

OBSERVATIONS ON THE ENDEMIC MALTESE TRAP-DOOR SPIDER *NEMESIA ARBORICOLA* POCOCK, 1903 (ARANEAE: NEMESIIDAE)David Dandria¹**ABSTRACT**

The discovery of several traps constructed by *Nemesia arboricola* in palm tree trunks in different localities in Malta is recorded. This confirms the arboreal habits attributed to the species by Pocock when the female was originally described in 1903. Other observations on the biology, ecology and distribution of the species are included.

INTRODUCTION

In 1903 Pocock described a new species of trapdoor spider known only from one or more female specimens collected in the Maltese Islands. He named the species *Nemesia arboricola* on account of the fact that the species had "...the habit of constructing its dwelling on the trunks of trees." (Pocock, 1903). In the "Red Data Book for the Maltese Islands", published in 1989, *N. arboricola* is included on the strength of Pocock's 1903 record with the observation "and not recorded again since". It is indicated as having uncertain taxonomic status and as being questionably endemic, while its status in the Maltese Islands is given as "unknown". (Schembri, 1989)

No further mention of the species appeared in the literature until 1993 when the species was recorded as "endemic, probably extinct" (Baldacchino *et al.*, 1993). In the same work, 3 males and 2 females of the related species *Nemesia macrocephala* Auserrer, collected in the period 1974 - 76, were recorded, none of them from traps constructed in tree-trunks. The original determination of two of these specimens was carried out by A.E. Decae of Holland, and the other specimens were also assigned to this species by one of the authors (D. Dandria), based on Decae's original identification.

In the period 1990-92, Dr. Erich Kraitscher made a number of collecting trips to the Maltese Islands in the course of which he collected several female specimens of a trap-door spider. He later published a paper in which he showed that the specimens he had collected were compatible with Pocock's concise description of *N. arboricola* (Kraitscher, 1994). He confirmed this by comparing his specimens with the holotype of *N. arboricola* at the Natural History Museum, London. This, unfortunately, was not in a good state of preservation as it had originally been pinned in a dry state. He was, however, able to identify his specimens as *N. arboricola* and he fully redescribed the female of this species. He pinpointed three characters which clearly distinguished his specimens as well as the holotype of *N. arboricola* from *N.*

macrocephala (a common Sicilian species) and the other related species *N. caementaria*. None of Kraitscher's specimens had been found on tree-trunks.

Kraitscher also expressed the opinion that the 1993 records by Baldacchino *et al.* were probably based on a misidentification and opined that the specimens they recorded could actually be *N. arboricola*. In 1996 Kraitscher published an important work on Maltese spiders (Kraitscher, 1996) in which he again cited his records of *N. arboricola*.

All documented records of the species in the Maltese Islands, including those in the present work, are listed in Table 1. The aim of the present work is to confirm that the records by Baldacchino *et al.* should in fact have been referred to *N. arboricola*, and to put on record some interesting aspects of the ecology of *N. arboricola* which have been observed by the author subsequent to Kraitscher's publications.

MATERIALS AND METHODS

The female specimens of *N. arboricola* cited in the work by Baldacchino *et al.* (1993) were carefully re-examined in the light of Kraitscher's 1994 description of *N. arboricola*. Other specimens collected subsequently were also carefully examined and are here recorded. Observations were made on the nests of several trapdoor spiders found in different habitats and localities in the Maltese Islands.

RESULTS

The specimens listed below were found to conform to Kraitscher's 1994 description of *Nemesia arboricola* Pocock 1903 and are therefore confirmed as belonging to this species.

(a) Specimens recorded as *N. macrocephala* by Baldacchino *et al.* (1993). (b) Subsequent records: Howard Gardens, Rabat (Malta) 10.vi.96 1 ♀, nest in trunk of *Phoenix canariensis* D.D. leg.; Siggiewi (Hax-Xluq) 5.iv.98, 1 ♀ juv., nest under stone, D.D. leg.; Balzan: 18.v.98 1 ♀, nest in trunk of *P. canariensis* D.D. leg.

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Table I: Documented records of *Nemesia arboricola* in the Maltese Islands.

