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THE OCCURRENCE OF *ECHIMUM SABULICOLA* POMEL (= *E. CONFUSUM* DE COINCY) IN THE MALTESE ISLANDS

Michael Briffa¹

ABSTRACT

The occurrence of *E. sabulicola* Pomel in the Maltese Islands is confirmed and its local history and status discussed.

The Lower Coralline Limestone plateau at Ta' Cenc and the valley of Mgarr ix-Xini in Southern Gozo are well known for their floristic interest. The area between them, however, locally known as "Ros in-Newwiela" seems to have been unexplored. It was in this secluded locality that on April 4 1992, the writer discovered several colonies of *E. sabulicola* growing in crevices of friable rock on the exposed Globigerina cliff-top. The associated flora included: *Anthemis urvilleana* (DC) Sommier and Caruana Gatto, *Darniella melitensis* (Botsch.) Brullo, *Daucus rupestris* Guss., *Senecio leucanthemifolius* Poir., *Hedysarum glomeratum* F.G. Dietrich, *Minuartia geniculata* (Poir.) Thell., *Frankenia hirsuta* L., and *Gynandris sisyrinchium* (L.) Parl. Some robust specimens were also seen on the edge of the adjoining fallow fields, where they were also accompanied by *Avena barbata* Pott ex Link., *Hordeum leporinum* Link., *Hedysarum coronarium* L., and *Chrysanthemum coronarium* L.

E. sabulicola is a Western Mediterranean species. In Malta it was only recorded by Grech Delicata (1853) under the name of *E. maritimum* Willd. from Gnejna Bay, besides Arcangeli (1894) who mentions its occurrence in the Maltese Islands, possibly on the authority of Grech Delicata. Sommier and Caruana Gatto (1915), updating the name as *E. confusum* De Coincy, regarded Delicata's record as doubtful on the grounds that the latter's sole surviving specimen at the Valletta University Herbarium was, according to them, *E. arenarium* Guss. This, however, is debatable. These authors observe that the roots of *E. arenarium* cause a violet stain on the paper on which they are mounted, giving one to understand that it is a special characteristic distinguishing *E. arenarium* from other *Echium* species. This has been proved incorrect. In fact the roots of the specimens of *E. sabulicola* deposited at the writer's own herbarium caused the same violet stain. Could this erroneous assumption have influenced Sommier and Caruana Gatto in determining Delicata's sole seventy-year-old surviving specimen? They also state elsewhere in the same publication that the old specimens deposited at the Valletta University Herbarium were not in a reliable condition for identification. In their own words: "Esso (l'Erbario Universitario di Valletta) e' in pessime condizioni, e rappresenta evidentemente soltanto un residuo di quello che fu: ed anche quanto resta e' spesso inutilizzabile per trasposizioni o perdita di etichette, o perche le piante sono tante guaste da non essere riconoscibili." It is

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improbable that Delicata could have mistaken *E. arenarium* for *E. maritimum* because he included both species in his flora together with their respective different localities and flowering periods. Both Borg (1927) and Haslam et al. (1977) include this species in their floras on the authority of Grech Delicata, the latter under the updated name of *E. sabulicola* Pomel. In the Gozo populations the writer noticed a constant morphological variation: the stamens are never exerted. In this respect the local plants are closer to *E. confusum* as described by Borg.

The present record removes any doubts there might have been on the inclusion of *E. sabulicola* Pomel as an important element in the Maltese Flora. The fact that Malta lies well within its range of distribution and its occurrence in all the nearby islands of Lampedusa, Linosa and Pantelleria suggest that it is of native origin.

ACKNOWLEDGEMENT

Thanks are due to Edwin Lanfranco of the Malta University Biology Department for confirming the writer's identification of *E. sabulicola*.

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HASLAM, S.M., SELL P.D. & WOLSELY P.A.W. (1977) *A Flora of the Maltese Islands* Malta University Press lxxi + 560pp.

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OBSERVATIONS ON COURTSHIP AND MATING BEHAVIOUR IN MALTESE POPULATIONS OF THE KILLIFISH *APHANIUS FASCIATUS* (PISCES: CYPRINODONTIDAE)

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ABSTRACT

Courtship and mating behaviour of a Maltese population of *Aphanius fasciatus* kept in laboratory culture is described. Males showed a brightening of their coloration, increased aggression towards other males, and paid more attention to females during the period April–October. Males took the lead in courtship. Courtship behaviour consisted of a number of acts. Some involved touching the female and these appeared to be designed to arouse sexual interest; others served to exhibit the male's body and to inhibit the female from swimming away. Mating commenced with the female pushing itself into floating algal mats; the male responded by wrapping its body tightly round that of the female, following which ejaculation of eggs and sperm occurred.

INTRODUCTION

The killifish *Aphanius fasciatus* Nardo, 1827 occurs in coastal marine and brackish water habitats all round the Mediterranean except in the westernmost part (Tortonese, 1986). This species is very variable and numerous races and varieties have been described, most of which are of uncertain taxonomic status (Spillmann, 1961; Tortonese 1970a, b; 1973). *Aphanius fasciatus* is the only species of truly brackish water fish occurring in the Maltese Islands (Despott, 1919; Lanfranco, 1958). Maltese populations apparently show some differences from other Mediterranean populations and are sometimes regarded as a distinct race (Darmanin, 1979). Moreover, different sites in the Maltese Islands appear to support different ecotypes (Zammit & Van Es, 1980). Most Maltese populations are now declining and this species is listed as "vulnerable" in the Red Data Book for the Maltese Islands (Lanfranco & Schembri, 1989).

While there is a rich literature on the taxonomy, morphology and ecology of this species (for example: Steinitz, 1951; Cavicchioli, 1962; Torchio, 1967; Tigano, 1982; Penaz & Zaki, 1985), its behaviour has received much less attention. For local populations, some behavioural information has been given by Zammit (1975) and by Cilia (1986) but this is far from complete. The present work describes the courtship and mating behaviour in a Maltese population of *Aphanius fasciatus* kept in laboratory culture.

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MATERIAL AND METHODS

Fish were collected using a hand net from the brackish water pool at the Ghadira Nature Reserve, northern Malta, where there is a thriving population, transported to the laboratory and housed in glass aquaria of dimensions 75 x 45 x 45cm kept outside out of direct sunlight. The water was aerated and salinity was allowed to vary between 24 ppt (winter) and 30 ppt (summer), while the water temperature was allowed to vary with the air temperature, to mimic the natural variations in salinity and water temperature in the fish's natural habitat (Hilli et al., 1990). The aquaria were provided with a 1cm layer of sand and with floating mats of green filamentous algae; sand and algae were obtained from the Ghadira pool. The fish were fed daily on commercial fish food (Tetra Fin and Sera-Raffy P) supplemented by live mosquito larvae.

Maltese *Aphanius fasciatus* are reported to breed between May and August (Zammit, 1975; Cilia, 1986). During this period, a close watch was kept on the culture tank for fish showing signs of sexual activity. Such fish were used for observations on courtship behaviour. For these observations, individual male fish were isolated in observation tanks identical to the communal culture tanks except that they were smaller (45 x 18 x 20cm) and the water was not aerated. After a settling period of 24 hours, a gravid female fish was introduced into the tank and observations made from behind a screen. Observations were made on ten pairs of fish during the period April - October 1988. Times were measured using a stopwatch. During the experimental period, water temperature varied between 27-31°C while salinity was a constant 33ppt.

RESULTS

In the communal culture tanks, sexually active males were recognised by a brightening of their coloration, their aggression towards other males, and their attention to females. Based on observations of courting pairs kept in observation tanks, courtship behaviour was found to consist of a number of acts which are described below and illustrated in Fig. 1.

Watching The male hovers motionless watching the female from a distance of between 5 -15cm. Often the male's body is arched laterally, the caudal fin quivering vigorously.

Pursuing The male swims after the female at a speed just sufficient to maintain a position some 3cm behind.

Looping The male circles round the female in a horizontal plane at a distance of some 15cm. The female either remains stationary or moves forward slowly.

Zigzagging The male swims ahead of the female performing alternate sharp turns to the left and right.

Nudging The male prods the female on the dorsal part of her head with his snout. Occasionally the male nudges the female's head ventrally. Nudging behaviour is

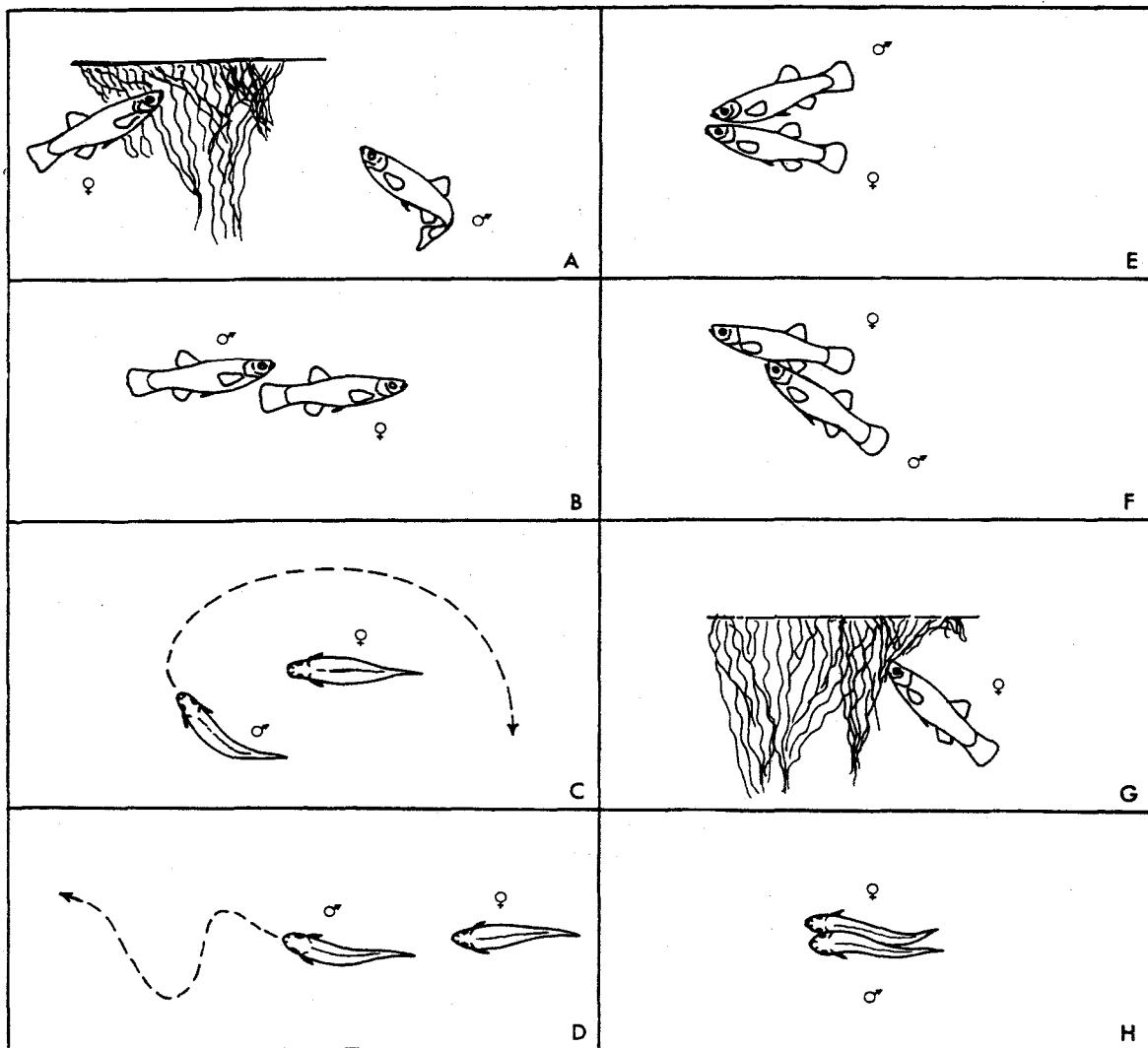


Fig. 1 Acts in the courtship behaviour of the killifish *Aphantius fasciatus* drawn from life. A, B, E, F and G show the fish in lateral view; Figs C, D and H show the fish in dorsal view.

followed by the pair swimming together with the male positioned just above the female and touching her on her head.

