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NOTE:

NEW DATA ON THE DISTRIBUTION OF 2N = 38 *SPALAX LEUCODON* (NORDMANN, 1840) CYTOTYPE IN TURKEY

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Subterranean mole rats *(Spalax*) are widespread in the Palaearctic region (Ognev, 1947; Corbet, 1978; Musser and Carleton, 1993). This genus is represented by two species in Turkey, *Spalax ehrenbergi* in the southeast and *Spalax leucodon* (Nordmann, 1840) over the rest of the country (Kıvanç, 1988; Doğramacı, 1989; Yüksel and Gülkaç, 1990, 2001; Nevo et al., 1995; Gülkaç and Küçükdumlu, 1999; Gülkaç and Yüksel, 1999; Sözen et al., 1999; Tez et al., 2001). Moreover, according to Coşkun (1996 a,b), a third species, *Spalax nehringi* (Satunin, 1898), also occurs in Turkey.

S. leucodon displays great karyotypic differentiation within its distribution range in Turkey. There are about 10 karyological forms of this species, as defined by diploid chromosome numbers varying between 36 and 62 (Nevo et al., 1995; Sözen et al., 1999). Climatic and biotic factors are apparently responsible for this chromosomal variation (Nevo et al., 1995). Much of this variation reflects differences between nonrandomly distributed populations, providing an excellent model to examine the concept of chromosomal speciation—the idea that chromosomal rearrangement may promote speciation (King, 1993). Furthermore, the geographic relations of these karyological forms are poorly understood, making it essential to accumulate additional data in order to generate an accurate distribution map of these populations in Turkey.

Here, we add new data to what has already been described for the distribution of the chromosomally variable populations characterized by 2n = 38.

Three mole rat specimens (*S. leucodon*), two males from Dikili–İzmir (39° 03′ N, 26° 53′ E) and one female from Balıkesir–Bigadiç (38° 55′ N, 27° 48′ E), were collected in 1999–2001 (Fig. 1).

Animals were held in large metal boxes that had a mixture of soils obtained from natural habitats. They were supplied with apples, potatoes, lettuce, and sunflower seeds before transport to the Department of Biology, Erciyes University, where they were maintained in a constant temperature room designed to accommodate small mammals (Weihe, 1987) until chromosomal analysis. Metaphase chromosome spreads were derived from bone marrow using the colchicine citrate technique (Ford and Hamerton, 1956).

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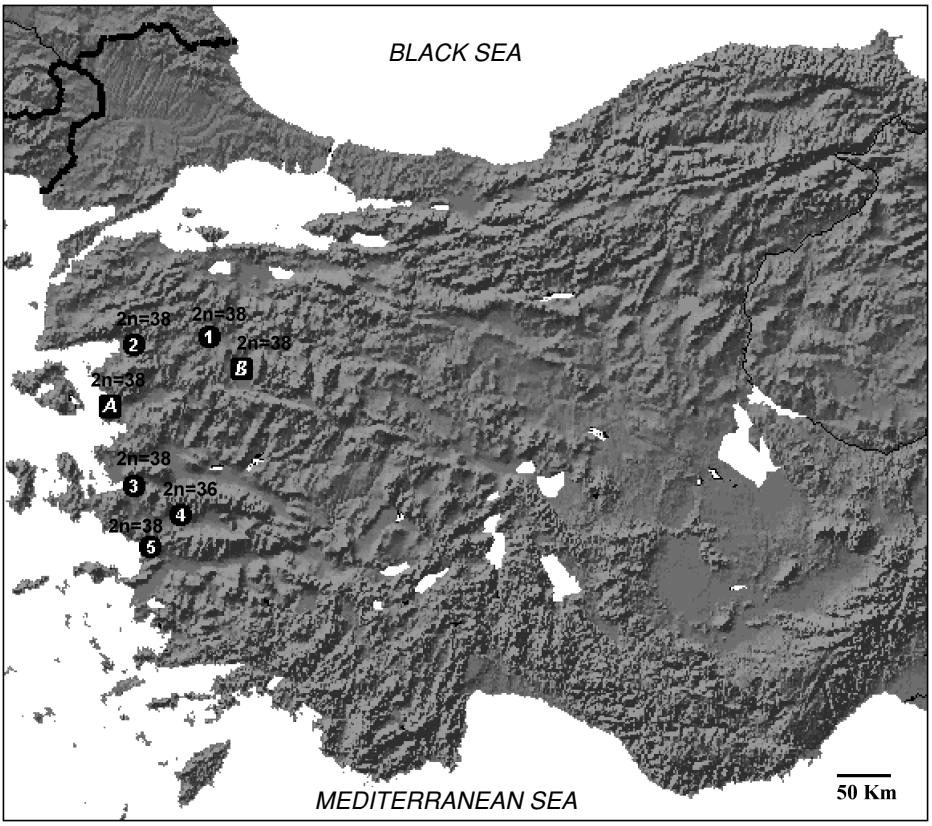

Fig. 1. Map showing the distribution of western Turkey *Spalax leucodon* populations with karyotypes of 2n = 36 and 38. Localities A and B were studied in this study, whereas localities 1–5 were studied by previous workers. Sampling localities are as follows: A: İzmir (Dikili); B: Balıkesir (Bigadiç) (present study); 1: Balıkesir (Nevo et al., 1994, 1995); 2: Havran (Savič and Soldatovič, 1979); 3: İzmir (Nevo et al., 1994, 1995); 4: Bayındır (Sözen et al., 1999); 5: Selçuk (Savič and Soldatovič, 1979). The diploid numbers (2n) recorded from each site are indicated.

