

## LIZARD PREDATION BY THE WIDOW SPIDERS *Latrodectus pallidus* and *L. revivensis* (Theridiidae)

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In their review of vertebrate predation by arthropods, McCormick & Polis (1982) cite reports of three species of comb-footed spiders (Theridiidae) which prey on vertebrates. For all three—*Achaeranea* (*Theridion*) *tepidarium*, *Latrodectus hasselti* and *Latrodectus mactans*—most vertebrate prey items were reptiles. These included skinks of the genera *Lygosoma* and *Leiopisma* and several kinds of snakes. For *A. tepidarium* and *L. hasselti*, prey also included a mouse. McKeown's (1952) book on Australian spiders shows a photograph of *L. hasselti* with two lizards in its web; and König (1987) photographed a gecko, *Phyllodactylus marmoratus*, in the web of *Latrodectus mactans hasselti*.

We here report predation on a lacertid lizard. *Mesalina* (= *Eremias*) *guttulata* (Lichtenstein, 1823), by two additional species of widows (genus *Latrodectus* Walckenaer, 1805) from Israel: *L. revivensis* and *L. pallidus*. Further, we postulate that since the venom of widows is effective against reptiles, any reptile species whose habits permit encounter with the sticky web of these spiders, is potential prey.

Remains of a lizard, probably *Mesalina* (= *Eremias*) *guttulata*, were found in a deserted nest of *L. revivensis* collected at Sede Boqer (Negev, Israel) (Zilberberg 1988).

At the village of Kefar Adumin (Judean Desert, Israel) at 1915 hrs on 21 June 1988, a plump, mauve-hued juvenile lizard of the same species was found in the process of being hoisted by an adult female *L. pallidus* from her feeding platform up to her nest. The ocellated pattern of the lizard was clearly visible through the silk wrapping.

The spider spent most of the following day feeding on the lizard. On 26 June, the nest was photographed, showing both predator and prey, the latter by now coiled and shrunken (Plate 1). The lizard was removed from the nest, measured, and preserved in the herpetology collection of the Zoological Museum of the Hebrew University of Jerusalem (HUJ-R 17078). Its length was 25 mm excluding the tail, which was whole.

From the remains of prey in the nests of *Latrodectus* spp., it is apparent that ground-frequenting arthropods, such as tenebrionid beetles, isopods, ants and scorpions constitute the bulk of the diet of widow spiders (Shulov 1948; Zilberberg 1988; personal observations). Despite this preponderance of arthropods in the diet, the venom of widows is poisonous in varying degree to a wide variety of animals, vertebrate and invertebrate (see Foelix 1982, Table 1, p. 46, for a review of the LD50 of spider venoms).

Out of 101 reported instances of vertebrate predation by spiders, only 19 are of reptiles (from McCormick and Polis 1982). In contrast to such spiders as *Dolomedes* spp. (Pisauridae) which regularly eat fish fry, minnows and tree frogs, or *Nephila* spp. which include birds in their diet, most of the vertebrate prey of comb-footed spiders is reptilian.

It is doubtful if *Latrodectus* predation plays a significant role in the population ecology of small reptiles. The predation reported here may represent either isolated instances of capture of vertebrate prey, or routine but small-scale trapping. If the latter, it is surprising that this has not been reported previously for spiders studied as extensively as the widows. It is nevertheless possible that investigators have failed to identify disfigured remains of small vertebrates when these are wrapped in silk, or possibly broken up and distorted by the elements, or both. Perhaps more careful study of prey remains, either those woven onto the outside of the nest, or those cut out of the web by the spider and found under the nest, might provide additional evidence for predation on vertebrates not only by these, but also by *L. tredecimguttatus*, *L. aff. hesperus*, *L. dahli* and *L. geometricus*, other widow spiders reported from Israel (Levy and Amitai 1983).

