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4. Anomaly P in amphibians: a new insight into an old problem

Svinin A.O.

Ecological & Evolutionary Genetics research group, International research laboratory for Climate Change, Land Use, and Biodiversity, Institute of Environmental and Agricultural Biology (X-BIO), University of Tyumen, 25 Lenina St., 625003 Tyumen, Russia.

Abstract: In the 1950s, the famous French biologist and writer Jean Rostand (1894 – 1977) found mass morphological anomalies in water frogs of the genus *Pelophylax* and called them “anomaly P”. It consists in a polymorphic syndrome, which includes symmetrical cases of polydactyly (in mild form), brachymely, taumely, excrescences, outgrowths, tumour-like formations, and additional distal parts of the limb in inguinal region (in severe cases). Rostand suggested that the anomaly P could be caused by teratogenic virus with a temporary effect on limb development and transmitted by fish, however the real cause of this anomaly remains unknown for 70 years after his research. We have experimentally shown that anomaly P developed in water frog tadpoles under the action of trematode *Strigea robusta* and the effect turned out to be stage- and dose-dependent. We found that the action of *S. robusta* is species-specific: parasite causes polydactyly and severe cases of the anomaly P syndrome in toads of the genera *Bufo* and *Bufo* but have no effects on brown frog tadpoles (*Rana arvalis* and *R. temporaria*). Observed deformations in toads were very close to manifestations of anomaly P in water frogs, and abnormality rates and survival in toads were similar to those in frogs. Such selective effect of *S. robusta* metacercariae on amphibian larvae is of great interest and can explain an abnormality pattern observed in natural populations of European amphibians.

Svinin, Anton O. (俄罗斯)



*Senior Research Fellow, Ecological & Evolutionary Genetics research group,
International research laboratory for Climate Change, Land Use, and Biodiversity,
Institute of Environmental and Agricultural Biology (X-BIO), University of Tyumen, Tyumen,
Russia*

ranaesc@gmail

Svinin Anton. Anomaly P in amphibians: A new insight into an old problem

Anton O. Svinin is a Senior Research Fellow at the University of Tyumen, Russia. He conducted scientific and pedagogical work at the Mari State University and Tomsk State University on the position of Associate Professor in 2016-2021. He is a member of A. M. Nikolsky Herpetological Society of the Russian Academy of Sciences. His PhD work focused on genetic structure, morphological variation, and gametogenic peculiarities in water frogs of the genus *Pelophylax* from northeastern European Russia. Recently, his research focuses on morphology, ecology, and genetics of amphibians from Northern Eurasia, as well as host-parasites interactions between trematodes and amphibians in ecosystems. Anton O. Svinin is currently examining morphological anomalies in water frogs also known as the “anomaly P”.