Locality	Reference	Habitat
"Malta"	Pocock (1903)	"on the trunks of trees"
B'kara	Baldacchino <i>et al.</i> (1993) ¹	The habitat for each record is not specified, but it is stated that the burrow is usually constructed "on the rocky sides of valleys and in soil banks".
Buskett	Baldacchino <i>et al.</i> (1993) ¹	
Mellieha	Baldacchino <i>et al.</i> (1993) ¹	
St. Paul's Island	Baldacchino <i>et al.</i> (1993) ¹	
Mosta: Wied il-Ghasel	Kritscher (1994)	
Mosta: Wied l-Isperanza? ²	Kritscher (1994)	The habitat for each record is not specified, but it is stated that all traps were "in rocks as well as in cracks in the ground".
Bugibba: Wied Qannotta? ³	Kritscher (1994)	
Mistra Valley, Mellieha Ridge	Kritscher (1994)	
Gozo: St. Lucia	Kritscher (1994)	
Gozo: Ramla Valley	Kritscher (1994)	
Rabat (Malta): Howard Gardens	Dandria (2001)	
Marsa: Marsa Sports Club	Dandria (2001)	Palm tree trunk (<i>P. canariensis</i>)
Gzira: Gnien l-Ewropa	Dandria (2001)	Palm tree trunk (<i>P. dactylifera</i>)
Balzan (Nr. Corinthia Hotel)	Dandria (2001)	Palm tree trunk (<i>P. canariensis</i>)
B'kara: Railway Station Garden	Dandria (2001)	Palm tree trunk (<i>P. dactylifera</i>)
Floriana: Maglio Garden	Dandria (2001)	Palm tree trunk (<i>P. dactylifera</i>)
Sliema: Gnien l-Indipendenza	Dandria (2001)	Palm tree trunk (<i>P. dactylifera</i>)
Zebbug (Malta): Nr. San Blas.	Dandria (2001)	On rocky outcrop by the roadside.
Attard	Dandria (2001)	Fissures in stone wall.
Siggiewi: Hax-Xluq.	Dandria (2001)	Under stone; immature spider.

¹ As *Nemesia macrocephala* Ausserer.

² The locality is cited in the German original as "Mosta, Tal Isoposa, Tal SSW der Stadt"

³ The locality is cited in the German original as "Buggibba, Wied Quamolla"

Observations: *Nemesia* nests were found (and kept under intermittent observation between 1994 and 2001) in the following habitats and localities:

Howard Gardens, Rabat (Malta). Several nests of varying dimensions were observed in the trunks of a number of *Phoenix. canariensis* palms in these public gardens. Most nests contained living spiders, but some were empty. This was the author's first observation of *Nemesia* nests in palm-tree trunks. One female was taken in 1996 (see record above). Following this discovery, palm-tree trunks were searched in various localities with the following results:

Marsa Sports Club Grounds, Marsa. One of the *P. canariensis* palm trunks bore a number of *Nemesia* nests.

Balzan (Nr. Corinthia Hotel). Several nests of various dimensions in two large *P. canariensis* palms by the roadside. All contained live spiders, in one case a female with cocoon. One female was taken in 1998 (see record above).

Europa Gardens, Gzira. A few nests in a large *P. dactylifera* trunk.

Old Railway Station Gardens, Birkirkara. Several nests in various *P. dactylifera* palm trunks.

Maglio Gardens, Floriana. Two nests in an old *P. dactylifera* palm.

Independence Gardens, Sliema. One nest in the only *P. dactylifera* in these public gardens. Several *P. canariensis* are also found here, but searches for nests in their trunks proved negative.

All nests observed were at a height of 1–2 metres from the ground, although the possible presence of other nests at higher points cannot be excluded.

Other observations included: **Zebbug (Malta): Near San Blas Caritas Rehabilitation Centre.** Several nests in soil pockets on a rocky outcrop by the roadside. **Attard:** Several nests of various sizes in the cracks of an old masonry wall.

Notes: Apart from Pocock's 1903 statement on the occurrence of nests in trees, the only observed habitats of the species hitherto recorded are rocky situations and cracks in soil (Baldacchino *et al.*, 1993; Kritscher, 1994, 1996). Nests constructed in tree trunks, as originally related by Pocock were discovered by the present author and are here recorded for the first time since 1903. These arboreal nests were only observed in the trunks of palm trees in several locations as indicated above and in Table 1. They are not easy to detect, owing to the near-perfect camouflage of the only visible part of the nest - the lid, whose external surface is identical in colour and texture to the rest of the palm trunk (Plate 1 a). This probably accounts for the fact that no such nests in palm trunks were detected for a long time. The only signs of the trap's presence in the trunk were the fine concentric lines marking the outer perimeter of the lid. In some instances the rather friable fibrous trunk material was eroded away round the outer part of the trap, exposing a short cylindrical portion just behind the lid (Plate 1 b). The diameters of the nests

