿☿; Buskett 5.VIII.75 ☿☿, 7.VIII.76 ☿, 28.VII.76 ☿☿; Sliema ♀; Bahrija V.78 ☿☿.

Many of the Maltese specimens of the worker and queen castes studied had a reddish colouration and this is what probably led BARONI URBANI (1968a) to assign similar populations from Malta to *L. emarginatus* Ol. However, all samples examined in the present study compared well with those southern populations of *L. niger* from a wide geographic area from Japan to Madeira which have a similar reddish colour. The Maltese specimens have densely pilose appendages and heads in contrast to true *L. emarginatus* from France, the Channel Islands and Switzerland which have only a sparse pilosity on these structures (Figs. 9 & 10). Males also have the antennal scapes densely covered with short suberect hairs. The frontal triangle and clypeus are shining and not matt as in *L. emarginatus*. On Malta *L. niger* was found in humid and shady places nesting in holes and crevices, often near human habitations, but was never frequent.

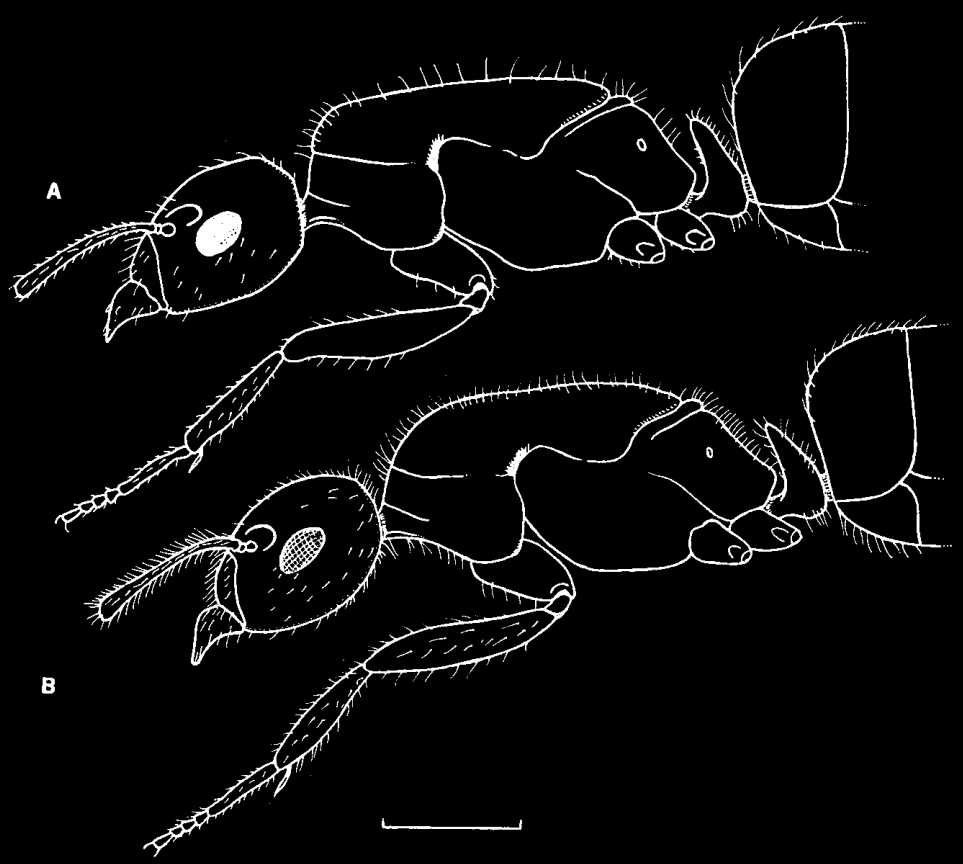

Fig. 9 - Heads and alitrunks of *Lasius* queens; lateral aspect; A, *L. emarginatus* (Ol.) from Tourrettes sur Loup, Alpes Maritimes, France; B, *L. niger* (L.) from Birkirkara, Malta; scale bar, 1 mm.

