REPTILES & AMPHIBIANS

First Record of an Albino European Fire-bellied Toad, *Bombina bombina* (Anura: Bombinatoridae), in Poland

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Albinism, a congenital deficiency of pigment (melanin), is caused by a mutation that suppresses melanin production in melanophores (e.g., Bagnara et al. 1968; Imes et al. 2006). This mutation manifests itself in a light, white-yellow, or pink body and usually red eyes (e.g., Spadola and Insacco 2010). Albinism can be complete (melanin synthesis does not occur throughout the entire body) or partial (lack of melanin only in some areas of the body), with the former exerting substantive negative effects on survival (e.g., Sanabria et al. 2010) by, for example, increasing the chance of developing autoimmune diseases and possibly affecting behavior and vision (e.g., Defries 1969; Chang et al. 2022; Choy et al. 2025). Albinism, in its various forms, has been widely documented in numerous species of amphibians (e.g., Wurffbain 1683; Christaller 1983; Ogielska-Nowak 1985; Nijs and Keller 2002; Pabijan et al. 2004; Channing and Paxton 2025).

The Fire-bellied Toad, *Bombina bombina* (Linnaeus 1761), occurs primarily in lowland habitats in central, eastern, and southeastern Europe, with isolated occurrences in Denmark and southern Sweden representing its northernmost limit (Speybroeck et al. 2016). In Poland, it occurs throughout lowlands but does not range into the Carpathians region in the southernmost parts of the country (Speybroeck et al. 2016; Szymura and Pabijan 2018). Fire-bellied Toads are associated with bodies of water with lush vegetation (e.g., oxbow lakes, wet meadows, or overgrown lakes, choosing even ephemeral puddles and ruts as breeding sites) (Juszczyk 1987). We herein report albinism in *B. bombina* from Poland.

At about 1345 h on 29 July 2024, during fieldwork near Hubale in the Roztocze Region in Poland (50.69150, 23.17808), we found an albino metamorph (~2.5 cm in length) (Fig. 1) and an albino juvenile *B. bombina*. Both were



Figure 1. An albino Fire-bellied Toad (*Bombina bombina*) metamorph observed in Roztocze, Poland. Photographs by Karol Wałach.

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Figure 2. The habitat of albino Fire-bellied Toad (*Bombina bombina*) metamorph at the time of observation. Photograph by Karol Wałach.

in a small ephemeral pond with a surface area of ~100 m^2 and an average depth of ~20 cm (Fig. 2). We also observed typically colored juvenile and metamorphic Fire-bellied Toads and Common Spadefoot (*Pelobates fuscus*) tadpoles in the pond. Motorbikes associated with a motocross track located near the site created trails and deep ruts, providing favorable conditions for amphibian breeding.

Genetic studies have suggested that mutations such as albinism and leucism can negatively affect survival, hence observations of albino adults are rare (e.g., López and Ghirardi 2011). Consequently, albinism in *Bombina* spp. has been observed most frequently in larvae and juveniles (Rösler 1983; Neudorfer 1989; Charbonnier et al. 2017; Di Nicola et al. 2025), as was the case in our observation.

Multiple reports document albinism in *B. variegata* in Europe (Fatio 1872; Juszczyk 1978; Rösler 1983; Neudorfer 1989; Genthner and Hölzinger 2007; Charbonnier et al. 2017; Robise 2019; Di Nicola et al. 2025) and Wiktorowa (1967) described an albino *B. variegata* with typically-developed and pigmented eyes. However, to the best of our knowledge, this is the first report of albino Fire-bellied Toads in Poland.

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