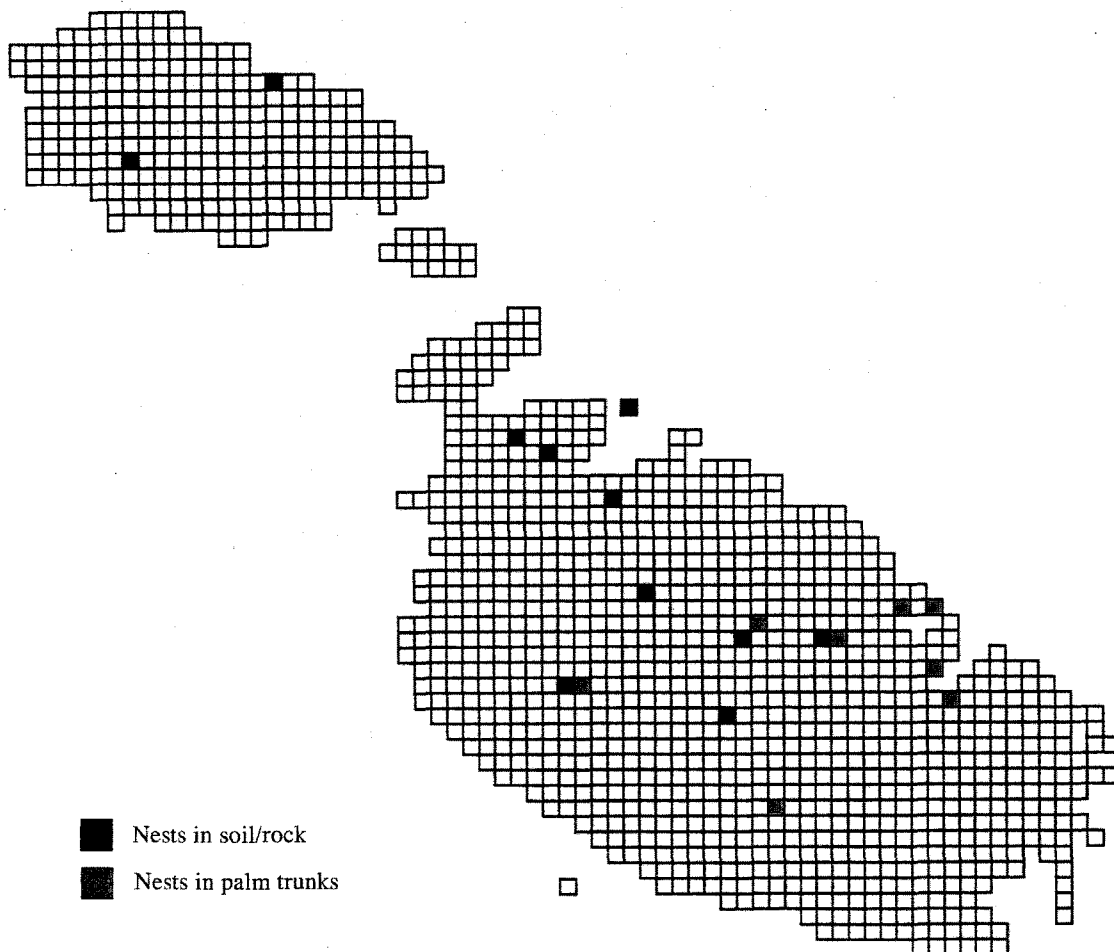


Fig. 1 Distribution of *Nemesia arboricola* Pocock in the Maltese Islands.

observed varied from 3mm to a maximum of 18mm, depending on the state of maturity of the spiders inside.

DISCUSSION

The detection of nests of *Nemesia arboricola* constructed in tree trunks belatedly vindicates Pocock's assertion that the specimen he had described and named did in fact live in such a habitat, and further reinforces Kritscher's conclusion that all trapdoor spiders in Malta belong to the species *N. arboricola*.

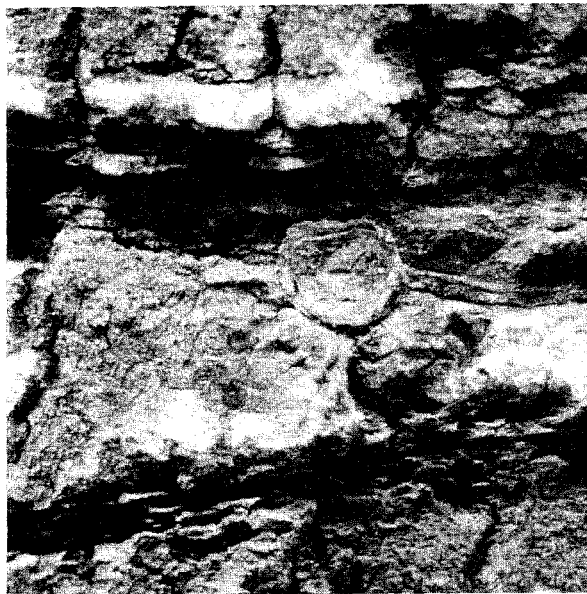
The assumption by Baldacchino *et al.*, therefore, that *N. arboricola* was to be "presumed extinct" no longer holds, while their record of *N. macrocephala* is invalidated.

