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A Taxonomical Study on the *Rana ridibunda* PALLAS, 1771 (Anura: Ranidae) Population from İvriz-Ereğli (Konya)

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Abstract: In this study, 15 adult (5♂♂, 10 ♀♀) *Rana ridibunda* specimens were studied. According to the results of the morphological analysis, the İvriz population was included in *R. r. caralitana.* Furthermore, the distribution area of *R. r. caralitana* was extended.

Key Words: *Rana ridibunda,* taxonomy, morphology, distribution area.

İvriz-Ereğli (Konya) *Rana ridibunda* PALLAS, 1771 (Anura: Ranidae) Populasyonu Üzerinde Taksonomik Bir Araştırma

Özet: Bu çalışmada, 15 (5♂♂, 10♀♀) ergin *Rana ridibunda* örneği incelenmiştir. Morfolojik analiz sonuçlarına göre, İvriz Populasyonu *R. r. caralitana*'ya dahil edilmiştir. Ayrıca *R. r. caralitana*'nın dağılış sahası da genişletilmiştir.

Anahtar Sözcükler: *Rana ridibunda,* taksonomi, morfoloji, yayılış sahası.

Introduction

The species of *Rana ridibunda* is spread over central and southern Europe and western Asia. This species, which was formerly represented by two subspecies, became a monotypical species after the *perezi* subspecies was accepted as a separate species by Hotz (1). But in the known regions of the species' range new taxa were discovered by different methods. Schneider et al. (2) have discovered a new species (*R. levantina*) by studying *R. ridibunda* populations from Israel by morphologic and bioacoustic means. Joermann et al. (3) have inserted *R. ridibunda* populations from western Turkey into *R. levantina* according to their bioacoustic properties. Also in Greece some *R. ridibunda* populations were established as two separate species (*R. eperiotica* and *R. balcanica*) by means of morphological and bioacoustical studies (4, 5). In Turkey, which is within the area of distribution, it is obvious that further studies with different methods on this species are needed.

The first studies on the taxonomy of the *R. ridibunda* populations of Turkey were made by Bodenheimer (6) and Başoğlu et al. (7) and a homogeneity was mentioned. Although Bodenheimer (6) has recorded samples which had orange-colored venters from Lake Beyşehir, these were accepted as belonging to the nominate race (*R. r. ridibunda*) without a detailed investigation. Later, many samples from Lake Beyşehir were studied morphologically by Arıkan (8), considering especially the differences in the pattern and coloration of the venters, and a new subspecies (*R. r. caralitana*) was defined. In later studies (9, 10) it was indicated that this subspecies spread over Gölcük (Isparta) in the west, Lake Hotamış in the east, lower areas of the Toros Mountains in the south in addition to Lake Beyşehir which is its terra typica. This subspecies cannot be found beyond the Sultan Mountains in the region.

In this study, the samples collected from İvriz-Ereğli (Konya) were evaluated taxonomically according to their morphological properties (biometry and pattern & coloration).

Material and Method

The samples in this study (5 ♂♂, 10 ♀♀) were collected from İvriz-Ereğli (Konya), at an altitude of 1155 m, on 8 July 1996 and 31 May 1997. Presently, they are deposited in ZDEU (Zoology Dept., Ege University) Museum. The various morphometrical measurements were taken using a dial caliper. The procedure of Uzzell and Hotz (11, 12) was used for the measurements and derived ratios.

Results

The samples used in this study were sexually mature. No differences between the sexes were 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.

No significant differences between the samples collected in May and July were observed from the point of view of pattern and coloration.

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. In 80% of them a vertebral stripe was present, with randomly distributed maculations on each side (Figure 1A). In 20%, there was no vertebral stripe and dark maculations of various sizes were distributed randomly (Figure 1B).

Figure 1. Dorsum pattern types of the specimens of *Rana ridibunda* from from İvriz-Ereğli (Konya) A: Dorsum with a vertebral stripe. B: Dorsum without a vertebral stripe. (Horizontal bar: 20 millimeters)

Characters	Ext.	M	SD	SE
Snout-Vent Length	68.20-125.70	100.205	14.533	3.753
Tibia Length	34.18-54.20	48.300	5.806	1.499
Head Length	23.26-37.08	32.587	3.891	1.005
Head Width	27.16-43.74	38.003	4.714	1.217
First Toe Length	10.10-17.54	14.995	1.873	0.484
Metatarsal Tubercle Length	4.44-6.66	5.625	0.708	0.183
Snout Vent Length/Tibia Length	1.957-2.319	2.070	0.092	0.024
Snout Vent Length/Head Width	2.442-2.874	2.632	0.115	0.030
Snout Vent Length/First Toe Length	6.135-8.027	6.679	0.428	0.110
Snout Vent Length/Metatarsal Tubercle Length	15.360-19.398	17.795	1.146	0.296
Head Length/Head Width	0.817-0.922	0.858	0.027	0.007
Tibia Length/Metatarsal Tubercle Length	7.698-9.527	8.602	0.529	0.137
First Toe Length/Metatarsal Tubercle Length	2.275-2.963	2.673	0.229	0.059

Table 1. Some morphometrical values (in millimeters) and derived ratios of the investigated 15 specimens from İvriz-Ereğli (Konya). Ext.: Extreme Values; M: Mean; SD: Standard Deviation; SE: Standard Error of the Mean.

Ground coloration of the whole venter including the extremities and the head was off-white almost covered with orange maculations. The maculations were vermiculate in shape in 73.33% of the investigated 15 specimens (Figure 2A) and as smallish spots in the remaining 26.67% (Figure 2B).

Figure 2. Ventral pattern types of specimens of *Rana ridibunda* from İvriz-Ereğli (Konya). (Horizontal bar 20 millimeters).

Discussion

The establishment of new taxa by several authors (11,12) from some geographical regions within the widespread range of *R. ridibunda,* necessitated a similar detailed study of Turkish populations, which are also within that range. In fact Arıkan (8) has defined the population of the Lake Beyşehir as a new subspecies (*R. r. caralitana*). In later studies (9, 10) the distrubution area of this new subspecies was widened. Morphometrical data of the İvriz population is almost identical with *R. r. caralitana* (8, 9, 10), hence the İvriz population given in table 1 is in accord with that of R.r. caralitana (8, 9, 10), hence the İvriz population is almost identical with *R. r. caralitana* from a morphological point of view. The İvriz population also resembles *R. r. caralitana,* from the point of view of pattern and coloriation of the venter.

As a result, the currently known distribution range of *R. r. caralitana* has been extended eastwards to include, İvriz-Ereğli, in addition to the known range of Lake Beyşehir (its terra typica), Lakes Eğirdir, Suğla, Gölcük (Isparta) and Hotamış.

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