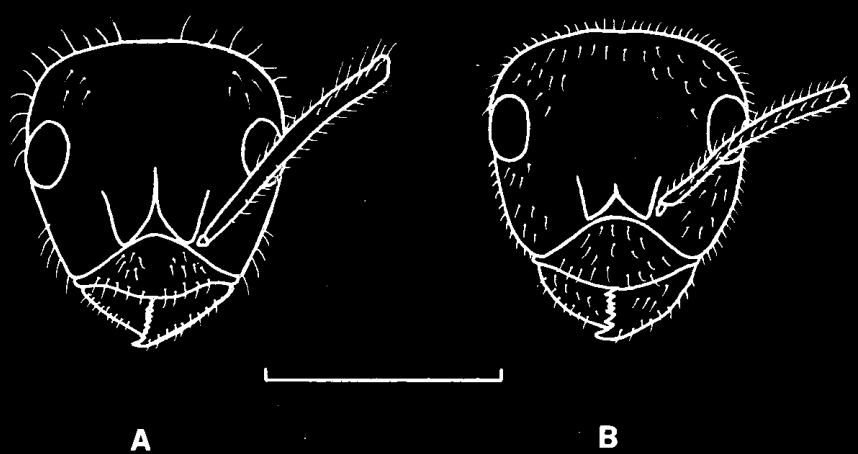

Fig. 10 - Heads of *Lasius* workers; frontal aspect; A, *L. emarginatus* (Ol.) from Monserratt, Spain; B, *L. niger* (L.) from Birkirkara, Malta; scale bar, 1 mm.

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ABSTRACT

On the basis of collections made on the Maltese Islands during 1975-1979, 44 species have been found of which only 29 have been previously recorded. Four species, *Messor caducus* (Motschulsky, 1839), *Cardiocondyla nigra* Forel, 1905, *Triglyphothrix lanuginosum* (Mayr, 1870) and *Paratrechina longicornis* (Latreille, 1802) are also new for the Italian fauna. Each species is listed and distributional, ecological and taxonomic data given. The Maltese populations of several different species show interesting morphological variations when compared to populations of the same species from the European mainland, and these are discussed. The following new combinations are proposed:
Aphaenogaster sicula for *A. crocea sicula* Emery, 1908
Aphaenogaster ionia for *A. semipolita ionia* Emery, 1915
Aphaenogaster inermis for *A. semipolita ionia* var. *inermis* Emery, 1908

Messor bouvieri for *M. sanctus bouvieri* Bondroit, 1918
Cardiocondyla nigra for *C. batesii* var. *nigra* Forel, 1905

A key to the sexual castes of Maltese *Tapinoma* (*T. simrothi*, *T. nigerrimum* and *T. erraticum*) is included. The hitherto undescribed male of *Leptothorax laestrygon splendidiceps* and the little known male of *Proceratium melinum* are figured while the male of *Diplorhoptrum santschii* is briefly described.

RIASSUNTO

In base a raccolte mirmecologiche effettuate nelle Isole Maltesi durante gli ann 1975-1979, viene accertata la presenza di 44 specie, 29 delle quali già segnalate precedentemente. Quattro specie: *Messor caducus* (Motschulsky, 1839), *Cardiocondyla nigra* Forel, 1905, *Triglyphotrix lanuginosum* (Mayr, 1870) e *Paratrechina longicornis* (Latreille, 1802) sono risultate nuove per la fauna italiana.

Per ogni specie sono forniti dati riguardanti la diffusione, l'ecologia e la tassonomia. Vengono discusse le interessanti variazioni morfologiche che le popolazioni maltesi di varie specie presentano rispetto alle popolazioni continentali delle stesse specie.

Sono proposte le seguenti nuove combinazioni:
Aphaenogaster sicula per *A. crocea sicula* Emery, 1908;
Aphaenogaster ionia per *A. semipolita ionia* Emery, 1915;
Aphaenogaster inermis per *A. semipolita ionia* var. *inermis* Emery, 1908;
Messor bouvieri per *M. sanctus bouvieri* Bondroit, 1918;
Cardiocondyla nigra per *C. batesii* var. *nigra* Forel, 1905.

È fornita una chiave di determinazione delle forme sessuate dei *Tapinoma* maltesi (*T. simrothi*, *T. nigerrimum*, *T. erraticum*).

Sono raffigurati il maschio non ancora noto di *Leptothorax laestrygon splendidiceps* e quello, poco conosciuto, di *Proceratium melinum*.

È brevemente descritto il maschio di *Diplorhoptrum santschii*.