Butting The male prods the female's belly with his snout.

Pushing The female makes sudden attempts to push itself inside a floating algal mat.

Clasping This is the spawning posture and usually occurs after the female has pushed itself inside an algal mat. The male assumes an S-shape and wraps its body tightly round that of the female. Both fish quiver the posterior part of their body. During clasping the fish may assume a horizontal, vertical or oblique orientation and may even lie upside down with their ventral aspect facing the surface.

Jerking Claspings usually ends in a series of rapid jerks by the female. Following jerking, pair contact is often broken.

Courtship sequences were analysed by considering each of the nine acts defined above in turn and counting the number of times each of the other eight acts followed. Conditional probabilities for each two-act transition were calculated as described by Slater (1973). These data are presented in the form of an ethogram in Fig. 2.

On the basis of these data the typical courtship mating sequence seems to be as follows:

Following introduction of a gravid female into the observation tank, the male's initial reaction was 'watching' for a period of approximately 35 seconds, normally followed by furious 'pursuing' all over the available space. After approximately 2 minutes of this behaviour, the male started to 'nudge' the female. Females usually responded to this by attempting to move away from the male, whereupon the male showed 'looping' and 'zigzagging' displays. This whole sequence of 'nudging', 'looping' and 'zigzagging' lasted for periods of up to 14 minutes. The sequence either terminated abruptly with the male resuming 'watching' behaviour, or else the female started 'pushing' into an algal mat. The male most frequently responded to this by approaching her and either 'butting' or 'clasping'. 'Clasping' behaviour often occurred three or four times in succession with the female moving further into the algal mat each time. The sequence either terminated by 'jerking', if spawning was successful, or else reverted back to 'butting' and 'nudging'.

DISCUSSION

In *Aphanius fasciatus*, the male plays the leading role and is more persistent, frequently spending long periods of time pursuing the female. Obviously this costs the male considerable expenditure of energy, and courting males appear to lose weight rapidly, as indicated by their receding abdomen. The different acts making up the courtship sequence seem to have different functions. Thus 'nudging' and 'butting', both of which involve touching the female's body, appear to serve in arousing mating interest on the part of the female. 'Nudging' behaviour is common in the courtship displays of several killifish species, for example, *Aphysemion occidentalis*, *Nothobranchius rachovi* and *Rivulus maddalena* (Axelrod, 1987).

'Looping' and 'zigzagging' appear to serve a dual role. When the female is stationary, they serve to exhibit the male's body. However, if performed when the female is trying to swim away from the male, they may be strategies to inhibit the females from escaping; by moving slowly in front of the female in 'zigzagging', or by encircling her in 'looping', the male attempts to stop the female fleeing.

The role of 'clasping' appears to be that of ensuring maximum spawning success. By wrapping and pressing his body round the female's, the male may aid ejaculation of the eggs since in some fish, pressure on the ovary seems to facilitate expulsion of the ova from the ovarian lumen (Foster et al., 1969). Additionally such close proximity of the partners is likely to ensure fertilization of the majority of eggs. However, 'clasping' does not always lead to spawning. Careful examination of the algal filaments following 'clasping'

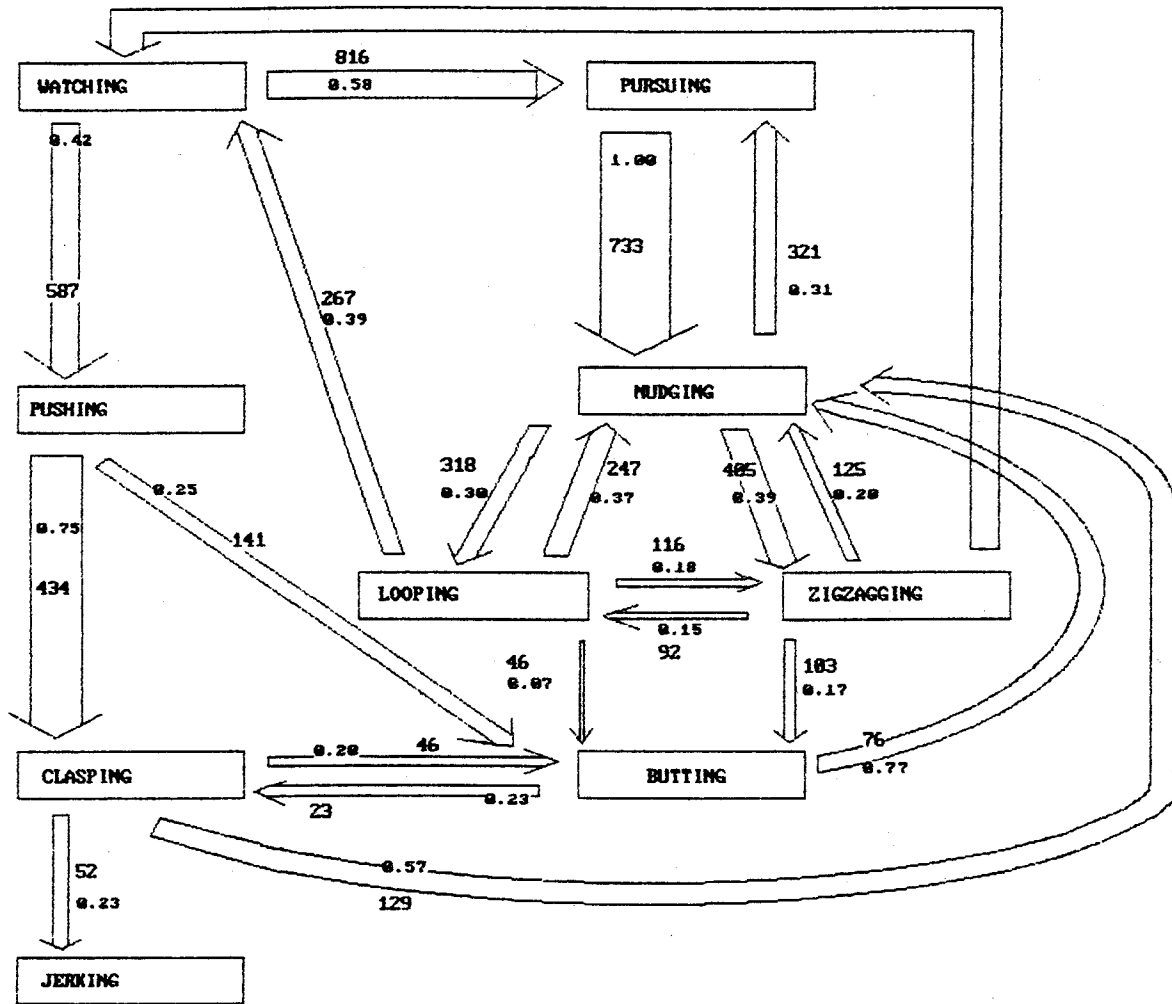


Fig. 2 Ethogram of courtship behaviour in the killifish *Aphantus fasciatus*. Arrow thickness is proportional to the conditional probability for the transition; conditional probabilities are also given as small figures; large figures are number of times the transition was observed.

behaviour by a pair of fish did not always reveal laid eggs. Thus, while courtship is always initiated by the male, it is likely that spawning success is affected mainly by female receptivity. Females often show resistance to courting males by fleeing from the site, or else, they may be induced to participate in the mating preliminaries, but then refuse to spawn. As in many other animal species, courtship behaviour in *Aphantus fasciatus* serves

to synchronize the activities of both partners, ensuring release of ova and sperm within a short interval of time, as well as providing an opportunity for mate choice, thereby reducing wastage of gametes (Halliday, 1983; Wootton, 1984).

ACKNOWLEDGEMENTS

We are grateful to Charles Gauci, officer in charge of the Ghadira Nature Reserve, for supplying fish; to Mark Borg and Carmel Hill for information about the ecology of the Ghadira pool; to Joseph Cilia for his suggestions regarding culturing; and to Sandro Lanfranco for drawing Fig. 2.

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NOTES ON SOME CERAMBYCIDAE (COLEOPTERA) FROM THE MALTESE ISLANDS

David Mifsud¹

ABSTRACT

Two species of cerambycid beetles are recorded. Of these, one is a new record for the Maltese Islands, while the other species is recorded for the first time since 1907.

Following the recent revision by Schembri and Sama of the Cerambycidae found in the Maltese Islands (Schembri & Sama, 1986), the present author adds a further species and confirms the presence of another species last recorded by Cameron and Caruana Gatto over eighty years ago (Cameron & Caruana Gatto, 1907).

Nathrius brevipennis (Mulsant, 1839)
(New record for the Maltese Islands).

Gozo: Marsalforn Valley. 6-VI-90 1 ex. leg. & Coll. D. Mifsud.

The specimen was attracted to light. Vegetation in the area, which may be considered as a disturbed habitat, included *Ceratonia siliqua* L. and *Morus* sp.

The larvae of *N. brevipennis* are known to develop in various broad-leaved trees particularly *Salix*, *Castanea*, *Quercus ilex*, *Pistacia*, *Ceratonia*. It has also been found on conifers including *Cupressus*, *Pinus halepensis* and *Picea excelsa* (Sama, 1988). In Sicily the larva is commonly found on *Ceratonia siliqua* (Sama & Schurmann, 1980).

It is difficult to ascertain the status of *N. brevipennis* in the Maltese Islands. The fact that it has never been recorded previously may be attributed to:

- (a) relatively recent introduction;
- (b) its small size, making it easily overlooked;
- (c) rarity or localised distribution;

The Maltese Islands would fall within the geographical range of distribution of the species. *N. brevipennis* is native to the Western Mediterranean, but has spread throughout the whole Mediterranean and is now nearly cosmopolitan, with records from Central Europe, Caucasus, Iran, China, North & South America (Sama, 1988).

