

Rana temporaria: Leucism in combination with retarded development

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There are several forms of pigmentary lacks known for amphibians (Thomas et al., 2002). Leucistic animals possess a completely white body but pigmented eyes. In the latter named aspect they differ from albinistic individuals who additionally lack eye pigmentation resulting in red eye colour (Twelbeck & Forman, 1983; Klemz & Kühnel, 1986; Thomas et al., 2002). Albinistic and leucistic tadpoles and adults are reported for various anuran taxa. Also white spawn is reported. It seems to be produced by white females but the tadpoles colour out rapidly if the spawn is fertilised by a normally coloured male (Smallcombe, 1949; Klemz & Kühnel, 1986). *Rana temporaria* (Linnaeus, 1758) is common in Europe except for Portugal and Iceland. Depending on the temperature it needs two to four months from egg deposition to metamorphosis (Golbach et al., 2014).

A leucistic tadpole of *R. temporaria* (collection number: ZFMK 97380, see Fig. 1) in the Gosner stage 36-37 (Gosner, 1960) was communicated to us in February 2015 by Andreas Niechciol. He had found it in an artificial small water body at Vennhausen near Düsseldorf (51° 13' N 6° 52' O, vgl. Thissen, 2015). Andreas Niechciol observed the leucistic tadpole spending the winter in this water body. The artificial small pond also housed numerous normally coloured tadpoles. The leucistic tadpole did not metamorphose like its conspecifics. Hibernation of tadpoles is known from



Figure 1. Leucistic tadpole of *R. temporaria* (collection number: ZFMK 97380). Photo: A. Reich (2015).

Pelobates fuscus (Nyström et al., 2002), *Alytes obstetricans* (Thiesmeier, 1992) and some other species, but not from *R. temporaria*. In spring 2015 it was taken to an aquarium in the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn, Germany, but died because of an excessive heat period in Bonn in that time after a few days and was subsequently transferred to 70% ethanol and deposited in the herpetological collection of the museum.

In contrast to normal *R. temporaria* tadpoles our specimen was of a whitish-golden coloration, lacking body

pigments. The eyes of the tadpole were normally coloured with a whitish-greyish iris and black pupil. The body shape of the tadpole was oval. It had an elongated body with a rounded snout. The tadpole measured about 3.9 cm in total length, 1.3 cm in body length and 0.7 cm in body width. Our tadpole therefore was of normal size for *R. temporaria* but exceeded the time usually needed for development and hence presumably hibernated in the larval stage. Such a developmental delay in combination with a lack of pigment has never been reported to the best of our knowledge.

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REFERENCES

- Golbach, B., Borkin, L., Grossenbacher, K. & Weddeling, K. (2014). *Rana temporaria* – Grasfrosch. In *Handbuch der Reptilien und Amphibien Europas, Band 5*, pp 305-439. Grossenbacher, K. Wiebelsheim: AULA-Verlag.
- Gosner, K. L. (1960). A simplified table for staging anuran embryos and larvae with notes on identification. *Herpetologica* 16: 183-190.
- Klemz, C. & Kühnel, K.-D. (1986). Ein Beitrag zum Albinismus beim Moorfrosch *Rana arvalis* Nilsson, 1842. *Salamandra* 22: 190-195.
- Nyström, P., Birkedal, L., Dahlberg, C. & Brönmark, C. (2002). The declining spadefoot toad *Pelobates fuscus*: calling site choice and conservation. *Ecography* 25: 488-498.
- Smallcombe, W. A. (1949). Albinism in *Rana temporaria*. *Journal of Genetics* 49: 286-291.
- Thiesmeier, B. (1992). Daten zur Larvalentwicklung der Geburtshelferkröte *Alytes o. obstetricans* (Laurenti, 1768) im Freiland. *Salamandra* 28: 34-48.
- Thissen, T. (2015). Das kleine Monster von Vennhausen. *Rheinische Post* 14.3.2015.
- Thomas, M., Rottscheidt, R. & Hachtel M. (2002). Ein Fall von Flavinismus bei der Erdkröte *Bufo bufo* (Linnaeus, 1758) nahe Bonn. *Salamandra* 38: 119-123.
- Twelbeck, R. & Forman, F. (1983). Ein teilweise albinistischer Grasfrosch (*Rana temporaria* Linnaeus, 1758) im Stadtgebiet Osnabrück (Niedersachsen). *Salamandra* 19: 166-168.

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