# Epigynal variation in *Enoplognatha latimana* Hippa & Oksala (Araneae, Theridiidae) in Europe

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## Summary

Throughout its European range, now known to extend from the Atlantic coast to the Black Sea, the populations of *Enoplognatha latimana* seem to be characterised by an extraordinarily large but mainly similar range of variation in the posterior part of the epigyne. The shape and size of the epigynal depression are geographically variable, the shape occasionally also within populations. *E. latimana* can always be distinguished from its sister species *E. ovata* (Clerck) by the modified, although not constant, posterior marginal area of the epigyne instead of a simple one.

## Introduction

It is a generally held opinion and experience of arachnologists that the secondary genital organs of spiders exhibit a great deal of stability in structure, and both the delimitation and identification of species are largely based on these structures. Geographic variation of these parts is known and slight differences within populations are often described (concerning Theridiidae, see Levi, 1957, 1959). In our study of the populations of *Enoplognatha latimana* Hippa & Oksala, we were confronted with variation not of minor details but exceeding the limits to be expected between species. This variation, rather than the stability, of these parts could be considered as being a character of the species. Although the causes of the variation cannot yet be explained, the results are published here to describe the phenomenon and enable the identification of the species.

## Material and Methods

The material studied in this work consists of the following samples of *Enoplognatha latimana* (origin of the samples in parentheses): England: Dorset, Furzebrook 1 ♂ (Mr Rowley Snazell); France: Loire-Atlantique, Le Croisic 1 ♂, Basses-Pyrénées 8 ♂♂ 12 ♀♀, Paris 1 ♀, Haute-Vienne 7 ♂♂ 10 ♀♀, Ardêche, Grospierres 1 ♀ (all Mus. Natn. d'Hist. Nat., Paris); Italy: Lombardia, Como, Albavilla 3 ♂♂ 13 ♀♀ (Zool. Mus., Univ. Turku), Emilia, Modena 2 ♂♂ 4 ♀♀ (Natur-Museum Senckenberg, Frankfurt); Germany: Baden-Württemberg, Baden Baden 3 ♂♂ 4 ♀♀, Heidelberg 2 ♂♂ 7 ♀♀ (both Zool. Mus., Univ. Turku); Hungary: Simontornya 2 ♂♂ 6 ♀♀ (Natur-Museum Senckenberg, Frankfurt); Romania: Dobrogea 2 ♂♂ 3 ♀♀, Moldau 1 ♀, Transsilvania 1 ♀ (all Muzeul Brukenthal, Sibiu); Bulgaria: Pleven, Reselec 1 ♂ 42 ♀♀ (Dr Christo Delchev); labelled Gallia, Espania, Constinople 12 ♂♂ 26 ♀♀ (Mus. Natn. d'Hist. Nat., Paris). These samples also show the known distribution of the species in Europe.

All the illustrations were made from separated, but untreated, epigynes in alcohol, by a camera lucida attached to a stereomicroscope.