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Trichoferus cinereus (Villiers, 1789)

Malta: St. Andrew's, 3-VII-91. 1 ex. leg. & Coll. D. Mifsud.

Since it was first recorded at Marsaxlokk and Mdina in 1907 (Cameron & Caruana Gatto, 1907), this species has not been encountered in the Maltese Islands. The present record is of a specimen taken from a coastal rocky steppe area dominated by *Foeniculum vulgare*. *Ficus carica* was also present.

T. cinereus is a xerophilic species, its larva developing in various broad-leaved trees. It can develop in very dry wood, and can also attack furniture, being thus considered to be a pest (Sama, 1988). In Sicily it is found especially on *Ficus carica* and *Quercus* sp. (Sama & Schurmann, 1980).

The species is known to occur in South Europe, North Africa, Asia Minor, Caucasus and Iran. It has been recorded from all of Italy, including the Islands (Sama 1988).

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Thanks are due to Dr. G. Sama for the determination of *Nathrius brevipennis* and to Mr. S. Schembri for providing important information. I would also like to thank Mr. E. Lanfranco for reading this paper and for his useful comments.

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RECORDS OF SPIDERS (ARACHNIDA: ARANEAE) FROM THE MALTESE ISLANDS (CENTRAL MEDITERRANEAN)

Alfred E. Baldacchino¹, David Dandria², Edwin Lanfranco³ and Patrick J. Schembri³

ABSTRACT

Following a brief review of the literature on Maltese Araneae, a list of species which have been confirmed as occurring in the Maltese Islands is given. This list is based on the taxonomic literature and on material in the authors' collections; in the latter case locality and collection data are included. The list comprises 74 species belonging to 21 families. The male palp and female epigyne of a number of species are illustrated.

INTRODUCTION

The spider fauna of the Mediterranean region is poorly known, especially that of the smaller islands. It is perhaps for this reason that the Araneae are one of the least studied groups of Maltese terrestrial invertebrates. We have been able to trace less than a dozen publications which deal with or mention Maltese spiders; of these, most are old works which are not readily obtainable. Moreover, much of this literature consists of semi-popular articles or works of a non-scientific nature such that the species mentioned in them need to be confirmed as actually occurring locally. In many cases we have not been able to relate the names given in these works to araneid taxa as currently understood.

The purpose of the present work is to give an account of our current knowledge of the araneid fauna of the Maltese Islands as a basis for future work on the group. It consists of two parts. We first survey the literature on local spiders, reporting the species as originally given in the various publications. We next give a list of species which have been confirmed as occurring in the Maltese Islands. This list is based on two sources: firstly, the taxonomic literature, in effect the four publications by Pocock (1903), Brignoli (1979; 1982) and Cantarella (1982); secondly, on material in the authors' collections which has been identified by taxonomists specializing in the group. While reflecting the present state of our knowledge of Maltese spiders, this report also highlights the large amount of work that still needs to be done before our knowledge of the group is anywhere near complete. Suffice it to mention that apart from a large amount of as yet unidentified material belonging to the 21 families treated in the species list below, we have specimens belonging to at least eight other families (Clubionidae, Dictynidae, Leptonetidae, Prodidomidae, Uloboridae, Oecobiidae, Oonopidae, Palpimanidae) still awaiting identification.

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LITERATURE SURVEY

The earliest reference to Maltese spiders we could trace was in Giovanni Gulia's *Il prontuario di storia naturale maltese*, a biological vocabulary published over the period 1889-1890 and giving the scientific names, and English and Italian vernacular equivalents to the Maltese common names of local plants and animals. This work mentions two spiders: "*Aranea scenica*" and "*Epeira diadema*" (Gulia 1889-90).

In 1903 R.I. Pocock described a new species of trapdoor spider which he named "*Nemesia arboricola*" from material collected in Malta by the Rev. C. Redman S.J. (Pocock, 1903). As far as we are aware, this is still the only record of this species from anywhere.

Ten years later, Giovanni Gulia attended the 9th International Zoological Congress in Monaco where he read a paper outlining the state of knowledge of the zoology of the Maltese Islands. After pointing out what little work had been done on Maltese Arachnida, Gulia gave a brief list of species noted by him, including "*Aranea scenica*", "*Tegenaria domestica*" and "*Epeira diadema*" (Gulia, 1914).

It is only in 1966 that the next work which mentions Maltese spiders is found. This is an unpublished manuscript by A. Cremona consisting of a glossary of Maltese technical terms covering a wide range of scientific and technological fields, deposited in the Melitensia collections of the University of Malta Library. Included in this work are the following araneids: "*Cheniza savagei*" (sic!) (probably referring to *Cteniza savagei* [Rossi, 1788]), "*Nemesia cementaria*", "*Argyroneta aquatica*" (sic!), "*Pholcus phalangioides*", "*Tegenaria domestica*", "*Aranea scenica*", "*Epiblemeum scenicum*" and "*Epeira diadema*" (Cremona, 1966).

In 1975 one of us (PJS) contributed two articles on the spiders of the Maltese Islands as part of a series on the natural environment which appeared in a local newspaper. In these articles the following genera/species were mentioned by name: "*Dysdera*", "*Segestria*", "*Scytodes*", "*Pholcus phalangioides*" (sic!), "*Araneus*", "*Argiope lobata*", "*Cyrtophora citricola*", "*Argyroneta aquatica*", "*Plexippus paykulli*"; general reference to local members of the families Theridiidae, Ctenizidae, Lycosidae and Thomisidae was also made (Schembri, 1975a, b).

In his review of the Italian species of the family Araneidae, Paolo Brignoli recorded "*Argiope lobata*" from the Maltese Islands (Brignoli, 1979), while in his review of the Palaearctic Filistatidae, he recorded "*Filistata insidiatrix*" (Brignoli, 1982).

In 1982 the Italian araneologist Teresa Cantarella published the first taxonomic work on a group of Maltese spiders, the family Salticidae, in which she listed 15 species as occurring in the Maltese Islands, including one, *Aelurillus schembrii*, new to science (Cantarella, 1982). A full list of the species recorded in this work is given in the species list which follows.

In a semi-popular article on spiders in *Civilization*, an encyclopaedia on Maltese culture, history and contemporary arts, one of us (AEB) mentioned the following species by name: "*Argiope lobata*", "*Thomisus onustus*", "*Xysticus caperatus*", "*Micrommata virescens*".

"*Synaema globosum*", and made general allusion to Maltese members of the families Lycosidae, Ctenizidae, Pholcidae, Agelenidae, Araneidae, Salticidae and Pisauridae (Baldacchino, 1983).

The June 1983 issue of *Potamon*, the magazine of the Society for the Study and Conservation of Nature, was dedicated to the natural history of St. Paul's Islands. One of us (PJS) contributed an article on the non-insect invertebrate fauna of the islets in which the following genera/species were mentioned: "*Araneus* spp", "*Heliophanus tribulosus*", "*Dysdera*", "*Ariadna*", "*Loxosceles*", "*Scytodes*" and "*Textrix*", together with an unidentified species of the family Palpimanidae and another of the family Gnaphosidae, possibly "*Zelotes*", and unidentified species of Linyphiidae (Schembri, 1983).

In his list of the flora and fauna of Ghar Dalam Cave, George Zammit Moempel (1986) recorded two spiders: "*Aulacocyba subitanea* (O.P.-C.)" and "*Pholcus phalangioidae*" (sic!).

In the first volume of his Maltese-English dictionary, Joseph Aquilina cites under "Brimbo" (the Maltese word for "spider") the same names given by Gulia (1989-90) and Cremona (1966) and an additional two species "*Lycosa tarantula*" (sic!) and "*Tarantula apuliae*" (sic!) in addition to the genera "*Floronia*", "*Episinus*" and "*Segestria*" (Aquilina, 1987).

The Red Data Book for the Maltese Islands, published in 1989, lists Maltese plants and animals which are endemic, threatened, or of special scientific interest. The following araneid species are included: *Nemesia arboricola*, *Tetragnatha extensa*, *Argiope bruennichi*, *Aelurillus schembrii* and *Neaetha membrosa* (Schembri, 1989).

SPECIES LIST

In the species list below, the following abbreviations are used:

AEB - A.E. Baldacchino; LC - L. F. Cassar; DD - D. Dandria; EL - E. Lanfranco;
JLS - J.L. Schembri; PJS - P.J. Schembri; SPS - S.P. Schembri; m - male; f - female;
j - juvenile.

The figures, based on material preserved in 70% ethanol, were drawn by D. Dandria with the aid of a stereomicroscope.

CTENIZIDAE

The following species has been recorded: "*Cheniza salvagei*" (sic!) (Cremona 1966, Aquilina, 1987), probably referring to *Cteniza sauvagei* (Rossi, 1788). We have no material corresponding to this species.

NEMESIIDAE

Nemesia arboricola Pocock, 1903

Nemesia arboricola sp. n.; Pocock, (1903)

Nemesia arboricola; Schembri, (1989)

This trapdoor spider differs from other species of *Nemesia* in constructing its dwelling on the trunks of trees rather than burrowing underground. Pocock's description of the female and nest, based on material collected by the Rev. C. Redman, indicates that more than one specimen was available. Despite its large size (c. 24mm), this species has not been recorded since its original description and may thus be regarded as an endemic species, now probably extinct.

Nemesia macrocephala (Ausserer, 1891) (Fig. 1a)

? *Nemesia cementaria*; Cremona (1966)

MALTA: Birkirkara ix.74, 1 m., P.J.S. leg., 8.iv.75, 1 m., J.L.S. leg., DD det.; Buskett 7.ix.76, 1 f., PJS leg., A.E. Decoe det; Mellieha 10.xi.74, 1 m., P.J.S. leg., DD det.

St. PAUL'S ISLANDS: 20.iv.75, 1 f., PJS leg., A.E. Decoe det.

This trap-door spider usually constructs its burrow in holes on the rocky sides of valleys and in soil banks.

FILISTATIDAE

Filistata insidiatrix (Forskoel, 1775) (Fig. 1d)

Filistata insidiatrix; Brignoli (1982)

MALTA: Birkirkara 6.vii.74, 1 f., PJS leg. F. Wanless det.; Buskett 24.vi.75, 4 ff., SPS leg. DD det.; Siggiewi 7.vi.87, 1 f., DD leg. & det.; Tas-Salib (Rabat) 5.iv.87, 1 f., 1 m., 1 j., DD leg. & det.; Wied id-Dis 7.iii.87, 3 ff., DD leg. & det.; Wied il-Ghasel (Mosta) 29.iv.84, 1 f., PJS leg., DD det.; Wied Qirda 24.iv.87, 1 f., 15.v.87 1 f., DD leg. & det.

Locally, this is a rather common species which constructs its web under loose bark, especially that of carob trees, *Ceratonia siliqua*, and in holes. In the latter case, the entrance has several radiating spokes.

