Is the conservation of the moor frog problematic in Romania?

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Abstract. Recently it was published a review regarding the distribution and general conservation status of the moor frog in Romania. The present paper wants to debate some additional aspects about conservation problems of Rana arvalis in Romania by discussing new misidentification records and new population size records.

Key words: Rana arvalis, conservation problems, Romania

The moor frog, Rana arvalis, is considered endangered in Romania, being specified in Annex 4A of the Order number 27 from 20/16/2007, regarding the protected natural habitats, as a species of community interest that needs strict protection. In order to make a precise statement about the conservation status of the moor frog the following are necessary: detailed knowledge about its distribution; data concerning the preferred habitats; and size of the populations. Recently it was published a review regarding the distribution and general conservation status of the moor frog in Romania (Sas et al. 2008). The present note wants to debate some additional aspects about conservation problems of Rana arvalis in Romania.

The quality of available distribution data is a first aspect that makes really hard to perform a real evaluation about the conservation status of Romanian Rana arvalis populations. It was showed in the above mentioned review that some of the existing distribution data are questionable (see in Sas et al. 2008). In general, the problem is that the two last large distribution publications (for Transylvanian - Ghira et al. 2002, for Romania - Cogălniceanu et al. 2000) reviewed older records from the literature, personal communications and museum collections, many of these date based on possible misidentifications. A good example would be the mentioning in both papers of Rana temporaria instead of Rana arvalis near the locality of Sacuieni-Bihor (ET 84, Ier Valley, the Western Plain). Another real problem is represented by the fact that in some recent papers the authors seems to made misidentifications and confusions between the 3 brown Ranidae species from Romania (R. arvalis, R. temporaria and R. dalmatina) (see the discussion in Sas et al. 2008).

Beside the misidentification based record of the moor frog in south-western corner of Moldavia (see in Ghiurcă et al. 2006, discussed in Sas et al. 2008) there is a new publication that wants to shows that in the Cozia Massif there can be found populations of Rana arvalis (Iftime & Iftime 2007). This “new record” is more than interesting, because in a previous paper regarding the same region (Iftime & Iftime 2006), the authors mentioned reptile species (eg. Vipera ammodytes) whose presence excludes the presence of the moor frog. On the other hand, neither the identification method used by the authors nor the attached photographs can be considered convincing. The authors tried to argument the possibility of the presence of the moor frog by using data from the review Ghira et al. 2002 in which there is a record for Turnu Rosu (45 km upstream the Olt River - a record that needs verification too). Is more than hazardous the
authors’ (Iftime & Iftime 2007) attempt to use their “own new record” in order to confirm the doubtful data of the presence of the moor frog in Mehedinti county (listed in Bazilescu et al. 2008).

Regarding the size estimation of some Romanian moor frog populations, available data exist only for a few areas, but in the Red Data List of Vertabrates from Romania, there is a dangerous statement, being considered that *Rana arvalis* is represented in Romania by a total number of around 20,000 individuals (Iftime 2005, and see discussion in Sas et al. 2008). In a similar manner, the statement according to which the moor frog populations from the Ier Valley (The Western Plain) have been reduced to 50% of its original size (Cogălniceanu & Venczel 1993) is based only on speculations in the absence of previous studies. This is proven by the fact that, in this region, the knowledge about the distribution of the moor frog has recently doubled due to more intensive recent surveys (Covaciuc-Marcov et al. 2003). Also, recent studies have recorded one of the largest *Rana arvalis* populations in Romania in this area (Sas et al. 2006, and also see in Sas et al. 2008). Practically, the only available data with regards to the size of moor frog populations refer to the Ier Valley (The Western Plains) (Sas et al. 2006) and the Ciuc Basin (eastern area of the Transylvanian Plateau) (Demeter & Mara 2006, Demeter & Benko 2008).

The largest *Rana arvalis* populations seem to be recorded in the Ciuc Basin (several populations over 600 individuals - Demeter & Mara 2006, and a record with over 2,600 individuals – Demeter & Benko 2008). Apart from these, there are only two other populations with a high number of individuals: one over 650 (see in Sas et al. 2006, 2008) and the other, recently recorded, with over 1000 individuals (see in Covaciuc-Marcov et al. submitted paper1 – not discussed in Sas et al. 2008) from the Ier Valley. All the remaining populations are much smaller, comprising 200-400 individuals and in some of the areas the moor frog can be found accidentally in very small numbers (see in: Sas et al. 2006). This situation seems to be similar in the rest of the Western Plains, such as the Crasna Valley and the Barcau Valley (Covaciuc-Marcov, S.D. & I. Sas unpublished data). It is worth mentioning that a *Rana arvalis* population exists in continuous habitats in the north-eastern area of the Western Plains, in the forests from Livada (north-eastern part of Satu-Mare county) and the adjacent pastures. Research began in 2002 have showed a metapopulation with over 3,000 individuals (Sas, I. & S.D. Covaciuc-Marcov in preparation – also see in Covaciuc-Marcov et al. 2008).

