

N.N.R. site. They were the result of almost a year of trapping and could not be separated into months. However, among the twenty-five species in the collection was a single male *Heliophanus dampfi* taken some eight years earlier than the Cors Fochno record.

The results of collecting by pitfall and by hand from March through to September 1995 indicate that the population of this species at Flanders Moss would appear to be in a healthy state. Although the traps yielded only a single female, hand collecting by sieve and sweep net, and particularly by 'Spiangle', produced adult females from April through to September. Adult males were taken in June and July only.

References

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109, Greenbank Crescent, EDINBURGH, EH10 5TA

Mediterranean Meanderings: Trapdoor Spiders of Mallorca and the Algarve

by Paul Selden

In March 1989, I took a geological study tour to the island of Mallorca in the western Mediterranean and one day we visited the southern end of the wild northern coast. We stopped our coach in the little village of Estellencs and walked down to the coast to see the Muschelkalk. To geologists from Britain, this formation is interesting because it forms the filling in the sandwich of three formations which give their name to the tri-partite Triassic period. In Germany, the three divisions are clear, with the Muschelkalk (literally, mussel-chalk) representing an invasion of the sea in the middle of the period, but in Britain we have mainly the upper and lower divisions, both of which are red sandstones (the New Red Sandstone) and hardly distinguishable from each other. So, wandering along and closely observing the soft banks of the road for signs of fossils, I went to pick up what I thought was a rather interesting circular fossil resembling a cog-wheel—a crinoid stem section perhaps? Instead, it flipped open to reveal a silk-lined tube: what I had mistaken for a fossil was the lid of a trap-door spider's burrow.

This was my first encounter with trap-door spiders. Once this was recognised, we realised that the whole bank was covered in burrows of varying sizes. Photographs were taken of trapdoor open/trapdoor closed, with fingers to show the scale. I collected a couple of the largest specimens I could find, though they looked rather small, and I presumed they were immatures. Back home, I tracked the genus down to *Nemesia*, but could not get any further. The literature on these is sparse and scattered, and I did not immediately pursue the matter any further.

Another chance to visit Mallorca came in 1992. A retired colleague, Fred Broadhurst, and I decided the time was ripe for another study tour to the island and we managed to arrange one very cheaply using a package

company. On the north coast again, I was keeping my eyes out for *Nemesia* burrows and came across some on a sandy bank, this time at Sa Calobra. Tourists to Mallorca who do not visit the Sierra del Norte and the mountain road which runs along its north side miss one of the most spectacular sights in the whole Mediterranean region. The road down to Sa Calobra plunges from around 3,000 feet to sea level in a distance of about five miles. For sufferers of vertigo, it is sheer terror as the bus winds, tunnels and spirals (really!) down among jagged rock pinnacles to where the Torrente de Pareis meets the sea in some lovely caves. Later in the tour, it proved impossible to park the bus at Estellencs because of the traffic (it was May, and rather busier than the last occasion), so I was unable to revisit the locality where I had first found these spiders.

At the meeting in Geneva in 1995 (see Newsletter **75**: 1–2), I mentioned the *Nemesia* I had found to Arthur Decae from the Netherlands. Arthur has worked for a long time on Mediterranean trapdoor spiders, so I thought he would be able to give me a species name for it but, when I described the burrow door with its characteristic crenulated margin, he seemed puzzled. Arthur had not seen this type of burrow door before. Trapdoor spider females and immatures are very difficult to identify, but their burrow construction and door sculpture can differ between species and be helpful in identification. Not only had I kept the specimens I had collected but also a burrow entrance and trapdoor, all of which I sent to Arthur. He confirmed that this door type was new to him, and I was delighted earlier this year to receive a postcard from Mallorca from Arthur who, on a spring cycling holiday, had discovered many more sites for this species all over the northern side of the Sierra del Norte. It now appears that this may be a new, small species (the specimens I had collected were mature females), whose trapdoor is clearly distinct from the other two species described from the island.

At this point let us consider what trapdoor spiders are. The common name is generally given to a family of mygalomorphs, the Ctenizidae, though representatives of many other mygalomorph families, as well as mesotheles, also make burrows with trapdoors (Main, 1993). The trapdoor adjective, though descriptive, is somewhat misleading since it suggests, to my mind at least, that the door acts as an insect trap of some sort. But it does not: the spider needs to emerge from the burrow to capture passing prey (usually at night) and some species lay out radiating silken lines from the burrow entrance which are often referred to as 'trip wires'—another misnomer since they act as an early warning system for the spider rather than actually impeding the progress of prey. One function of the trapdoor appears to be to conceal the burrow (which it does very effectively) and may actually prevent predators from entering. Barbara Main has shown it is also a barrier preventing flash-flood water from drowning the spider (Main, 1993), though drought avoidance is almost certainly a function too. Trapdoor spiders live quite a few years, and apparently do not move house unless their residence is destroyed.

I have had no chance to visit Mallorca again since 1992, but spent a couple of weeks in the Algarve in southern Portugal in the summer of 1996. It was August and it was hot. Generally, by this time of year in the Mediterranean, spiders are either at an immature stage and hidden away somewhere moist, or nocturnal, when they can be found under stones. Searching the cliff-top garigue near Praia do Zivial in the western Algarve and turning over stones (nice scorpions!), I came across a

trapdoor quite by accident. It was adjacent to a stone which I had just turned, and the burrow was built vertically downwards in a rock-hard substrate. This was too much for my large-bladed Swiss army knife, and I had no time to spend excavating a large hole to capture the spider. Nevertheless, I planned to return if necessary to look for more.