DYSDERIDAE

Dysdera crocata C.L. Koch 1839

MALTA: Sliema 20.iii.88, 1 m., 8.v.88, 2 ff., DD leg. & det.; Tas-Salib (Rabat) 5.iv.87, 1 f., DD leg. & det.

This common species is found under stones and among leaf litter.

SEGESTRIIDAE

Segestria senoculata (Linnaeus, 1758)

MALTA: Buskett 3.vi.74, 1 f., PJS leg., F. Wanless det.

ZODARIIDAE

Zodarion sp.

MALTA: Selmun 13.vi.74, 1 f., PJS leg., F. Wanless det.

PHOLCIDAE

Pholcus phalangioides (Fuesslin, 1775)

Pholcus phalangioides; Cremona (1966)

Pholcus phalangioides (sic!); Schembri (1975a)

Pholcus phalangioidae (sic!); Zammit Moempel (1985)

Pholens phalangioides (sic!); Aquilina (1987)

MALTA: Attard 12.iv.81, 1 j., AEB leg., P. Brignoli det.; Kalkara 26.ii.82, 1 f., AEB leg., P. Brignoli det.

GOZO: Colypso's Cove 4.iii.84, 1 f., 1 j., E. Christian leg., K. Thaler det.

A very common species usually associated with human habitations. Frequently found on ceilings of cellars, store-rooms etc.

Holocnemus pluchii (Scopoli, 1763) (Fig. 1 b & c)

MALTA: Buskett 19.xi.84, 4 mm., SPS leg., P. Brignoli det.; Ghodira 27.vii.82, 1 f., AEB leg., P. Brignoli det.; Siggiewi 1.v.85, 1 f., DD leg. & det.; Targa Gap 2.xi.82, 2 mm., 3 ff., PJS leg., P. Brignoli det.; Wied Qannotta 18.ix.82, 5 ff., PJS leg., P. Brignoli det.; Wied is-Sewda 5.vi.87, 1 f., DD leg. & det.

COMINO: Blue Lagoon 26.ix.82, 2 ff., 2 mm., C. Briffa leg., P. Brignoli det.

Locally, this species is frequently met with in rubble walls where it constructs its copious web in the larger crevices between the stones.

SCYTODIDAE

Scytodes bertheloti Lucas, 1838

MALTA: Birkirkara 3.ix.75, 1 f., PJS leg., P. Brignoli det.

ST. PAUL'S ISLANDS: 27.vii.75 1 f., PJS leg., P. Brignoli det.

Scytodes velutina Lowe, 1836

MALTA: Bighi (Kalkara) 28.iii.82, 1 f., AEB leg., P. Brignoli det.

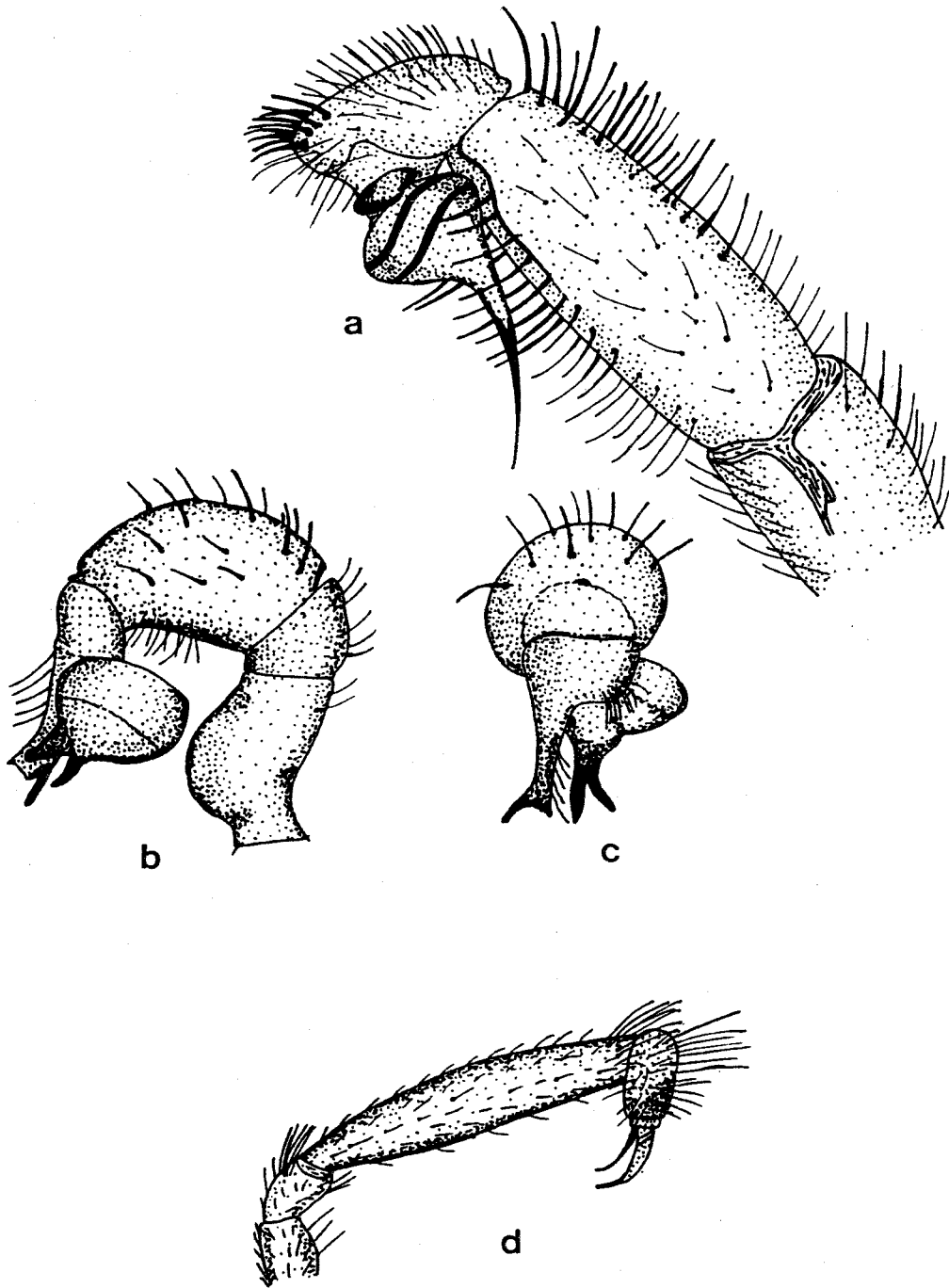


Fig. 1 (a) *Nemesia ? macrocephala* male: palp (x30); (b), (c) *Holocnemus pluchii* male: palp (x30); (d) *Filistata insidiatrix* male: palp (x20).

LOXOSCELIDAE

Loxosceles? rufescens (Dufour, 1820)

MALTA: Ghadira 6.v.81, 1 j., AEB leg., P. Brignoli det.; Kalkara 6.iv.82, 1 j., AEB leg., P. Brignoli det.
ST. PAUL'S ISLANDS: 20.iv.75; 27.vii.75, PJS leg., P. Brignoli det.

GNAPHOSIDAE

Haplodrassus severus (C.L. Koch, 1839)

MALTA: Salina 13.iii.88, 1 m., DD leg., G. Levy det.; Siggiewi 19.ii.89, 1 m., DD leg., G. Levy det.;
Wied Qirda 7.iv.87, 1 f., DD leg., G. Levy det.
FILFLA ISLAND: Plateau 23.ii.90, 2 mm., 2 ff., PJS leg., G. Levy det.

Nomisia exornata (C.L. Koch, 1839)

COMINO: 22.iv.87, 1f., DD leg., G. Levy det.

Nomisia recepta (C.L. Koch, 1839)

MALTA: Siggiewi 23.v.87, 1 m., DD leg., G. Levy det.; Sliema 8.v.88, 1 m., DD leg., G. Levy det.; Wied
Qirda 26.vi.87, 1 f., DD leg., G. Levy det.

Poecilochroa sp.

MALTA: St. Andrews 25.iv.87, 1 f., DD leg., G. Levy det.

Scotophaeus blackwalli (Thorell, 1871)

MALTA: Mosta 9.i.89, 1 f., DD leg., G. Levy det.

Trachyzelotes sp.

MALTA: Floriana (Bellissebh) 6.v.84, 1 fj., PJS & M. Gaudi leg., G. Levy det.

Zelotes sp. 1

MALTA: Wied il-Kbir 12.iii.88, 1 f., DD leg., G. Levy det.
FILFLA ISLAND: 23.ii.90, PJS leg., DD det.

Zelotes sp. 2

FILFLA ISLAND: 7.vii.82, 3 ff., AEB leg., G. Levy det.