Conventional stained chromosomes of the three specimens were obtained and about 20 metaphase cells of each animal were fully analyzed microscopically for precise chromosome composition. The karyotypes were prepared according to Levan et al. (1964). Skins, skulls, and karyotypes of the samples examined are deposited in the Department of Biology, Faculty of Arts and Sciences, Erciyes University, Kayseri.

The karyotypes of the three samples of *Spalax leucodon* from Dikili–İzmir and Balıkesir–Bigadiç, located in western Turkey, consisted of 38 chromosomes. The autosomal complement consisted of seven pairs of metacentric, five pairs of submetacentric, five pairs of subtelocentric, and one pair of acrocentric chromosomes (NFa = 70). Of the

sex chromosomes, X was a large submetacentric and Y was a small acrocentric (Fig. 2). This karyotype is similar to that given for populations (with 2n = 38) from the other western sites (1, 2, 3, and 5) by Savič and Soldatovič (1979) and Nevo et al. (1994, 1995), but differs from that given for the Bayındır–İzmir population (site 4) by Sözen et al. (1999). On the basis of the karyotype of a female mole rat from Bayındır, it was reported that the diploid chromosome number in this population is 36 (Sözen et al., 1999). Unfortunately, the karyograms presented by Sözen et al. (1999) are hand-drawn, making it very difficult to make a more detailed chromosomal comparison. On the other hand, all the karyotype analyses of mole rats from the neighboring western localities (sites 1, 2, 3, and 5) showed the diploid number to be 38.

In this paper, we present the results of the karyotypic analyses of the mole rat population from two new western sites, Dikili and Bigadiç (Fig.1). Since the distance between Bayındır and other western sites is between 47 and 162 km, these studies cover a relatively large area, over which it should be possible to detect any western mole rat populations differing from those with 2n = 38.

Therefore, we conclude that the karyotype with 2n = 38, NF = 74 is probably the only karyotype in the westernmost mole rat populations in Turkey. This is in agreement with the finding that the diploid chromosome number in Turkish *Spalax leucodon* increases from 38 to 62 with increased aridity (Nevo et al., 1994). However, to fully interpret the possible range of chromosomal variation in western mole rat populations, it will be

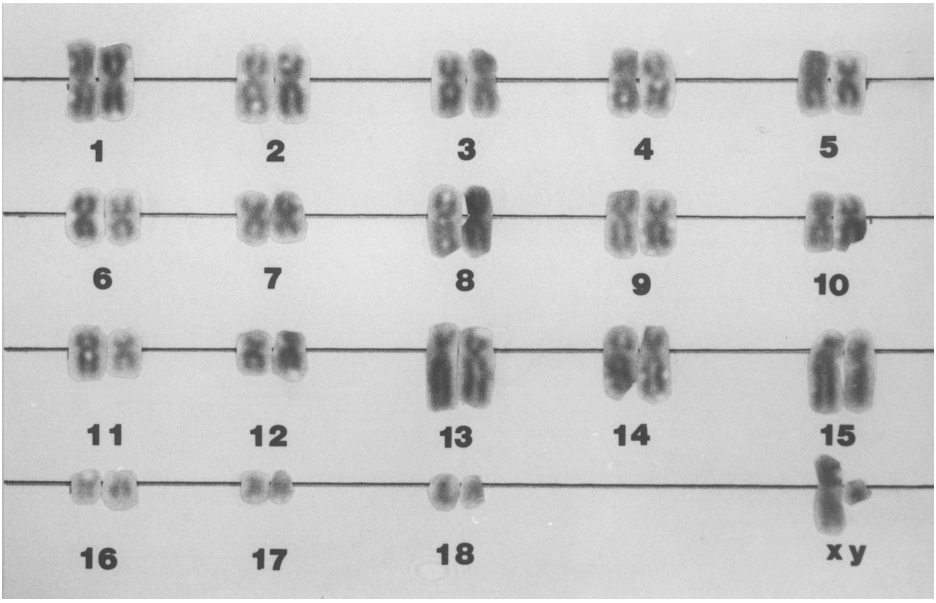

Fig. 2. The karyotype of a male *Spalax leucodon* (2n = 38) from İzmir–Dikili, western Turkey.

necessary to perform further karyotypic analysis from other western localities of the distribution range of *Spalax leucodon* in Turkey.

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