

## Diving in the lizards *Anguis fragilis* and *Lacerta agilis*

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**Abstract.** We describe two observations of lizards diving into small puddles with rich structure provided by live and dead vegetation, involving an adult male *Lacerta agilis* and a juvenile *Anguis fragilis*.

**Key words:** behaviour, ecology, Anguidae, Lacertidae, Sauria

In a long-term study on the population ecology of yellow-bellied toads, *Bombina variegata* (Linnaeus, 1758), we regularly survey many small water bodies in Lainzer Tiergarten, a large nature reserve at the western outskirts of Vienna, Austria (Gollmann & Gollmann 2002, 2005). Here, we report two unusual observations of diving in lizards we made in the course of this field work.

On 9 June 2003 we searched a south-west exposed meadow (48°10'N, 16°22'E, 400 m a.s.l.). It was a warm and windy day, and overcast during the following observation at 12:20. When approaching a small, overgrown puddle in a reedy area we noted a conspicuous movement of the water, indicating the dive of a small animal. As no frog or toad had surfaced after several minutes of waiting, one of us (GG) gently palpated the ground of the puddle in search of that animal. To our surprise, it turned out to be an adult male of *Lacerta agilis* Linnaeus, 1758 (fig. 1). No other herptile was present in the puddle at that time.

On 27 April 2008 we investigated a north-west exposed meadow (48°11'N, 16°22'E, 310 m a.s.l.) on a mild and sunny day. In a small puddle filled with leaf litter we collected four individuals of *Bombina variegata* at 16:30. While looking for further toads, one of us (BG) noted the head of a small reptile appearing between the leaves. Upon capture, the animal was identified as a juvenile *Anguis fragilis* Linnaeus, 1758 of approximately 12 cm total length. After brief handling for photography, we placed the animal on the surface of the puddle (fig. 2). It stayed motionless for a while, then started slow forward creeping movements; after 5 minutes, it dived into the puddle and disappeared under leaf litter.

Diving into water has been reported as a rare escape behaviour in *L. agilis* (Blanke 2004, p. 58). We sometimes observed short fast swims when lizards crossed small meadow streams, but the incident reported above is the only observation of diving in this species we

made. To remain submerged for several minutes is certainly an unusual behaviour for *L. agilis*. Whereas swimming in *A. fragilis* has been described as means of locomotion (Dathe 1971), and as flight behaviour (Petzold 1971), no observations of diving are on record (Völkl & Alfermann 2007, p. 77). In our case, we cannot be sure whether the juvenile lizard had dived into the puddle at our approach, or had been there before. Considering descriptions of foraging in wet conditions –after rainfall or

dewfall— and in protected cavities (Luiselli 1992, Völkl & Alfermann 2007, p. 80ff), we suggest that *A. fragilis* may dive into richly structured water bodies not only as an escape behaviour, but perhaps also in search for prey such as earthworms or dipteran larvae.

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**Figure 1.** Male *L. agilis* placed on the puddle into which it had dived (9 June 2003).

**Figure 2.** Juvenile *A. fragilis* placed on the puddle where it had been caught (27 April 2008); after 5 minutes, it dived again into this puddle.

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