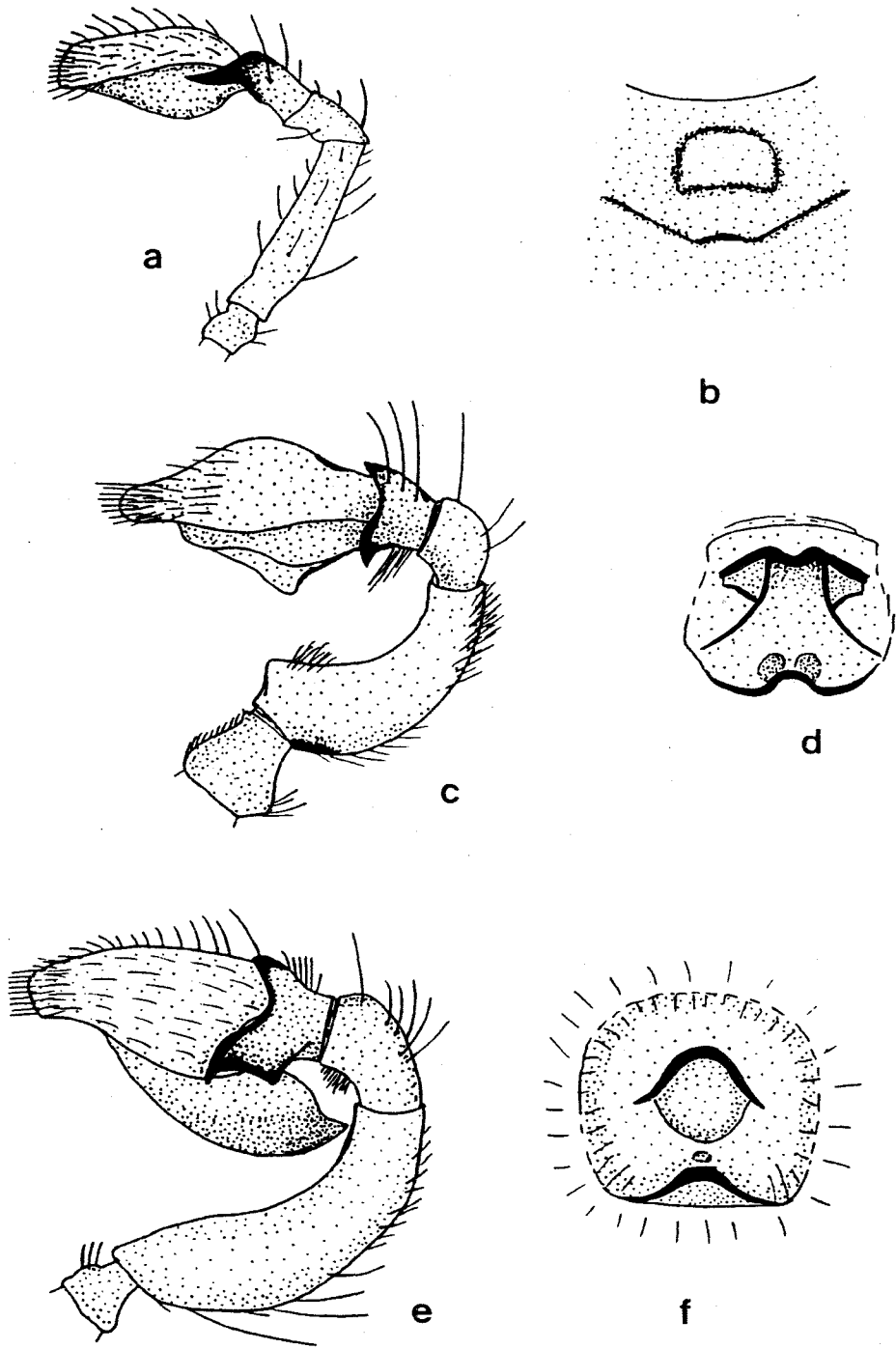


Fig. 2 (a) *Chalcoscirtus infimus* male: palp (x 40); (b) *C. infimus* female: epigyne (x 140); (c) *Menemerus semilimbatus* male: palp (x 40); (d) *M. semilimbatus* female: epigyne (x 140); (e) *M. taeniatatus* male: palp (x40); (f) *M. taeniatatus* female: epigyne (x140).

SALTICIDAE

In addition to the species listed below the following species has also been recorded: *Salticus scenicus* (Gulia, 1889-90; 1914; Cremona, 1966; Aquilina 1987; [all as *Aranea scenica*, and Cremona and Aquilina also as *Epiblemum scenicum*]). We have no material corresponding to this species. All 15 species of salticids which follow were recorded by Cantarella (1982). Here, only new locality records are given.

Aelurillus schembrii Cantarella 1982.

Aelurillus schembrii; Schembri (1989)

COMINO: Hotel area 3.v.87, 1 f., DD leg. & det.; Tower area 22.iv.87, 1 f., DD leg. & det.

This species was first collected from Comino in 1975 and has since been recorded also from Malta and from Sicily. (Cantarella, 1982).

Chalcoscirtus infimus (Simon, 1868) (Fig. 2 a & b)

Cyrtba algerina (Lucas, 1846) (Fig. 3f)

Evarcha jucunda (Lucas, 1846) (Fig. 4d)

Evophrys rufibarbis (Simon, 1868) (Fig. 3e)

Hasarius adansonii (Sav. & Aud., 1825)

MALTA; Sliema 1.viii.87, 1 f.; 26.iii.87, 1 f.; 11.v.87, 1 m.; 21.v.87, 1 m.; 14.vi.87 1 m.; DD leg. & det.

Common inside houses.

Heliophanus tribulosus Simon, 1868 (Fig. 4 a & b)

Heliophanus tribulosus; Schembri (1983)

MALTA; Siggiewi 26.iv.87, 1 m., DD leg. & det.

COMINO; Sta. Marija Bay 10.iv.88, 1 m., DD leg. & det.

Icius hamatus (C. L. Koch 1846) (Fig. 3d)

MALTA; Siggiewi 7.vi.87, 1 f., DD leg. & det; Sliema 14.v.87, 1 m., DD leg. & det.

Menemerus semilimbatus (Hahn, 1827) (Fig. 2 c & d)

Menemerus taeniatus (L. Koch, 1867) (Fig. 2 e & f)

MALTA; Pieta Glacis 2.vi.87, 1 m., DD leg. & det.; Ta' Wied Rini (Bahrija) 1.v.87, 1 j., DD leg. & det.

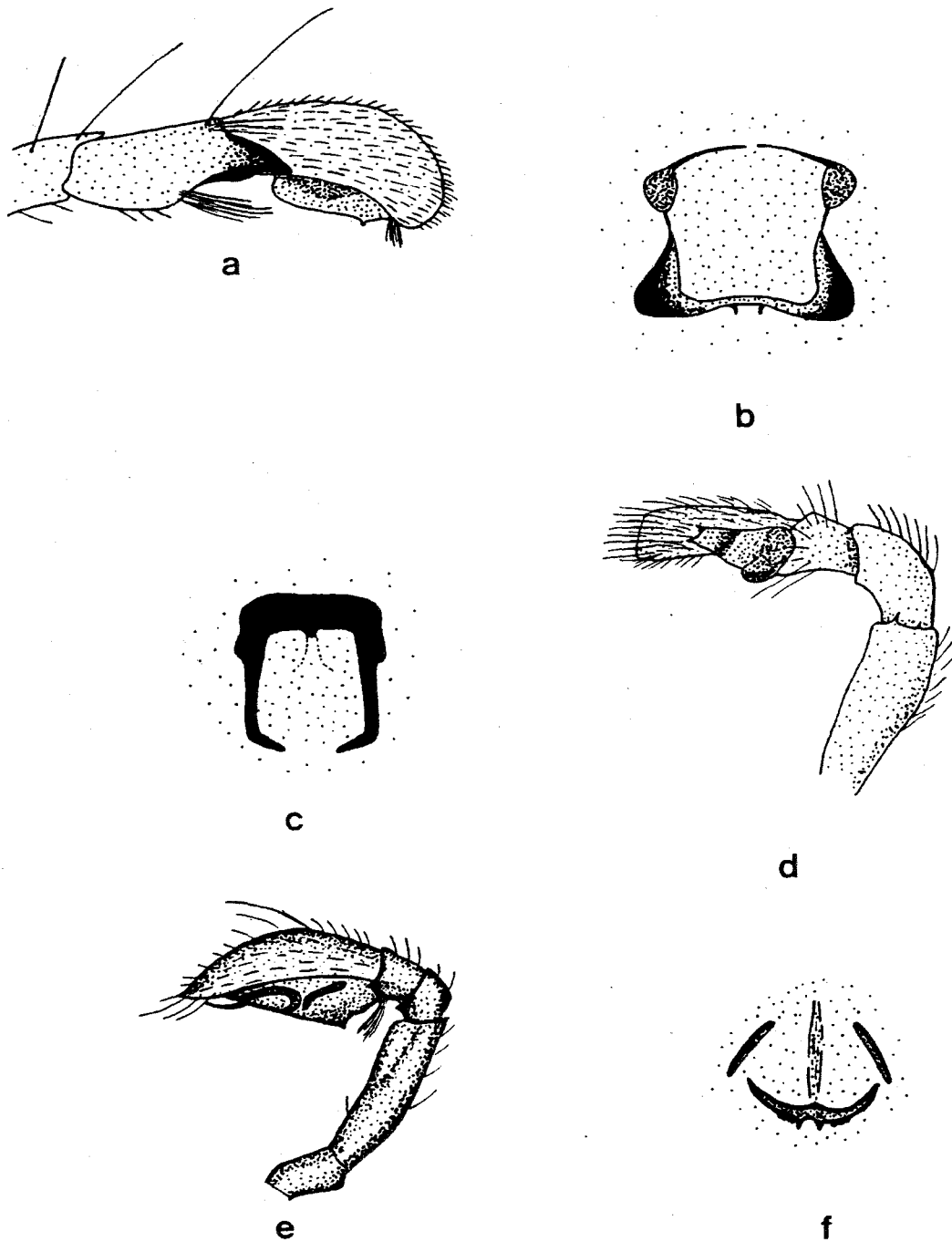


Fig. 3 (a) *Sallicus mutabilis* male: palp (x 60); (b) *S. mutabilis* female: epigyne (x 140); (c) *S. simanii* female: epigyne (x 140); (d) *Lcius hamatus* male: palp (x 45); (e) *Evophrys rufibarbis* male: palp (x 40); (f) *Cyrba algerina* female: epigyne (x 100).

Neaetha membrosa (Simon, 1868)
Neaetha membrosa; Schembri (1989)

This species is listed in the Red Data Book for the Maltese Islands as a rare species, threatened due to extensive habitat disturbance. (Schembri, 1989).

Phlegra bresnieri (Lucas, 1846) (Fig. 4 c)

MALTA; Siggiewi 27.iii.88, 1 j., DD leg. & det.

Plexippus paykullii (Sav. & Aud., 1825)

MALTA; Burmarrod 6.vi.87, 1 m., DD leg. & det.; Sliema 5.vii.87, 1 f., DD leg. & det.

This large spider with distinctive white and brown markings is often found in or near houses.

Salticus mutabilis Lucas, 1846 (Fig. 3 a & b)

MALTA; Pieta Glacis 2.vi.87, 1 m. 2 jj., DD leg. & det.; Sliema 28.v.87, 1 m., DD leg. & det.; 13.vi.87, 1 m., DD leg. & det.; Tas-Salib (Robot) 5.iv.87, 1 m., DD leg. & det.; Wied Qirda 7.iv.87, 1 m., DD leg. & det.

Salticus simoni Kulczynski, 1907 (Fig. 3 c)

MALTA; Sliema 2.iii.87, 2 jj.; 19.iii.87, 1 j.; 21.v.87, 1 f.; 8.vi.87, 1 f., DD leg. & det.

SPARASSIDAE

Micrommata ligurinum (C. L. Koch, 1845)
Micrommata virescens; Baldacchino (1983)

MALTA; Bidnija 26.iii.74, 1 f., LC leg., G. Levy det.; Ghajn Tuffieha 24.ii.90, 1 f., DD leg., G. Levy det.; Noxxor 26.iii.88, 1 f., DD leg., G. Levy det.; Wied il-Kbir 12.iii.88 1 m., DD leg., G. Levy det.

This species has often been previously misidentified as *M. virescens* (Clerck) [= *M. roseum* (Clerck, 1757)].

NESTICIDAE

Nesticus sp.

MALTA; Girgenti cove 25.ii.84, E. Christian leg., K.Thaler det.