The difference between sizes of the moor frog populations is mainly a result of the differences between the habitats’ sizes (both aquatic and terrestrial) (see in: Demeter & Mara 2006, Sas et al. 2006). In the amphibians’ survival strategy, besides spawning sites, the terrestrial feeding environment is also crucial. In the case of the moor frog populations from the Ier Valley the highest values of the food diversity have been recorded for larger populations, compared to the other populations in the area (Sas, I. in preparation).

The habitat(s) and microhabitats are the target of many management proposals for conserving species and communities and therefore it would be very useful to predict what are and will be the consequences of the different modifications at the habitat and landscape scale on the studied species (Hartel et al. 2008). Studies that explore the relative importance of patch and landscape features in determining the size of breeding populations are completely absent from Romania. Data about the moor frog’s habitats, as in the case of its distribution, are known only for the populations from the Western Plains, the Eastern Carpathians and Northern Moldavia. In all of these regions, the moor frog occupies similar habitats (see in Sas et al. 2008). As a result of intense dry out of the swamps, most of the *Rana arvalis* populations had reduced in atypical habitats, of smaller sizes, which have limiting effects on the size of these populations. It has been proposed that the most important breeding habitats have been destroyed by river

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regulation works (see in: Demeter & Mara 2006, Sas et al. 2006). The intensive river regulation works in the second half of the 20 century probably caused the disappearing of Rana arvalis populations or their fragmentation to smaller populations on the edges of formerly continuous habitats. The creations of channels do not provide suitable breeding habitats for a species like Rana arvalis (Mara & Demeter 2005, and also see in Demeter et al. 2006). Thus, despite the fact that these spawning habitats (ditches and channels) are quite deep, these small sized habitats expose the Rana arvalis spawn and larvae to a large number of predators or to the negative effects of the communal spawning (see in: Sas et al. 2006).

The priority for the Romanian Rana arvalis populations is to optimize the conditions for the local breeding populations by managing both the breeding and foraging habitats. Protection of aquatic breeding sites may be of little value if adjacent terrestrial habitats used by amphibians for feeding and shelter are destroyed (see this statement in: Alford & Richards 1999 or in Adrados & Consult 2003). The amphibian species population size is likely to be influenced by the quality of both aquatic and terrestrial habitats (see in: Vos & Chardon 1998). Therefore, the succession status of potential breeding and foraging habitats, in combination with the occurrence of breeding success within approximately 1 kilometer’s distance will be the key elements in a conservation strategy. However, for the long-term survival of amphibian populations in a landscape, a network of habitats is needed (Stumpel 2004). Priority should be made to protect the large populations of Rana arvalis in Romania, especially those that live in areas relatively close to each other and hence it could be part of several unique infrastructures. Also, priority protection for the large populations does not mean that small populations are less in need of protection and any measures in this respect are welcomed.

The really conservation status of the moor frog in Romania are almost completely unknown, mainly caused by the fact that the distribution of moor frog in Romania is not sufficiently known (compared to other European Countries – see papers in Glandt & Jehle 2008), a lot of the records probably being based on cases of misidentification. The only areas about which we can safely discuss about the real status of the moor frog populations are the Western Plains (the Ier Valley, the Somes Plain), the Eastern Carpathians (the Ciuc Basin, the Brasov Basin) and northern Moldavia (requires further, more detailed herpetofaunistical inventories), (see in Sas et al. 2008). As concerning the Transylvanian Plateau, further studies are necessary in order to confirm or infirm the presence of the moor frog in the area (also see the discussion in Sas et al. 2008). Taking all these into account, in Romania Rana arvalis can be considered critically endangered (CR).

References


***** OUG nr. 27 din 20/06/2007, privind regimul ariilor naturale protejate, conservarea habitatelor naturale, a florei și faunei sălbatice , Anexa Nr. 4B, Specii de Interes Național SPECII de animale și de plante care necesită o protecție strictă. [in Romanian]