A New Locality for *Rana ridibunda caralitana* Ankan, 1988 (Anura: Ranidae) in the Central Anatolia

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Abstract: In this study, a total of 18 adult marsh frog specimens collected from Bor (Nigde) have been examined through the morphological analysis, primarily on their coloration and pattern characteristics. It is concluded that the examined specimens fall into *R. ridibunda caralitana* category. Thus, the distribution area of *caralitana* has been extended.

Key Words: Rana ridibunda, taxonomy, morphology, distribution range.

Introduction

*Rana ridibunda*, considered a monotypic species until recent years, was first described by Pallas from Atyrau (Western Kazakhstan) (Terratypica-recticta). The species circulates in central and South Europe, North Africa and West Asia.

Lake frogs in Greece, formerly classified as *R. ridibunda*, have recently been reclassified as three species *R. ridibunda*, *R. epeirotica* and *R. balcanica* (Schneider et al. 1984; Schneider et al. 1993).

*R. ridibunda* is also widespread in Turkey. According to Bodenheimer (1944), Başoğlu and Özeti (1973), it is a homogenous species in Turkey. Although Bodenheimer (1944) has recorded specimens with orange coloured venters from Bęyehir Lake they are accepted without a detailed investigation as traits belonging to the nominate subspecies. Based on some morphological and coloration properties, Ankan (1988) described the Bęyehir population as *R. r. caralitana*. Later, the same subspecies was reported from Lake Eğirdir and Lake Sügila, tributaries of the Çarşamba, and also from Gölcük (İsparta), Çivril (Denizli) in the west, outskirts of the Taurus Mountains in the south, the vicinity of İzr-Ereğli (Konya), Kırkgöz (Antalya), Taşkesişi (Korkuteli/Antalya), Gırev Plateau (Elmalı/Antalya), Lake Gencek (Derebuğak/Konya), Derebuğak (Konya) and Tınaztepe (Seydisehir/Konya) in the east, vicinity of Yaşaman (Karapınar/Konya) in the north-east (Ataštür et al. 1990; Ankan et al. 1994, 1998; Budak et al. 2000, Kaya et al. 2002, Düşen et al. 2004; Tosunoğlu et al. 2005).

Water frogs in Southwest Asia, including Turkey, were described as *Rana levantina* by Schneider et al. (1992) using certain voice analysis methods. Beerli (1994) and Dubois and Ohler (1994), on the other hand, quoted the species as *R. bedriagae* taking the priority principle into consideration. Moreover, Sinsch and Schneider (1999) and Schneider and Sinsch (1999) carried out a series of studies in which they stated that the presence of this species in the moderate climate of the southern regions of Turkey was controversial and that *R. ridibunda* could inhabit these regions as well. Some other researchers (Beerli 1994; Jdeidi et al. 1998, 2001), on the other hand, reported that *R. bedriagae* is the only species that lived in Anatolia. Jdeidi et al. (2001) extended the distribution of *caralitana* subspecies so as to encompass the Çardak-Denizli area and described it as a subspecies of *R. bedriagae*. They also reported that *caralitana* could be accepted as a separate subspecies on account of the fact that *caralitana* and its nominate subspecies coexisted in Akşehir and Çardak. Most recently, Plotner et al. (2001) stated that Anatolian marsh frogs do not represent *R. bedriagae* on the basis of mitochondrial DNA techniques.

In this study, specimens collected from Bor (Nigde) were evaluated taxonomically according to their morphological properties.

Materials and Methods

Our study was conducted on September 7 July 2005. We studied 18 adult (10 ♂♂, 8 ♀♀) specimens of *Rana ridibunda* which were collected from Bor (37° 54' N, 34° 30' E, 1100 m a.s.l.) (Figure 1). The material is now deposited in the Zoology Department, Ege University (ZDEU). The pattern and coloration characteristics were recorded from live specimens,
later the alcohol-formaldehyde fixed specimens (3 parts 40% formaldehyde + 7 parts 70% alcohol) were kept in 70% ethanol. The morphometrical measurements were taken with a digital caliper of 0.01 mm sensitivity.

**Material:** ZDEU 262/2005, 1-18; Bor, Niğde province, 07-07-2005, Leg.: D. Ayaz, M. Afsar, K. Çiçek

**Results and Discussions**

The samples used in this study were sexually mature. No difference between the sexes was observed in the investigated characteristics, so the data from both sexes were pooled. Morphometric measurements and some ratios derived from these measurements are given in Table 1.