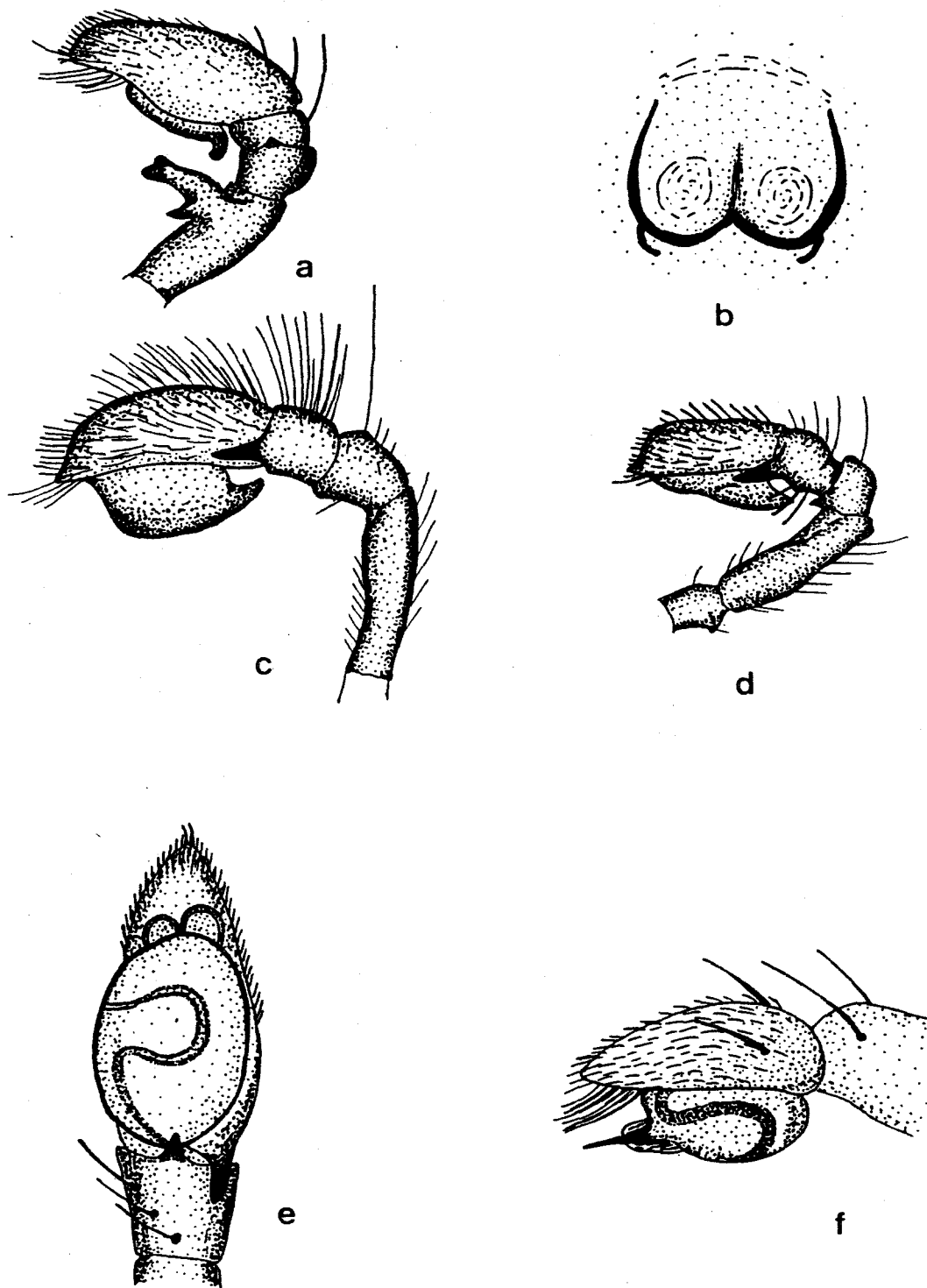


Fig. 4 (a) *Heliophanus tribulosus* male: palp (x 45); (b) *H. tribulosus* female: epigyne (x 140); (c) *Phlegra bresnieri* male: palp (x 45); (d) *Evarcha jucunda* male: palp (x 40); (e) *Philodromus pulchellus* male: palp (x 50); (f) *Tibellus? oblongus* male: palp (x 50)

THOMISIDAE

Oxyptila sp.

COMINO: 23.iii.75, PJS leg., G. Levy det.

Oxyptila cf. *brevipes* (Hahn, 1831)

MALTA: Birkirkara 23.ix.74, PJS leg., F. Wanless det.

Oxyptila aff. *nigrita* (Thorell, 1875) (Fig. 7 a)

MALTA: Mgjebah 28.ix.85, 1 m., D. Johnson leg., G. Levy det.

This species may actually be new (G. Levy, personal communication).

Runcinia lateralis (C. L. Koch, 1838) (Fig. 6 f)

MALTA: Fomm ir-Rih 11.vii.75, 1 f., PJS leg. & det.; Ghodira 22.v.80, 1 f., AEB leg., G. Levy det.; Mellieha 19.vi.82, 1 m., PJS leg. & det.; Mistra 7.vii.82, 1 f., PJS leg. & det.; San Anton Gardens summer 1973, 1 f., SPS leg., PJS det.; Wied Babu 7.vii.79, 1 f., PJS leg., G. Levy det.; Wied Hesri 11.ix.82, 3 jj., PJS leg. & det.; Wied Qannotta 2.vii.82, 2 mm., 1 f., 2 jj., PJS leg. & det.

Synaema globosum (Fabricius, 1775) (Fig. 6 a)

Synaema globosum; Baldacchino (1983)

MALTA: Buskett 29.iii.75, 2 jj., PJS leg. & det.; Delimara 25.v.81, 1 f., AS(?) leg., G. Levy det.; Dragonara Cove (entrance) 14.ix.75, 1 m., PJS leg. & det.; Dingli Cliffs 9.v.83, 1 f., M. Gauci leg., PJS det.; Gnejna 10.iv.82, 1 f., JLS leg., PJS det.; Ghodira 1.vii.80 1 f.; 30.v.80 1 m.; 24.iv.81, 1 f., 1 m.; 27.iv.81, 1 f., 1 m., AEB leg., G. Levy det.; Manoel Island 5.iii.87, 1 f.; 27.v.87, 1 f., 1 m., DD leg. & det.; Mistra 7.vii.82, 8 jj., PJS leg. & det.; Mosta 15.iv.87, 1 m., DD leg. & det.; Pietà Glacis 2.vi.87, 1 f., DD leg. & det.; St. Andrews 25.iv.87, DD leg. & det.; St. Julians 4.v.81, 1 f., AEB leg. & det.; 24.iii.87 1 f., DD leg. & det.; Tal-Qroqqa 17.v.74, 1 f., JLS leg., PJS det.; Targa Gap 2.xi.82, 1 j., PJS leg. & det.; Tas-Salib (Robot) 5.iv.87, 2 ff., 1 m., DD leg. & det.; Wied Gerzuma 10.vii.82, numerous jj., PJS leg. & det.; Wied Hesri, 11.ix.82, numerous jj., PJS leg. & det.; Wied il-Foham 17.iv.83, 1 m., M. Gauci leg., PJS det.; Wied il-Ghasel 20.iv.81, 1 f., 1 m., SPS leg., PJS det.; Wied Qannotta 2.vii.82, 1 f., numerous jj.; 18.ix.82 2 jj.; 8.v.83, 1 f.; 12.v.83, 1 m., PJS leg. & det.; Wied is-Sewda 1.v.75, J. Cilio leg., PJS det.; 16.iv.87, 1 f., DD leg. & det.

COMINO: 13.iv.80, 2 ff., AEB leg. & det.; Blue Lagoon 26.ix.82, 1 j., PJS leg. & det.

The commonest local crab spider, very frequently found on flower-heads of *Chrysanthemum coronarium* and *Daucus* spp.

Thomisus onustus (Walckenaer, 1805) (Fig. 6 b)

Thomisus onustus; Baldacchino (1983)

MALTA: Bighi (Kalkara) 22.iv.82, 1 f., AEB leg., G. Levy det.; Chodwick Lakes 12.ix.74, 1 j., PJS leg. & det.; Dingli (Villa Psaigon) 26.iv.81, 1 f., AEB leg., G. Levy det.; Ghodira 27.v.81, 1 f., AEB leg., G. Levy det.; Manoel Island 5.iii.87, 1 f., DD leg. & det.; Mistra 7.vii.82, 1 m., 3 jj., PJS leg. & det.; Msida 25.vii.75, 1 m., LC leg., G. Levy det.; Salina 21.ix.82, 1 j., PJS leg. & det.; San Anton Gardens

summer 1973, 1 m., SPS leg., PJS det.; St. Andrews 12.iii.87, DD leg. & det.; Tal-Qroqq 21.ii.74, 1 f., PJS leg. & det.; Ta' Qali 15.vii.82, 2 mm., 1 j., PJS leg., G. Levy det.; Wardija 16.v.87, 1 f., DD leg. & det.; 5.vi.87, 1 f., PJS leg., G. Levy det.; Wied Hesri 11.ix.82, 1 m., 1 j., PJS leg. & det.; Wied il-Ghasel 2.viii.79, 1 j., JLS leg., PJS det.; Wied il-Kbir (Zebbug) 10.v.77, 3 ff., 1 m., PJS leg., G. Levy det.; Wied Qannotta 2.vii.82, 1 j., PJS leg. & det.
GOZO: Dwejra 22.ix.83, 1 f., M. Gauci leg., PJS det.; Xlendi Valley 20.iv.81, 1 f., PJS leg., G. Levy det.
COMINO: Cominotto 22.viii.75, 1 f., SPS leg., G. Levy det.

This rather common species is found on flowers, often adapting its coloration to match that of the flowers it is living on.

Xysticus off. *audax* (Schrank, 1803) (Fig. 6 c & d)

MALTA: Ghodira 5.iii.81, 1 f., AEB leg., G. Levy det.; San Pawl tat-Targa iii.83, 1 f., D. Johnson leg., PJS det.; Tal-Qroqq 17.v.74, 1 f., JLS leg., PJS det.; Wied Babu 17.ii.83, M. Gauci leg., PJS det.; Wied Qannotta 14.iii.81, 1 f., SPS leg., PJS det.
COMINO: 4.iv.82, 1 m., AEB leg., G. Levy det.

Xysticus? *bufo* (Dufour, 1820) (Fig. 6 e)

MALTA: Bellissebh 6.v.84, 1 f., PJS & M. Gauci leg., G. Levy det.; Buskett 26.ix.82, 1 f., SPS leg., G. Levy det.; Gnejna 27.vii.75, 1 f., SPS leg.; 12-14.x.85 3 ff., D. Johnson leg., G. Levy det.; Salina 4.ii.89, 1 f., DD leg., G. Levy det.; Targa Gap 2.ix.82, 2 mm., PJS leg. & det.
GOZO: Dwejra 5.xii.82, 1 f., EL leg., G. Levy det.

Maltese specimens are referable to *X. bufo* as described and illustrated by Levy (1976)

Xysticus caperatus Simon 1875

Xysticus caperatus; Baldacchino (1983)

MALTA: Gzira 17.vii.74, 1 f., LC leg., G. Levy det.; Msida 17.ii.75, 1 f., LC leg., G. Levy det.

Xysticus off. *kochii* Thorell, 1872

MALTA: St. Julians 24.iii.87, 1 f., DD leg., G. Levy det.

GOZO: Il-Turretta 27.iv.84, M. Gauci leg., G. Levy det.; Wied Mielah 1.iv.88, 1 f., DD leg., G. Levy det.

