Field observation of two-tailed sand lizard *Lacerta agilis* Linnaeus, 1758 and a common lizard *Zootoca vivipara* (Jacquin, 1787) in Poland

Najdbi dvorepih osebkov martinčka *Lacerta agilis* Linnaeus, 1758 in živorodne kuščarice *Zootica vivipara* (Jacquin, 1787) na Poljskem

Krzysztof DUDEK, Department of Zoology, Institute of Zoology, Poznan University of Life Sciences, Wojska Polskiego 71 C, 60-625 Poznań, Poland; E-mail: dudeekk@gmail.com
Anna EKNER-GRZYB, Department of Behavioural Ecology, Faculty of Biology, Adam Mickiewicz University, Umultowska 89, 61-614 Poznań, Poland

Caudal autotomy is a common anti-predator strategy in many species of lizards (Bateman & Fleming 2009). A tail loss is possible for the certain species of lizards due to the vertebral notch, which has special gashes and muscles that contract and break the tailbone, which causes obstruction of the nearby tissue and veins (Alibardi 2009). After a tail has been lost, a new one grows in its place. However, the new tail will have cartilaginous bones and it cannot be detached again (Zani 1996, Clause & Capaldi 2006). Sometimes the autotomy can be incomplete and in that place an additional tail can grow (Tamar et al. 2013) that results in two tails, which is called bifurcation.

During the research conducted in central Poland, we found individuals of two lizard species with bifurcated tails. The first observation took place on 19. 4. 2010 in a meadow between arable fields (51° 32′ 55″ N, 17° 36′ 57″ E) where we observed one sub-adult common lizard *Zootoca vivipara* (Jacquin, 1787). The second observation took place on 5. 6. 2010 in a forest glade (51° 32′ 2″ N, 17° 35′ 55″ E) near a gas mine, of an adult female sand lizard *Lacerta agilis* Linnaeus, 1758. Apart from the abnormal tail, both lizards exhibited normal morphology and coloration (Ekner et al. 2008). The regenerated tail of the sand lizard was short and growing from middle of the basic tail (Fig. 1). The common lizard's new tail was stout and nearly as long as the normal tail. The only visible difference was the colour of scales (Fig. 2).

We hypothesize that this abnormality was the result of incomplete caudal autotomy, when only a part of the tail muscles and bones broke off. The original tail indeed remained attached, but the damage was extensive enough to trigger the regeneration process of growing a new tail in the place of injury.

In our research on lizards, which has been conducted for four years in central Poland, we captured over half a thousand specimens of both species (Ekner et al. 2011, Ekner-Grzyb et al. 2013, Dudek et al. 2014) and only these two had double tails. An observation of bifurcated lizards known from literature has shown that this phenomenon occurs in different lizard species, but is rare (Fojtl 1994, Strijbosch 1999, Cordes & Walker 2013, Tamar et al. 2013).

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Figure 1. Two-tailed female sand lizard (*Lacerta agilis*) found on 5. 6. 2010 in central Poland (photo: K. Dudek).
Slika 1. Dvorepa samica martinčka (*Lacerta agilis*) najdena 5.6.2010 v osrednji Poljski (foto: K. Dudek).

Figure 2. Two-tailed common lizard (*Zootoca vivipara*) found on 19. 4. 2010 in central Poland (photo: K. Dudek).
Slika 2. Dvorepa živorodna kuščarica (*Zootoca vivipara*) najdena 19. 4. 2010 v osrednji Poljski (foto: K. Dudek).