and *Sceloporus*. Each genus includes several more or less independent sequences of Robertsonian derivation, some involving fusions and others involving fissions. Also, as seen here in *L. monticola monticola* fissioning sequences in these other genera frequently involve Robertsonian polymorphisms as well as differences fixed between species (e.g. *Sceloporus grammicus*[11,12], *Anolis monticola*[13,14] and *Anolis grahami*[15]). The great morphological differences between these 3 genera and the strong geographic barriers which separate the Chilean *Liolaemus* from all other genera with similarly derived karyotypes, argue against any attempt to claim that karyotypes other than the 2n=34 or 36 are primitive in the *Liolaemus* radiation. Rather, we think that the similar patterns of karyotypic variation among these genera suggest that they evolved in similar ways under the control of similar evolutionary circumstances[3].

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Intersubspecific sex chromosome difference in *Citellus citellus* L. (Rodentia, Sciuridae)

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Summary. The autosomal karyotypes of all subspecies studied of *Citellus citellus* from Bulgaria do not differ. The X chromosome, by contrast, is different in 1 of the subspecies where it seems to have undergone a pericentric inversion.

The species *Citellus citellus* L. is represented in Bulgaria by 4 subspecies[2,3]: *C.c. balcanicus* Markov, *C.c. martinoi* Peshev, *C.c. lascarevi* Martino, *C.c.* ssp. *nova* Markov. Zivkovic et al.[4,5], and Savic et al.[6] have described the karyotypes of *C.c. citellus*, *C.c. balcanicus* and *C.c. lascarevi*. These authors do not mention any chromosomal differences between these subspecies. Specimens from the most Eastern population of *C. citellus* (Moldavia - USSR), whose subspecific position is not established, had a karyotype identical to that of the subspecies from the Balkans[7]. From the published data, it appears that there are no differences in the various subspecies of *C. citellus* concerning the number and the morphology of autosomes as well as the morphology of the sex chromosomes (2n=40, NF^a=66).
We have studied the karyotype of different populations of *C. citellus* from Bulgaria by means of the bone marrow

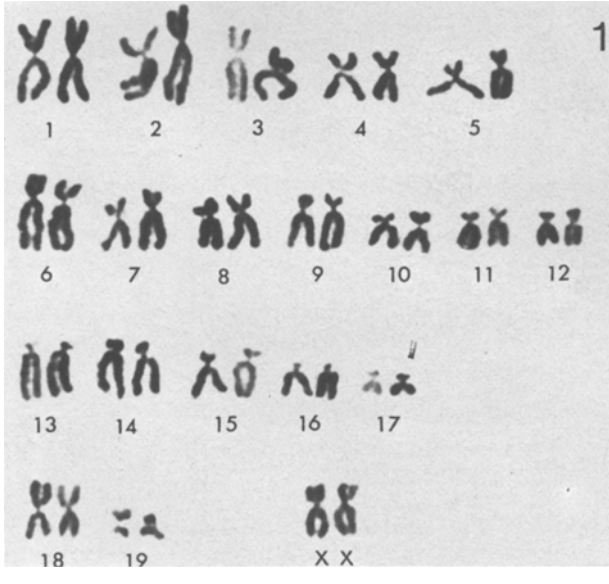

Fig. 1. Representative karyotype of *C.c. balcanicus* female.

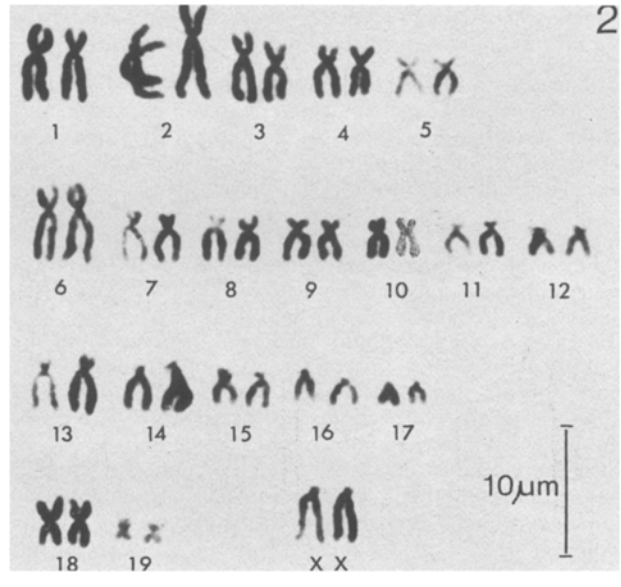

Fig. 2. Representative karyotype of *C.c. lascarevi* female.