PHILODROMIDAE

Philodromus pulchellus Lucas, 1846 (Fig. 4 e)

MALTA: Attard 2.v.81, 1 f., AEB leg.; 10.iv.83, 1 m., PJS leg., G. Levy det.; Ghodira 9.iv.81, 1 f., AEB leg., G. Levy det.; Naxxar 4.ii.74, 1 m., SPS leg., G. Levy det.; Wied Qannotta 14.iii.81, 1 f., SPS leg., PJS-det.
COMINO: 23.iii.75, 3 ff., 2 mm., PJS leg., G. Levy det.; Sla. Marija Bay 10.iv.88, 1 m., DD leg., G. Levy det.

Thanatus vulgaris Simon, 1870

MALTA: Wied il-Kbir 10.v.77, 1 f., SPS leg., G. Levy det.

COMINO: 23.iii.75, 1 f., PJS leg., G. Levy det.

Tibellus ? oblongus (Walckenaer, 1802) (Fig. 4f)

MALTA: Ghodiro 24.iv.81, 1 m., AEB leg., G. Levy det.

PISAURIDAE

Pisaura mirabilis (Clerck, 1757) (Fig. 7d)

MALTA: Attard v.82, 1 f., AEB leg., DD det.; Bahrija Valley 1.v.83, 1 f., PJS leg., DD det.; Chadwick Lakes 23.iv.83, 1 f., PJS leg., DD det.; San Pawl tat-Targa 10.iii.85, 1 f., D. Johnson leg., DD det.; Selmon 13.vi.87, 1 f., DD leg. & det.; Sliema ii.83 1 j., EL leg., DD det.; Wied Qannotta 1.iv.75, 1 f., PJS leg., DD det.; Xemxija 12.iv.81, 1 m., AEB leg., DD det.

COMINO: 23.iii.75, 1 f., PJS leg., DD det.

Not uncommon. usually encountered guarding eggs or spiderlings in its tent-like web constructed in low shrubs.

AGELENIDAE

In addition to the species below the following have also been recorded: *Tegenaria domestica* (Gulia, 1914; Cremona, 1966; Aquilino, 1987); *Argyroneta aquatica* (Cremona, 1966 [as *Argyronauta aquatica*]; Schembri, 1975b; Aquilino, 1987 [as *Argyronota aquatica*]). We have no material corresponding to these species.

Tegenaria parietina (Fourcroy, 1785)

MALTA: Birkirkara 8.iii.74, 1 f., PJS leg., F. Wanless det.

Fairly common in cellars and abandoned buildings, where it constructs its funnel-web in corners.

ARANEIDAE

In addition to the species listed below the following has also been recorded: *Araneus diadematus* (Gulia, 1889-90, 1914; Cremona, 1966; Aquilino, 1987; [all as *Epeira diadema* .]). We have no material corresponding to this species.

Agalenatea redii (Scopoli, 1763)

MALTA: Mosta 15.iv.87, 1 f., DD leg. & det.; Wied il-Kbir 10.v.77, SPS leg., G. Levy det.

COMINO: 4.iv.82, 1 m., AEB leg., G. Levy det.; Tal-Liebru 17.iv.83, 1 f., PJS leg., G. Levy det.

Araneus quadratus Clerck, 1757

MALTA; (no locality data) 1 f., SPS leg., G. Levy det.

Argiope bruennichi (Scopoli, 1772) (Fig. 5)
Argiope bruennichi; Schembri (1989)

MALTA: Buskett 8.vii.76, 26.viii.76, EL leg. & det.

These are the only records of this well-known European species from the Maltese Islands. No specimens were collected but colour photographs of the species were taken (EL). The area where this species occurred at Buskett has since been severely affected by flooding.



Photo E. Lanfranco

Fig. 5 *Argiope bruennichi* (Scopoli) photographed at Buskett (1976)

Argiope lobata (Pallas, 1772) (Fig. 7 c)
Argiope lobata; Schembri (1975a)
Argiope lobata; Brignoli (1979)
Argiope lobata; Baldacchino (1983)

MALTA; Ghodiro 31.viii.74, 1 f., PJS leg., F. Wanless det.; San Anton Gardens 30.viii.73, 1 f., PJS leg., F. Wanless det.; To' Qali 15.viii.82, 1 m., PJS leg., G. Levy det.

The largest Maltese spider; it constructs its distinctive orb-web in valleys and lightly wooded areas.

Cyclosa insulana (Costa, 1834)

MALTA: Ghar Lapsi 2.iv.89, 1 f., DD leg., G. Levy det.; Pwales Valley x.89, 1 f., DD leg., G. Levy det.
GOZO: Xlendi 5.viii.87, 1 f., DD leg., G. Levy det.

This species constructs a small, untidy orb-web with a stabilimentum. The web, usually in low shrubs, is littered with fragments of plant and insect debris among which the spider is perfectly camouflaged.

Cyrtophora citricola (Forskoel, 1775)

Cyrtophora citricola; Schembri (1975a)

MALTA: Ghaxaq 23.vi.82, 1 f., AEB leg., DD det.; Msida 14.viii.74, 1 f., 1 j., LC leg., DD det.; San Anton Gardens 17.ix.73, 3 fl., PJS leg., F. Wanless det.; Tas-Solib (Robot) 5.iv.87, 1 f., DD leg. & det.; Wied Qirda 27.iii.87, 2 ff., 6 jj., DD leg. & det.

This is a very common spider which constructs its characteristic web mainly in shrubs of *Opuntia ficus-indica* and *Asparagus spinosus*. Webs are built close together and are occasionally confluent. Adult coloration is usually black and white but brown and cream specimens are also common. Although not collected, the species has also been observed on Gozo and Comino.

Mangora acalypha (Walckenaer, 1802)

MALTA: Chadwick Lakes 30.vi.81, 1 f., SPS leg., G. Levy det.; Rdum il-Bies 10.iii.83, 1 f., PJS leg., G. Levy det.

Metellina meriana (Scopoli, 1763)

MALTA: Gwardamanga 27.v.85, 1 m., M. Gauci leg., G. Levy det.

Neoscona subfusca (C.L. Koch, 1837)

MALTA: Attard 29.iii.80, 1 f., M.R. Baldacchino leg., G. Levy det.; Bighi (Kalkara) 22.iv.82, 1 f., N. Fenech leg., G. Levy det.; San Anton Gardens 1973, 1 f., PJS leg., F. Wanless det. (as *Araneus dalmaticus*); Sliema 11.vi.89, 1 f., DD leg., G. Levy det.; Zejtun 22.xii.85, 1 f., AEB leg., G. Levy det.

Larinioides folium (Schrank, 1803) (Fig. 7 b)

MALTA: Buskett ix.80, 1 f., N. Fenech leg., G. Levy det.; Gwardamanga 27.v.85, 1 f., M. Gauci leg., G. Levy det.; Ghadira 5.iii.81, 1 f.; 9.iv.81, 1 f., 2 mm.; 29.iv.81, 1 f., LC leg., G. Levy det.; Ghajn Rihana 18.ix.74, 1 f., SPS leg.; 22.viii.75, 1 f., LC leg. G. Levy det.; Wardija iii.77, 1 f., SPS leg., G. Levy det.; Wied Qannotta 18.ix.82, 1 f., G. Levy det.

This species is commonly known as *Larinioides* (" *Nuctenea* ") *suspicax* (O.P.-Cambridge, 1876) and should not be confused with *Larinioides* (" *Nuctenea* ") *cornuta* (Clerck, 1757). It is often seen near water, hiding in a silken retreat near its large orb web.

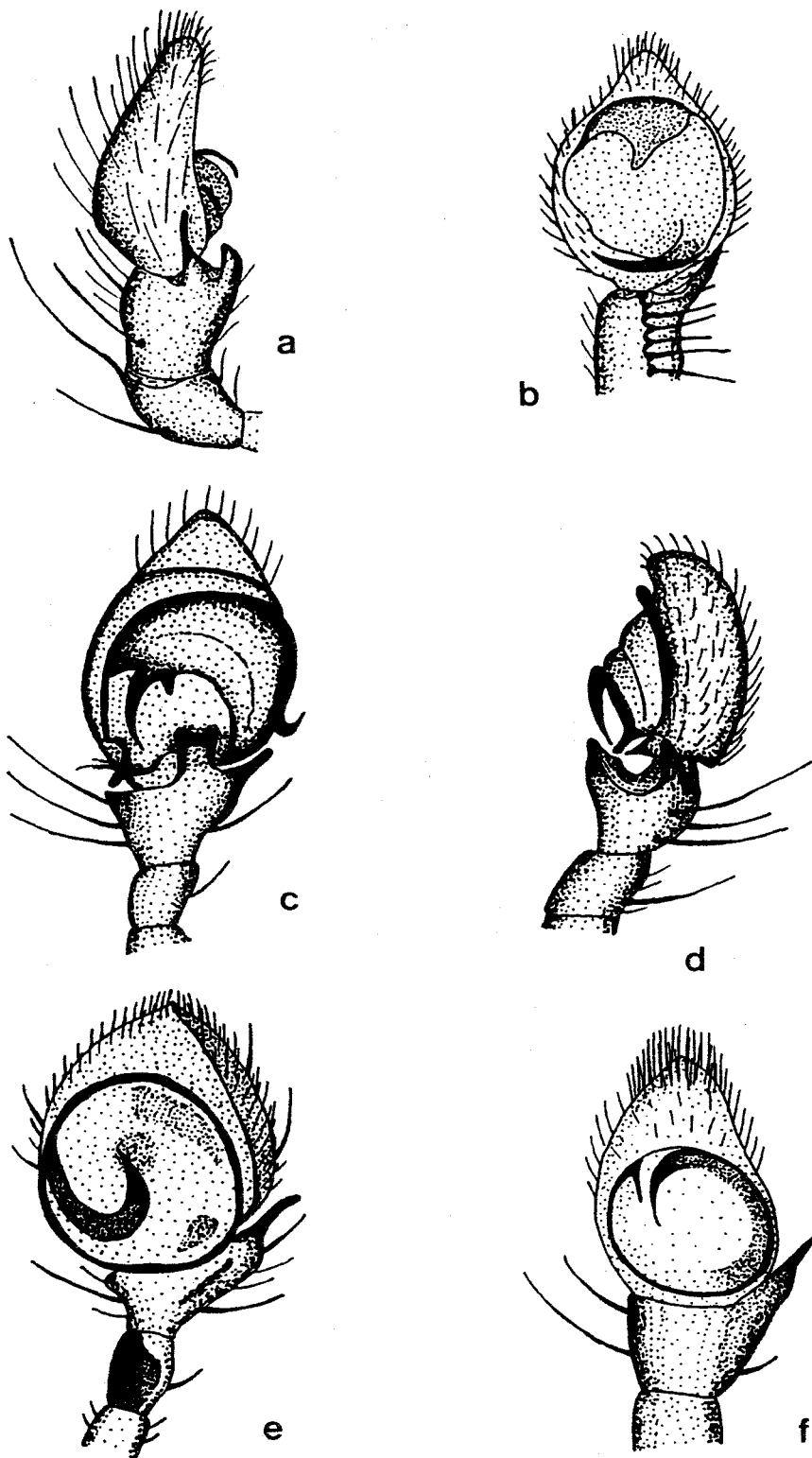


Fig. 6 (a) *Synaema globosum* male: palp; (b) *Thomisus onustus* male: palp; (c, d) *Xysticus* aff. *audax* male: palp; (e) *X. ?bufo* male: palp; (f) *Runcinia lateralis* male: palp. (all x 60)

Zygiella atrica (C. L. Koch, 1845)

MALTA: Ghajn Rihano 18.ix.74, 1 f., PJS leg., F. Wanless det.; San Anton Gardens 10.ix.73, 1 f., PJS leg., F. Wanless det.; Wied is-Sewda 16.iv.87, 1 f., DD leg. & det.

