First record of mating plugs in lizards

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During ongoing research into the courtship behaviour of European lizards in the family Lacertidae (In den Bosch, 1986, 1990) I noticed that more or less recently mated females sometimes produced a faecal pellet consisting not only of the usual brown faecal matter and white nitrogenous waste, but also an additional transparent element. The latter was occasionally also the sole discharge.

In its simplest form this element was Y-shaped, with the lower part shortened and pointing posteriorly (assuming it usually lies in the female genital sinus). The upper bifurcated part was thickened distally, each component pointing somewhat lateroanteriorly (fig. 1). More complex configurations were sometimes found, with flanges and small appendages. It was typically a few millimetres in length and is considered to be a mating plug.

Mating plugs of many sorts have long been known in insects (Parker, 1970), and are also found in mammals (Martan and Sheperd, 1976), but they have not been reported in amphibians or birds. Removal of sperm in birds, however, has been documented (Davies, 1983). Copulatory plugs in reptiles seem to be extremely rare (Whittier and Tokarz, 1992); they have been mentioned only in a few snake species, either as a gelatinous deposit (Devine, 1975) or as an oviducal constriction, as in the adder, Vipera berus (Nilson and Andrén, 1982), although the latter may simply serve to decrease sperm loss (Stille et al., 1986). Judging from my observations it appears that the existence of such a plug is more rule than exception in lizards of the West Palearctic Lacertidae; they have been found in the following 36 species: Algyroides marchi, A. moreoticus, A. nigropunctatus; Eremias arguta; Gallotia atlantica; Lacerta agilis, L. anatolica, L. andreanszkyi, L. cappadocica, L. caucasica, L. derjugini, L. graeca, L. horvathi, L. laevis, L. monticola, L. mosorensis, L. nairensis, L. oertzeni, L. parvula, L. praticola, L. rudis, L. schreiberi, L. strigata, L. valentini, L. viridis; Ophisops elegans; Podarcis boscaei, P. erhardii, P. filfolensis, P. hispanica, P. lilfordii, P. muralis, P. perspicillata, P. tiliguerta, P. wagleriana and Psammodromus blanci.

The plugs obviously from a barrier to sperm, either blocking the progress of incoming sperm from a new copulation, or preventing sperm from a previous copulation travelling in the wrong direction. Other effects could include decreased receptivity, by chemical or physical means. The copulatory plug is just one of a series of phenomena I have found in these lizards indicative of female guarding; the majority of such tactics in European lizards seems to be of an ethological nature. All are being dealt with in a review (In den Bosch, in preparation).
Figure 1. Copulatory plug of _Lacerta bauri_. The white bar represents one millimetre.