technique, considering also the morphological characteristics of the different populations and their subspecific systematic positions. Our material included samples of 6 specimens (2♂♂, 4♀♀) of *C.c. balcanicus* collected from the vicinity of Sofia at about 550 m altitude and from the vicinity of Koprivstitsa, at 1050 m altitude; 5 specimens (3♂♂, 2♀♀) of *C.c. martinoi* collected from Rhodopa mountains at 2600 m altitude; 6 specimens (2♂♂, 4♀♀) of *C.c. lascarevi* collected from the Danube plain at about 200 m altitude; 6 specimens (1♂, 5♀♀) of *C.c.* ssp. *nova* collected from Dobroudja at 150 m altitude; and 5 specimens (2♂♂, 3♀♀) of *C. citellus* collected from Trakia at about 300 m altitude whose subspecific position is not established but whose morphological characteristics are similar to those of *C.c. lascarevi.*

All the specimens studied have a diploid number of 40 chromosomes comprising 5 pairs of submetacentric, 7 pairs of subtelocentric, 5 pairs of acrocentric and 2 pairs of metacentric autosomes (figure 1). The chromosomes are classified according to Levan et al.[8]. The autosomal karyotype did not differ detectably from that described by other authors[4–7] and will not be discussed further. The only variation of major significance is in the morphology of the X chromosomes. Variations in the morphology of the sex chromosomes are not usual among rodents. They have been found in Rattus[9], Peromyscus[10], Akodon[11], Mus[12], Spermophilus[13], Neutoma[14], Tatera[15], Zygodontomys[16], Bandicota[17,18], Oryzomys[19]. The morphology of the X chromosomes is apparently the same in the 3 subspecies *citellus, balcanicus, martinoi* and in the individuals of the subspecies nova from Dobroudja. The X chromosome is a mediumsized submetacentric (figure 1). But in all specimens of *C.c. lascarevi* and in the individuals of the subspecies from Trakia, the X chromosome is a mediumsized acrocentric (figure 2). The X chromosome variants in these cases differ only in morphology but not in size. Thus the difference may be due to a pericentric inversion. The Y chromosome is the smallest element of the complement, measuring about 0.5 µm in all subspecies, and it appears to be acrocentric.

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Electrophoresis of proteins in three populations of *Ophryotrocha labronica* La Greca e Bacci 1962 (Annelida Polychaeta)

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Summary. Different degrees of similarity are found between the electrophoretic patterns of proteins of *Ophryotrocha labronica* populations collected in 3 different localities.

Life histories and sex conditions of samples of *Ophryotrocha labronica* collected in different localities and in different years suggest that this comprehensive species is composed of highly heterogeneous populations[1–3]. The same has been observed in other marine species, belonging to the genera *Crepidula*[4], *Littorina*[5], *Jaera*[6], *Tisbe*[7] and *Capitella*[8].

Colonna[9] showed very significant differences in the masticatory apparatus between females collected in Venice (VE), Naples (NA IV) and Faro, Portugal (FA).

The electrophoretic mobility of general proteins from the 3 populations is now investigated in an attempt to cast more light on their relationships within the *Ophryotrocha labronica* group. The technique of acrylamide gel electrophoresis was employed in the present research.

Each sample consisted of 20 adult specimens, a number that, from preliminary essays, proved most suitable to obtain a reliable and repeatable picture of the general proteins.

Homogenization was performed in 0.5 ml glass containers employing a dental drill[10], in 40 µl Tris-glycine 0.5 mM buffer, pH 8.3. 20 µl of glycerol-bromophenol blue were added to clear supernatant after centrifugation at 14,000 × g for 15 min, and 20 µl of such extract were used for electrophoresis.

This was performed according to the disc method of Davis[11] in glass tubes 60 mm in length and 2 mm in diameter. A glycine-Tris buffer of pH 8.3 was used for the run, and electrophoresis was carried out for 1 h with a voltage of 50 V for 20 min, 100 V for 10 min, 200 V for 30 min. The gels were then removed from the glass tubes and stained overnight in coomassie blue. Destaining was

Similarity matrix for the VE-FA-NA IV populations

	VE	FA	NA IV
VE	X	0.2386	0.2844
FA	0.7614	X	0.2752
NA IV	0.7156	0.7248	X

Lower values are the similarity coefficients of Jaccard (S_J), upper values are distances ($1-S_J$).