\* Deceased 9 October, 1989

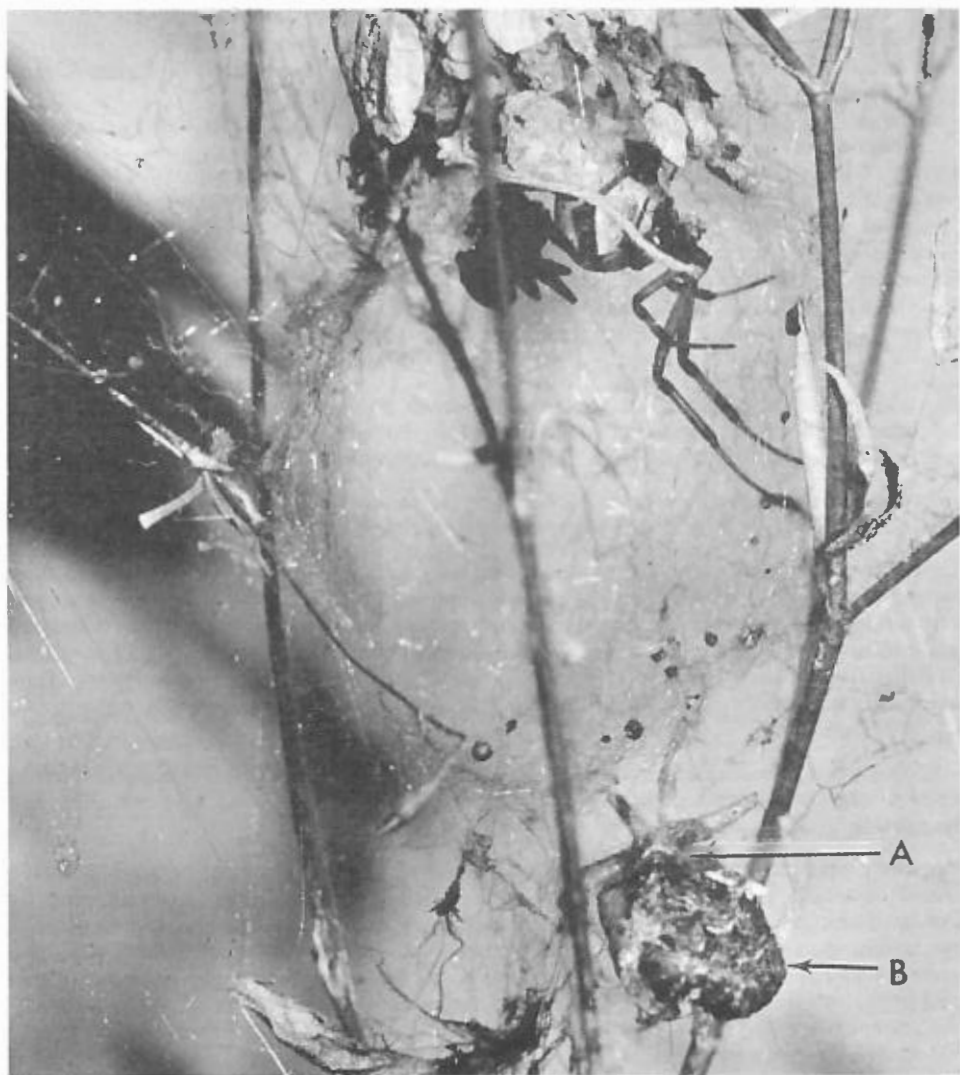


Plate 1. The *Latrodectus pallidus* at the entrance to her pebble-clad nest (above) and the coiled, shrivelled carcass of her prey, the lizard *Mesalina guttulata* (A, left orbit; B, dorsum).

*Mesalina guttulata* is among the few lizards in Israel whose stomach contents have been studied. Orr et al. (1979) found both Scorpionidae and young Theridiidae, so that it is highly probable that *Latrodectus* spp. are included in *Mesalina guttulata*'s diet. Thus, the predator-prey relationship between *Latrodectus* spp. and *Mesalina guttulata* is probably reciprocal.

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## BOOK REVIEW

*Härlekinfrosche der Gattung Atelopus*. Ralf Heselhaus and Matthias Schmidt. 1988. Softback, 63 pages, 49 photos, 25 in colour. Published by Herpetologischer Fachverlag, Münster. ISBN: 3-9801853-0-3. Available from specialist booksellers, approximately £6.

It is seldom that German language publications are reviewed for the non-technical press, but this little book fills a noticeable gap in the literature and deserves a wider readership.

'Harlequin Frogs of the genus *Atelopus*' provides a succinct introduction to the lives of these 'stump footed frogs'. A brief overview of the systematics of *Atelopus* is followed by an account of their distribution and characteristic habitats. Colour and black and white photos of habitats and shots of collecting and photographing *Atelopus* are given throughout the text. The authors describe trips to Panama and French Guyana giving useful details on vegetation and the problems associated with photographing and collecting *Atelopus*. Important reference is made to the status of the endangered 'Golden Frog' *Atelopus zeteki*.

*Atelopus* toxins are discussed with reference to their function in nature. The natural breeding cycle of *Atelopus* is discussed in some detail with interesting notes on mass spawning and population size.

A useful chapter on *Atelopus* in the terrarium, illustrated with a diagram and photos of naturally furnished vivaria, is followed by the bulk of the book (35 pages) giving species accounts for *Atelopus chiriquiensis*, *A. flavescens*, *A. ignescens*, *A. senex*, *A. spumarius barbatinii*, *A. s. spumarius*, *A. varius varius*, *A. v. ambulatorius*, *A. v. loomisi* and *A. zeteki*. Each account gives a brief description, notes on the distribution, habitat and care in captivity of each species and is accompanied by at least one excellent colour photo of the species in a natural surrounding. Additional black and white photos supplement the accounts and the authors have included colour photos of species variants. Four colour variants of *A. v. varius* are shown illustrating the bewildering variety exhibited by this species.

A general distribution map for the genus *Atelopus* is followed by a clearly laid out species table giving, at a glance, the size, colouration, distinguishing characteristics and distribution for fifteen species and subspecies not treated in the preceding accounts. A short bibliography lists relevant references.

'Harlequin Frogs of the genus *Atelopus*' exemplifies the type of book that, until recently, has been lacking on the herp. book market. Covering a narrowly defined subject area it will appeal to herpetologists and herpetoculturists with an interest in frogs, to the bibliophile and to workers in Neotropical herpetology. By retaining control of the publishing the authors have avoided the major fault that mars so many of the mainstream herp. publications - the lack of good original photos. Illustrated to the high standard that we have come to expect from European publications ten species and subspecies of *Atelopus* are pictured in colour and black and white. For the non-German reader the standard of photos alone would compensate for any difficulty with the text and would make this little book a useful purchase. It is hoped that future publications from the authors will appear in an English language edition to bring them the wider readership they so obviously deserve.

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