In all the specimens examined, the ground coloration of the dorsum was in various hues of green and brown. The shape and size of the maculations in the dorsum varied. The ground coloration of the whole venter including the extremities and the head was off-white almost covered with orange maculations. The pattern types of the specimens of *R. ridibunda* from Bor (Niğde) are given in Table 2, Figure 2 (Dorsal A, B) and Figure 3 (Ventral A, B).


Table 1. Morphometric measurements (in millimeters) and ratios of the *R. ridibunda* material from Bor (Niğde) together with statistical data. N: number of specimens, M: mean, SD: standard deviations and SE: standard errors of the means, SVL: Snout-Vent Length, TL: Tibia Length, HL: Head Length, HW: Head Width, FTL: First Toe Length, MTL: Metatarsal Tubercle Length.

<table>
<thead>
<tr>
<th>Characters</th>
<th>N</th>
<th>M</th>
<th>Range</th>
<th>SD</th>
<th>SE</th>
<th>N</th>
<th>M</th>
<th>Range</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVL</td>
<td>10</td>
<td>76.70</td>
<td>70.62-85.63</td>
<td>4.975</td>
<td>1.573</td>
<td>8</td>
<td>82.00</td>
<td>73.61-95.48</td>
<td>7.201</td>
<td>2.546</td>
</tr>
<tr>
<td>TL</td>
<td>10</td>
<td>38.10</td>
<td>34.12-42.58</td>
<td>3.244</td>
<td>1.025</td>
<td>8</td>
<td>40.73</td>
<td>37.81-47.34</td>
<td>3.130</td>
<td>1.106</td>
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<tr>
<td>HL</td>
<td>10</td>
<td>25.87</td>
<td>23.88-28.77</td>
<td>1.492</td>
<td>0.471</td>
<td>8</td>
<td>27.14</td>
<td>25.07-31.25</td>
<td>2.014</td>
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<tr>
<td>HW</td>
<td>10</td>
<td>28.93</td>
<td>25.25-31.78</td>
<td>2.045</td>
<td>0.646</td>
<td>8</td>
<td>31.14</td>
<td>29.29-35.73</td>
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<td>0.749</td>
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<tr>
<td>FTL</td>
<td>10</td>
<td>15.89</td>
<td>12.40-16.70</td>
<td>1.669</td>
<td>0.528</td>
<td>8</td>
<td>16.71</td>
<td>14.78-19.23</td>
<td>1.357</td>
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<tr>
<td>MTL</td>
<td>10</td>
<td>4.85</td>
<td>3.67-5.76</td>
<td>0.539</td>
<td>0.170</td>
<td>8</td>
<td>4.72</td>
<td>4.34-5.44</td>
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<td>SVL/FTL</td>
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<td>0.032</td>
<td>8</td>
<td>2.01</td>
<td>1.89-2.09</td>
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<tr>
<td>SVL/HW</td>
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<td>0.098</td>
<td>0.031</td>
<td>8</td>
<td>2.63</td>
<td>2.51-2.77</td>
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<td>0.034</td>
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<tr>
<td>SVL/TL</td>
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<td>4.42-5.68</td>
<td>0.340</td>
<td>0.107</td>
<td>8</td>
<td>4.91</td>
<td>4.53-5.19</td>
<td>0.202</td>
<td>0.071</td>
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<tr>
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<tr>
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<td>0.100</td>
<td>8</td>
<td>3.54</td>
<td>3.24-3.94</td>
<td>0.214</td>
<td>0.076</td>
</tr>
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</table>


Figure 2: Dorsal (A, B) pattern types of the specimens of *Rana ridibunda* from Bor (Niğde) ([Horizontal bar 20 millimeters])

Figure 3: Ventral (A, B) pattern types of the specimens of *Rana ridibunda* from Bor (Niğde) ([Horizontal bar 20 millimeters])
Despite the studies (Beerli 1994; Jdeidi et al. 1998, 2001, Kaya et al. 2002, Düşen et al. 2004) that consider Anatolian marsh frogs as *R. bedriagae*, we are confident, as mentioned by Plotner et al. (2001) that more detailed studies should be done to explain the phylogenetic relations of Anatolian marsh frogs.

The present known distribution range of this subspecies has been extended to the eastern regions: Bor (Niğde) in addition to the known range of Lake Beyşehir (its terra typica), İvriz (Ereğli/Konya), Lake Eğirdir, Lake Sügli, Lake Gölçük (İsparta), Lake Hotamış, Lake İşkli and Çardak (Denizli), Yaşamapinar (Karapınar/Konya), Lake Gencek (Derebucak/Konya), Derebucak (Konya), Tinaztepe (Seydişehir/Konya), Kırkgöz (Antalya), Taşköşes (Korkuteli/Antalya) and Girdev Plateau (Elmalı/Antalya) (Figure 1).

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References