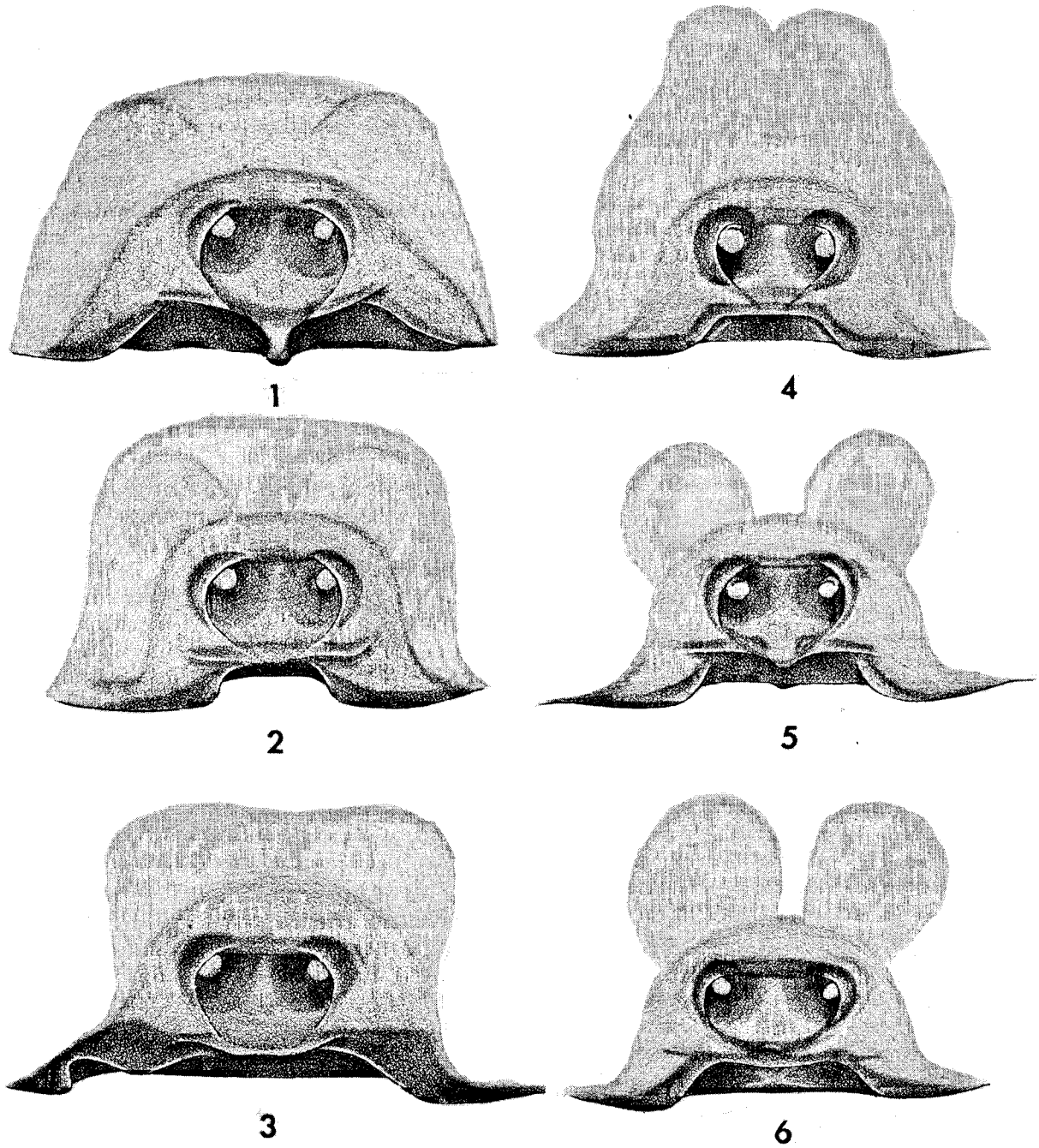
## Results and Discussion

When describing *E. latimana* we (Hippa & Oksala, 1982) noted that the female epigyne is somewhat variable, but did not pay it the attention it deserved. Re-examination of the original material as well as identification of material received since has indicated that the variation within this species is extraordinarily large. In many respects it exceeds that found between species of many groups of Theridiidae, and makes the positive identification of the species difficult if it is not known.

The most striking variation is found in the structure of the rather complicated posterior marginal area of the epigyne (see Figs. 1-8), which is composed of a transverse subvertical posterior wall, of oblique lateral crests and of a transverse crest just posterior to the epigynal depression. This part varies greatly in width, the transverse crest may be entire (Figs. 2, 3, 4, 6, 7) or medially divided (Figs. 1, 8), in the latter case the halves are usually oblique, and not infrequently there tends to develop a median crest (Figs. 1, 5, 8), which in extreme cases divides the whole posterior part into two distinct halves (Fig. 1). Variation in the posterior part of the epigyne occurs in all populations and similar types are found in

widely separated populations, suggesting that the whole range of structures in Figs. 1-8 and any intermediates between these may be found in all of them. Further, more extreme structural types than we have found are probable.

The shape of the epigynal depression is also



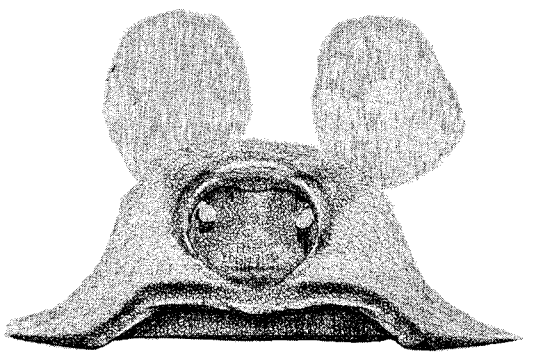

Figs. 1-6: Epigynes of *Enoplognatha latimana* Hippa & Oksala. **1-3** From Bulgaria, Pleven; **4** From a sample labelled Gallia, Espania, Constinople; **5-6** From France, Basses-Pyrénées. All to the same scale and to the same scale as Figs. 7-10.

variable. It may vary from quite round (Figs. 7, 8) to slightly cordate (Figs. 1, 2, 3, 4, 5) or even transversely elongate (Fig. 6), in the last case it is superficially not much different from that of *E. ovata*. There are also differences in the absolute size (width) of the depression. The characters of the epigynal depression are apparently not quite independent of the population: the small and roundish form was found in populations from Italy and Germany, the larger and more cordate form elsewhere. The transversely elongate shape is rare and was observed only in a few specimens from France.

