

## ABOUT THE PRESENCE OF *RANA TEMPORARIA* SPECIES (AMPHIBIA) AT 150 M ALTITUDE IN THE LIVADA FOREST (NORTH-WESTERN ROMANIA)

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**Abstract.** *In the spring of the year 2007 we identified, in the forest from Livada, a population of Rana temporaria at the altitude between 150 and 160 m. This is the lowest altitude at which the species was recorded till now in the western part of Romania. The frogs occupy the moist and shady areas of the forest from Livada, at the foot of the most western peak that flanks the entrance in Oaş Depression.*

**Keywords:** *Rana temporaria, low altitude, Oaş Depression.*

**Rezumat.** *Despre prezența speciei Rana temporaria (Amphibia) la altitudinea de 150 m în pădurea de la Livada (nord-vestul României). În vara anului 2007 am identificat în pădurea de la Livada o populație de Rana temporaria la altitudinea între 150 și 160 m. Aceasta este altitudinea cea mai joasă semnalat acum în vestul României. Broaștele ocupă zonele cele mai umbroase și umede al pădurii de la Livada, aflat la poalele a celui mai vestic vârf de la intrarea în Depresiunea Oaşului.*

**Cuvinte cheie:** *Rana temporaria, altitudine joasă, Depresiunea Oaşului.*

### INTRODUCTION

*Rana temporaria* is one of the most widespread species of amphibians from Europe (MAYER et al., 1998). In the north of its range, the species is present at reduced altitudes, but in the southern parts of its area is exclusively spread in high and mountain zones (GROSSENBACHER, 1997).

In Romania, *Rana temporaria* is present in the hill and mountain regions, at more than 200 m altitudes (COGĂLNICEANU et al., 2000). It is a species attached to a high level of humidity (FUHN, 1960, IFTIME, 2005), the biggest populations being present in coniferous and beech forests (GHIRA et al., 2002). However, it was recently noticed in Romania, in northern Moldavia in swampy, treeless zones, placed at reduced altitudes (COVACIU-MARCOV et al., 2003 a, STRUGARIU et al., 2006).

The lowest altitude at which *Rana temporaria* was recorded so far in the western part of Romania was 170 m (COVACIU-MARCOV et al., 2006). Previously, in many regions of the west side of the country, the species was noticed at altitudes of about 200 m. (COVACIU-MARCOV et al., 2003 b, 2005 a, b).

In April of the year 2007, we identified a *Rana temporaria* population in the forest from Livada, Satu-Mare County, at the foot of the most western peak that flanks the Oaş Depression. The minimum altitude at which the frogs are present is 150 m, this being so far the lowest altitude at which the species descend in west of Romania. Previously, in the Oaş region, including the forest from Livada, there was made a study regarding the geographical distribution of the herpetofauna (COVACIU-MARCOV et al., 2003 c), but *Rana temporaria* was not noticed in the area, but only in the Oaş Mountains, at altitudes more than 300 m.

The frogs are spread on the sides of a land road that crosses the forest parallel with the base of the hillock. The forest is mainly made up by species of quercineae, being very dense, shady, with high humidity, with old and big trees, but also with areas of very thick bushes. On the hilly side, there are even deforested and naturally regenerated sectors. The frogs live only in the shadiest zone of the forest, with rocky substratum, covered by a thick carpet of dead leaves. At 50 m downstream of the road, the forest thins out and becomes grassy, this being the inferior distribution limit of the frogs. In that region *Rana temporaria* is missing, but there are many samples of *Rana dalmatina*. The common frogs are mainly spread next to some channels and torrents with rocky substratum, similar to the habitats of the species from higher zones.

The descent of the species at this reduced altitude must be integrated in the general context of the forest from Livada and the field region of the north part of Satu-Mare County, on the whole. Thus, in the region, generally mountain species in Romania like *Zootoca vivipara* or *Vipera berus* are present on the field, next to *Rana arvalis*, a glacial relict species (COVACIU-MARCOV et al., 2003c). The presence of these species at low altitudes is probably determined by the colder and moister climate of the area (STROENESCU et al., 1966). It is however possible that these species had populated the territory in cause, along the last ice age too, the Carpathian Basin being recently considered a glacial refuge (WILLIS et al., 2000, WILLIS & VAN ANDEL, 2004). In the same way, however it can't be excluded the supposition that the phenomenon is more largely met in western Romania, but the population from the inferior altitude limit are very rare. This fact seems to be proved by the previous non-discovery of the population from Livada contributed with the reduced number of previous studies and with the rarity of the habitats from reduced altitudes, due to the deforestations.