In 1994 Kritscher ascribed the fact that the species was little known to "the unobtrusive way of life and the camouflage of the trapdoor". The same reasons also account for the non-detection of the nests in tree-trunks for so many years. In fact, the camouflage of the trapdoor against the background of the palm trunks is even more effective, as can be seen by comparing Plate I a and c.

Owing to the several records and observations now at hand, *Nemesia arboricola* can be considered to be of rather frequent occurrence, and its distribution in the Maltese Islands is also quite widespread, as can be seen from Fig. 1.

It is interesting to speculate whether the specimen which was passed on to Pocock in 1903 had been found in a palm trunk or in the trunk of some other tree. Diligent searches by the present author in the trunks of other trees, especially in areas adjacent to palm-trees where nests had been detected, were fruitless. Such searches were also carried out on other species of palm trees including *Chamaerops humilis*, the only palm species which is considered to be indigenous and which is now virtually extinct in the wild (E. Lanfranco, pers. comm.), although numerous specimens have been planted in public and private gardens.

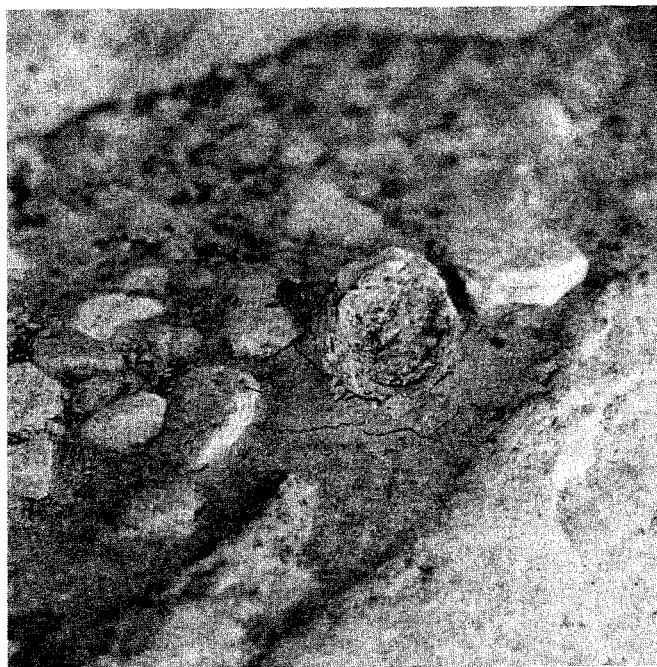
The question also arises concerning the circumstances of the adoption of the arboreal habit, keeping in mind that of the two palm species involved, *P. dactylifera* is probably an archaeophyte while *P. canariensis* is of much more recent introduction, possibly no more than 400 years ago. (E. Lanfranco, pers. comm.). One possibility is that the species is



(a)



(b)



(c)

PLATE I Nests of *Nemesia arboricola* Pocock.

- (a) Nest in trunk of *Phoenix canariensis*. (b) Nest in trunk of *P. canariensis* with part of tube exposed.
(c) Nest in rocky outcrop.

not endemic to Malta but also exists in North Africa, where *P. dactylifera* is native, but has been overlooked for the reasons already mentioned. Alternatively, *N. arboricola* is endemic to Malta, and only adopted arboreal habitats following the introduction of palm-trees to the Islands. I would tend to favour the second hypothesis, due to the apparent absence of *Nemesia* nests in the indigenous *Chamaerops humilis* palms and because the possibility that the species has been overlooked in N. Africa is rather remote, given the size of the spider and considering that the araneid fauna of the region has been studied intensively.

The male of *N. arboricola* has not yet been described in the literature, although three male specimens have been recorded

and the pedipalp of one of them was figured (Baldacchino *et al.*, 1991). A formal description of the male based on these specimens will be the subject of a future publication. As has been pointed out (Kritscher, 1996) the discovery of males of both *N. arboricola* and *N. macrocephala* is essential for a really valid elucidation of their taxonomic relationship.

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