There was no need to return to Praia do Zival. Once I had the search image, every likely spot was scoured for trapdoors, and they were everywhere! I found trapdoor spiders from sea level to 3,000 feet, from arid garigue to damp pine forest.

The second tube I came across was near the sea again, but was in leaf litter under thorny bushes. One way to find the trapdoors is to scrape away loose litter which commonly reveals the top of the burrow flush with the top of the litter, so it stands proud when the loose litter is scraped off. The burrows were vertical, but, being in a bank of soft earth, it was easy to excavate a hole adjacent to the tube and then come in on the spider from the side. Even so, they are a heck of a long way down—six inches at least. These trapdoors are quite tough, a little like a bath plug, and the tube silk is thick. The spider inside is black and almost hairless, with a short, round abdomen bearing many small tubercles. The first one I found was an adult male, but all others thereafter were females or immatures. I found this species at three localities; at two of them the tube was as described but at the third (Praia d'Oura) they were horizontal tubes in a sandy bank and easier to excavate.

I found a different type of trapdoor spider at four localities (including Praia d'Oura): a *Nemesia*, but much larger than those from Mallorca. The burrow is characteristic, having a more flimsy wafer of a door (but still extremely difficult to see on a sandy substrate), and less well lined with silk than the first type. Also, the burrow has two entrances. The main tube is vertical, but near the top there is a side branch to another door, commonly less well maintained, which the spider can use in emergencies. A variant of this type occurred under bushes at the edge of an orchard; one tube appeared to have been sealed off from the inside because beneath the trapdoor, which was quite tough, was an inverted silt plug. The spider was clearly a *Nemesia*, however. In the adjacent orchard, the farmer had ploughed amongst the carob and almond trees. The clods of earth were riddled with trapdoor spider burrows, and I wondered how many had perished in the ploughing. Ploughing of orchards seems to be a widespread practice in the area and I could not understand the reason for it. Surely, trapdoor spider populations could not establish if ploughing occurred regularly, and the practice must severely affect the ground-dwelling invertebrate populations of these orchards.

Once the hunt for trapdoor spiders is on, there are clues one can use to tell whether a particular site is favourable. The spiders give themselves away because once the burrow is vacated, the loose trapdoor soon detaches and becomes part of the general ground debris. The circular disks, silk on one side, silt on the other, are quite distinctive. Also, the silk-lined tube, now without a door, can be rather obvious. However, not all spider burrows contain trapdoor spiders. At one site, I was scraping away loose debris when I pulled up a long silken tube out of the sandy substrate. This turned out to contain an atypid which had used an old trapdoor burrow for the subterranean part of its purse web! Old trapdoor burrows are also used by filistatids—as ready-made retreats to which they attach their characteristic cribellate silken meshwork.

The Portuguese trapdoor spiders still await identification, which may prove difficult because I caught no males of *Nemesia*. However, since my return, I have sent these field observations to Arthur Decae, who has provided some tentative identifications and comments. I may have found three or four species of trapdoor spider in the Algarve. The black, almost hairless spider is probably *Ummidia aedificatorius*. Eleven species of *Nemesia* are known from this region, and I found at least two types: the forked burrow with a wafer trapdoor is one type, and the type with a cork-type trapdoor, but sealed from beneath for aestivation, is another. Some of the females had broods of quite large youngsters in their burrows. Does anyone know at what stage in their lives they leave the female? How many broods does she rear in her lifetime? In fact, spending their lives as they do, under the ground, safe from predators and the hot summer sun, there are doubtless many details about the lives of trapdoor spiders which remain to be discovered.

Reference

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Earth Sciences, The University, MANCHESTER, M13 9PL

Gone fishing . . . for *Tegenaria*

by Geoff Oxford and Peter Croucher

We have recently been trying to ascertain the distributions in central and western England of the large house spiders, *Tegenaria saeva* and *T. gigantea*, as part of a wider study of hybridisation between them. For many counties, records of these two species combined are in single figures, suggesting either that they are rare or that they are severely under-recorded. Common experience rules out the former explanation. Under-recording is probably a result of two factors: (1) being largely synanthropic, specimen collecting within people's houses is often difficult; and (2) where spiders are found away from habitation, they usually lurk in deep cracks, making extraction virtually impossible.

During the course of our work we have developed a simple technique for sampling *Tegenaria* which is almost fool-proof. This involves 'fishing' for them using blowfly, or the smaller greenbottle, maggots which are usually readily available from fishing shops. In York, at least one enterprising all-night petrol station owner sells maggots from a slot-machine on his forecourt. A maggot dropped onto the periphery of a *Tegenaria* web will soon bring the owner out to where it can be caught with a quick sweep of the hand. Alternatively, a clear delicatessen pot (e.g. the sort coleslaw comes in) can be placed over the spider, trapping it against the web. The lid can then be snapped on from beneath. Maggots have a number of advantages as bait: (1) they are easily obtained (except, possibly, in areas where game fishing predominates); (2) they wriggle continuously; (3) they rapidly get entangled in the web so that the spider has a job extricating them, and therefore remains in a catchable position for longer; and (4) if kept in a fridge they stay as maggots for 10 days or more, depending on their state of development when bought. Maggots are far superior to other, wild-caught, bait (e.g. woodlice) in this respect. Penney and Drew (1996) suggested a similar trick using