Zygiella x-notata (Clerck, 1757)

MALTA: Salina 13.iii.88, 1 f., DD leg., G. Levy det.; Siggiewi xi.89, 1 f., 1 m., DD leg., G. Levy det.

TETRAGNATHIDAE

The *Red Data Book for the Maltese Islands* mentions *Tetragnatha extensa* (Linn.) as having been recorded from Salina, Ghadira and Il-Moghluq, Marsaskala (Schembri, 1989); although we have several specimens of *Tetragnatha* sp. in our collections, we have as yet no definite determination of the species.

THERIDIIDAE

Anelosimus avilicus (C. L. Koch, 1838)

MALTA: Salina 27.vi.87, 1 f., DD leg., G. Levy det.

Argyrodes argyroides (Walckenaer, 1841)

MALTA: Attard winter 82/83, 1 f., AEB leg., G. Levy det.; Il-Palma (Mgarr) ix.89, 1 f., DD leg., G. Levy det.; Siggiewi 1.v.88, 1 f., 2 mm., DD leg., G. Levy det.

Members of this genus usually live commensally (?) in the webs of species of Araneidae, feeding on trapped insects too small for the host. The above specimens were associated with *Cyrtophora citricola*, except for the specimen from Il-Palma which was living on the web of *Argiope lobata*.

Argyrodes gibbosus (Lucas, 1846)

MALTA: Birkirkara 6.viii.74, 1 f., PJS leg., F. Wanless det.

Associated with *C. citricola*.

Enoplognatha macrochelis (Levy & Amitai, 1981)

MALTA: Salina 4.ii.89, 1 m., DD leg., G. Levy det.

GOZO: Ghajnsielem (near Duckpond) 16.iii.89, 1 m., DD leg., G. Levy det.

Enoplognatha mandibularis (Lucas, 1846)

MALTA: Siggiewi 10.ii.89, 1 f., 1 m., DD leg., G. Levy det.; Sliema 11.90, 1 f., DD leg., G. Levy det.
FILFLA ISLAND: 23.ii.90, 4 ff., PJS leg., G. Levy det. (as *E. (? mandibularis)*).

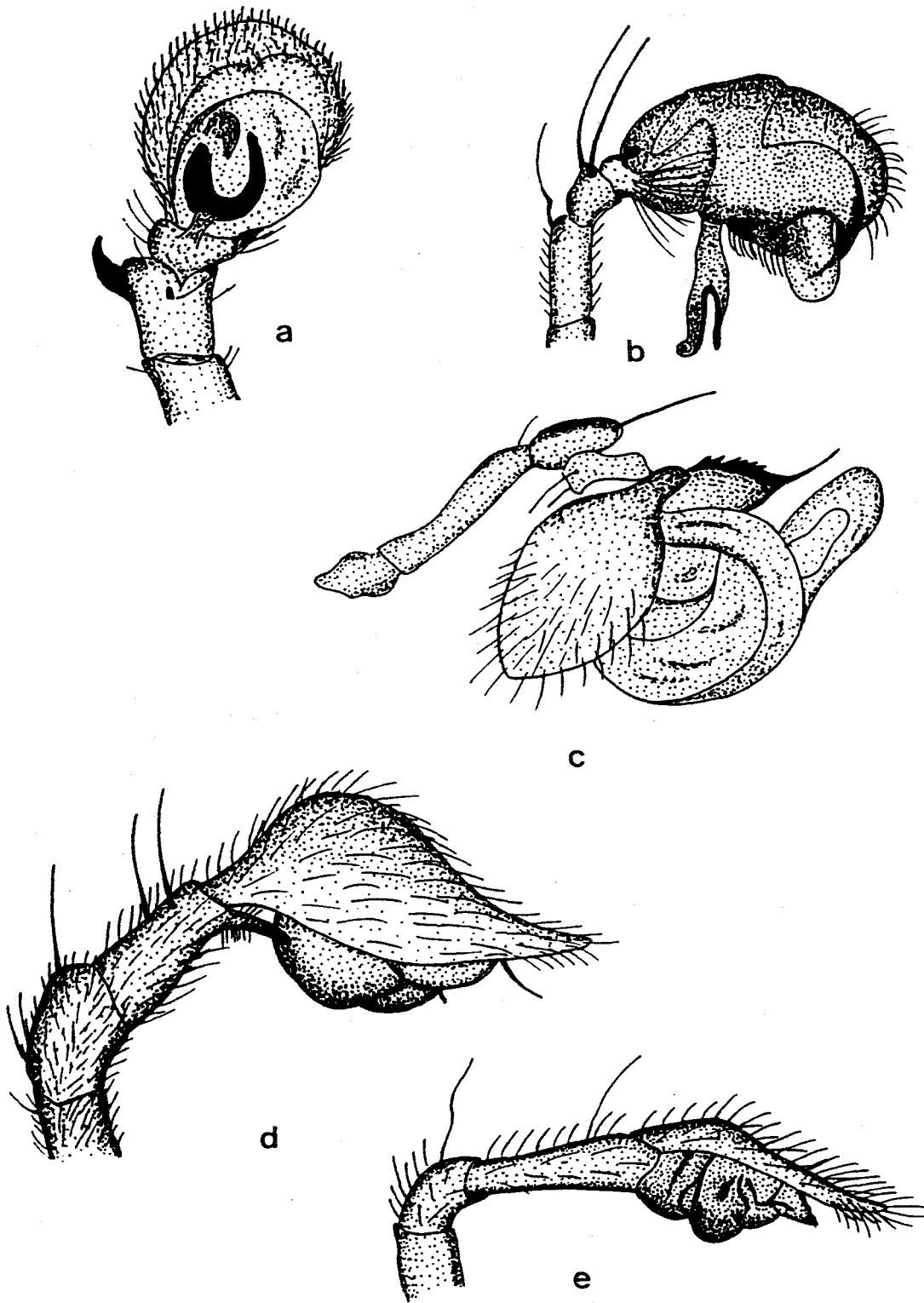


Fig. 7 (a) *Oxyptila* aff. *nigrita* male: palp (x 60); (b) *Larinioides folium* male: palp (x 20); (c) *Argiape labata* male: palp (x 35); (d) *Pisaura mirabilis* male: palp (x 30); (e) *Steatoda paykulliana* male: palp (x 35).

Euryopis acuminata (Lucas, 1846)

MALTA: Il-Qoliet (St. Julians) 26.iv.87, DD leg., G. Levy det.; Selmun 13.vi.87, 1 f., DD leg., G. Levy det.

Steatoda grossa (C. L. Koch, 1838)

MALTA: Attard iii.81, 1 m., AEB leg., G. Levy det.

Steatoda paykulliana (Walckenaer, 1806) (Fig. 7 e)

MALTA: Ghar Lapsi 22.i.83, 1 f., 1 m., SPS leg., DD det.; Wardija ii.77, 1 f., SPS leg., DD det.; Xemxija 12.iv.81, 2 ff, AEB leg., G. Levy det.
GOZO: Ras San Dimitri 2.iv.88, 1 f., DD leg. & det.
COMINO: Blue Lagoon 3.v.87, 1 f., DD leg. & det.

This species is found under stones and although its bite is reputedly poisonous to man (Jones, 1983), there have never been any reports of such incidents locally.

Steatoda triangulosa (Walckenaer, 1802)

MALTA: Attard winter 82/83, 1 f.; 28.iii.82, 1 f., AEB leg., G. Levy det.; Birkirkara iv.80, 2 ff., SPS leg., G. Levy det.; Ghadira 22.viii.81, 1 f.; 21.ix.81, 1 f., AEB leg., G. Levy det.; Sliema 6.iv.87, 1 f.; 10.v.87, 1 f.; 25.vi.87, 1 f.; 15.i.88, 1 f., DD leg., G. Levy det.; St. Julians 17.iii.87, 1 f., DD leg., G. Levy det.; To' Wied Rini (Bahrija) 1.v.87, 1 f., DD leg., G. Levy det.

Very common everywhere, especially in and around human habitations.

LINYPHIIDAE

The only species reported in the literature is *Aulacocybe subitanea* (O.P.-Cambridge) collected by G. Zammit Maempel from the entrance of Ghar Dalam Cave, Birzebbuga, Malta, in January 1983 and identified as such by P. D. Hillyard of the Natural History section of the British Museum (Zammit Maempel, 1985). We have no material corresponding to this species; however we have several linyphiid specimens still awaiting identification.

LYCOSIDAE

In addition to the species listed below the following have also been recorded: *Lycosa tarentula* (Aquilino, 1987 [as *Lycosa tarantula*]) and "*Tarantula apuliae*" (sic!) (Aquilino, 1987). We have no material corresponding to these species.

Lycosa narbonensis Walckenaer, 1806

MALTA: Birkirkara 5.viii.73, 1 f., PJS leg., F. Wanless det.

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The Editor invites papers and short notes dealing with any aspect of natural history having a bearing on the Central Mediterranean.

Authors should submit two copies of each paper which should be typewritten (double-spaced) with a wide left-hand margin. Illustrations and photographs should be of good quality, numbered consecutively (Fig. 1; Fig. 2; etc) whether they are line-drawings, graphs or photographs. Numbers and captions should be on a separate sheet, not on the illustration itself.

The information submitted in the paper should be original, based on personal research, and should represent a contribution to our knowledge of the field concerned. The main text should be clear and concise, and should, except in the case of short notes, be preceded by an abstract of not more than a hundred words. The papers submitted may be reviewed by a referee whose comments will be passed on to the authors concerned.

Authors are to check carefully the accuracy of all scientific names and references cited. Citation of references should follow this format:

surname; initials; year of publication in brackets; title of work; title of periodical, abbreviated where appropriate; volume number; part in brackets; pages.

In the case of books, the publishers, place of publication and paging should also be included.

Examples:

CILIA, J. (1975) Crickets of the Maltese Islands. *Mall. Nat.* 2 (1): 13-24.

ROBERTS, E.L. (1954) *The birds of Malta*. Valletta: Progress Press, 168pp.