## BIBLIOGRAFIE

- COGĂLNICEANU D., AIOANEI F., BOGDAN M. 2000. *Amfibienii din România, Determinator*. Edit. Ars Docendi, București: 1-99.
- COVACIU-MARCOV S. D., SAS I., CICORT-LUCACIU A. Șt., KOVÁCS ÉVA HAJNALKA. 2003a. *Notes upon the herpetofauna of the northern area of the Botoșani county (Romania)*. Univ. din Bacău. Stud. și Cerc. Șt.. Biol. Bacău. **8**: 201-205.
- COVACIU-MARCOV S. D., SAS I., CUPȘA DIANA, MELEG GABRIELLA, BUD BIANKA. 2003 b. *Studii herpetologice în regiunea Munților Pădurea Craiului și Plopișului (Județul Bihor)*. Analele Univ. din Oradea. Fasc. Biol. Oradea. **10**: 81-95.
- COVACIU-MARCOV S. D., GHIRA I., SAS I. 2004c. *Contribuții la studiul Herpetofaunei zonei Oașului (Județul SM, România)*. Mediul cercetare, protecție și gestiune. Cluj-Napoca. **2**: 107-112.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A. Șt., SAS I., BREDET A. M., BOGDAN H. 2005a. *Herpetofauna from the basin of Mureș river in Arad county, Romania*. Mediul cercetare, protecție și gestiune. Cluj –Napoca. **5**: 147-152.
- COVACIU-MARCOV S. D., CICORT-LUCACIU A. Șt., SAS I., ILE R. D. 2005b. *The herpetological fauna of “Culmea Codrului” (Satu - Mare county, Romania)*. Analele Univ. din Craiova, Craiova. **46**: 163-168.
- COVACIU-MARCOV S. D., SAS I., KISS A., BOGDAN H., CICORT-LUCACIU A. Șt. 2006. *The herpetofauna from the Teuz River hydrographic basin (Arad County, Romania)*. N. West. J. Zool. Oradea. **2**(1): 27-38.
- FUHN I. 1960. “*Fauna R.P.R.*”. Amphibia, Fascicola I. Edit. Acad. R.P.R. București. **14**: 1-288.
- GHIRA I., VENCZEL M., COVACIU-MARCOV S. D., MARA GY., GHILE P., HARTEL T., TÖRÖK Z., FARKAS L., RÁCZ T., FARKAS Z., BRAD T. 2002. *Mapping of Transylvanian Herpetofauna*. Nymphaea, Folia Naturae Bihariae. Oradea. **29**: 145-203.
- GROSSENBACHER K. 1997. *Rana temporaria* (Linnaeus 1758). in: Gasc J. P. (ed.). Atlas of Amphibians and Reptiles in Europe. Museum National D’Histoire Naturelle. Paris: 158-159.
- IFTIME AL. 2005. *Amphibia*. in: “Cartea Roșie a Vertebratelor din România”, editori Botnariuc & Tatole. Edit. Acad. Române București: 1-325.
- MAYER A. H., SCHMIDT B. R., GROSSENBACHER K. 1998. *Analysis of three Amphibian populations with quarter - century long time - series*. Proc. R. Soc. Lond. B. Londra. **265**: 523-528.
- STOENESCU Ș. M., ȘCHIOP A., DICA I., POPESCU E., PATRICHI E., ȚEPEȘ E. 1966. Atlasul climatologic al R. S. R. București.
- STRUGARIU AL., GHERGHEL I., VOLOSCIUC-HUTULEAC M. V., SĂHLEAN T. C., SAS I., PUȘCAȘU CRISTINA MARIA. 2006. *Preliminary data concerning the distribution of amphibian fauna in Suceava County (Romania)*. Analele Univ. din Oradea. Fasc. Biol. Oradea. **13**: 39-47.
- WILLIS K. J., RÜDNER E., SÜMEGI P. 2000. *The full-glacial forests of central and southeastern Europe*. Quaternary Research Washington **53**: 203-213.
- WILLIS K. J., VAN ANDEL T. J. 2004. *Trees or no trees? The environments of central and eastern Europe during the last Glaciation*. Quaternary Science Reviews. Elsevier Ltd. **23**: 2369-2387.

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