In the female vulva the variation does not differ from that generally found in the Theridiidae. Also the comparison of the scant material of males did not reveal unusual variation; there is slight geographic variation in the proportions of conductor and radix (*sensu* Levi & Randolph, 1975; Levy & Amitai, 1981; Hippa & Oksala, 1983) and absolute dimensions of the palp corresponding to the differences in the dimensions of the epigynal depression.

The belief that only one species is concerned is based, as partly mentioned above, on the following observations: 1) the variation of the epigyne in all the larger samples studied is continuous, 2) within a population the vulva is similar, especially the inner canal of the copulatory pocket which fits the conductor of the male palp (cf. Hippa & Oksala, 1982) and 3) all males studied are similar.

At present we consider it useless to speculate on the possible causes of the epigynal variation described



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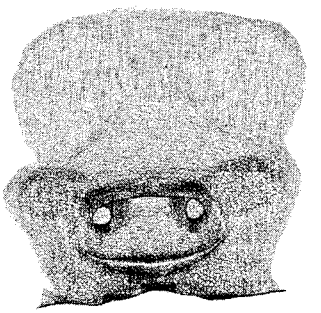

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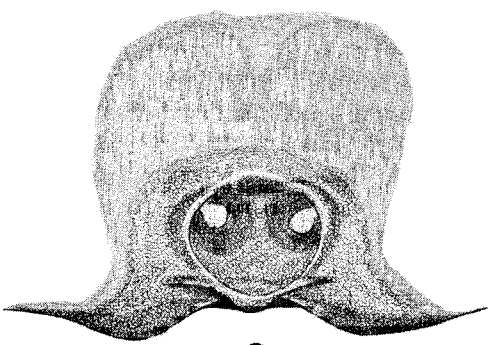

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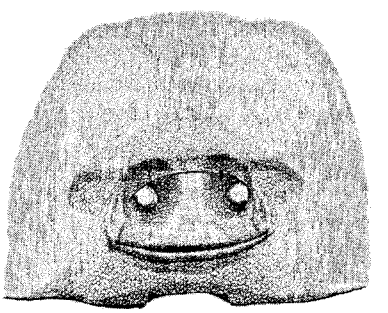

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Figs. 7-8: Epigynes of *Enoplognatha latimana* Hippa & Oksala. 7 From Italy, Como; 8 From Germany, Heidelberg.

Figs. 9-10: Epigynes of *E. ovata* (Clerck) from Denmark, Sjaelland.
All to the same scale and to the same scale as Figs. 1-6.

because all the necessary knowledge about the functional morphology and anatomy of the structures is lacking.

In the sister species *E. ovata* (see Hippa & Oksala, 1983) no comparable variation is found, but its populations are very uniform (Figs. 9, 10) and the geographic variation is also small. The epigyne of *E. latimana* can always be distinguished from that of *E. ovata* by a modified, not simple, posterior marginal area (cf. Figs. 1-8 and 9-10).

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**References**

HIPPA, H. & OKSALA, I. 1982: Definition and revision of the *Enoplognatha ovata* (Clerck) group (Araneae: Theridiidae). *Entomol. scand.* **13**: 213-222.

HIPPA, H. & OKSALA, I. 1983: Cladogenesis of the *Enoplognatha ovata* group (Araneae, Theridiidae), with description of a new Mediterranean species. *Ann. Ent. Fenn.* (in press).

LEVI, H. W. 1957: The spider genera *Enoplognatha, Theridion* and *Paidisca* in America north of Mexico (Araneae, Theridiidae). *Bull. Am. Mus. nat. Hist.* **112**: 1-123.

LEVI, H. W. 1959: Problems in the spider genus *Steatoda* (Theridiidae). *Syst. Zool.* **8**: 107-116.

LEVI, H. W. & RANDOLPH, D. E. 1975: A key and checklist of American spiders of the family Theridiidae north of Mexico (Araneae). *J. Arachnol.* **3**: 31-51.

LEVY, G. & AMITAI, P. 1981: The spider genus *Enoplognatha* (Araneae: Theridiidae) in Israel. *Zool. J. Linn. Soc.* **72**: 43-67.

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# Spiders of the Galápagos Islands. I. Mysmenidae (Araneae)

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## Introduction

In 1982 we undertook an expedition to the Galápagos Islands with the purpose of studying their spider fauna. During a three-month stay (February-April) we visited a number of islands (Isabela, Santiago, San Cristóbal, Santa Fé and Santa Cruz) and collected considerable numbers of spiders in the different vegetational zones in various places on each island. It is our intention to publish the results of our collecting according to the progress we make in the study of this material. Araneological publications about the Galápagos are scarce and, mostly, descriptions of new species are incorporated in general revisions so that no real faunistic survey exists, save the species list of Roth & Craig (1970) which is very incomplete (some families identified only down to genus level). From our preliminary sorting we noticed that a large number of new species have to be added to this list. Since the South American spider fauna is in general badly known, we will not take into account whether a species is endemic or not, for a species first found on the islands is in this case not necessarily endemic.