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Karyotype of the Common Vole from the Warsaw Suburbs

KARIOTYP POLNIKA ZWYCZAJNEGO Z OKOLIC WARSZAWY

Krystyna A. ADAMCZEWSKA-ANDRZEJEWSKA, Regina MACKIN-ROGALSKA, Ewa T. MYSTKOWSKA & LESZEK NABAGŁO

Adamczewska-Andrzejewska K.A., Mackin-Rogalska R., Mystkowska E.T. & Nabagło L., 1989: Karyotyoe of the common vole from the Warsaw suburbs. Acta theriol., 34, 11: 163—165 [With Plate IV]

Chromosomes were examined from 16 common voles *Microtus arvalis* (Pallas, 1779) caught in the suburbs west of Warsaw. We found that the karyotype of all individuals was typical for *M. arvalis* form *arvalis* (2n=46, NF=80). This chromosome formula was identical to the only other karyotype of the common vole from Poland (Białowieża) prepared by Fedyk (1974).

[Institute of Ecology PAS, Department of Vertebrate Ecology, Dziekanów Leśny, 05-092 Łomianki, Poland (KAA-A, RM-R, LN) and Medical Academy, Institute of Biostructure, 02-004 Warsaw, Poland, (ETM)]

1. INTRODUCTION

Two sibling species *Microtus arvalis* (Pallas, 1779) and *Microtus rossiaemeridionalis* (Ognev, 1924), first described and named as *Microtus subarvalis* (Meyer, Orlov *et* Skholl, 1972) are found in sympatry in Soviet Union, Bulgaria, Yugoslavia, Romania and Greece (Malygin, 1983). Both species inhabit meadows and agricultural fields. They appear identical morphologically, but they differ in their karyotype, shape and size of spermatozoid head, and baculum shape (Meyer *et al.*, 1972; Aksenova, 1973; Aksenova & Tarasov, 1974). They hybridize very rarely and the offspring are sterile (Meyer, 1983).

Very complicated taxonomic problems of the *M. arvalis* species group were presented by Malygin (1983). The diploid number of chromosomes for *M. arvalis* (syn.: *M. ilaeus* Thomas, 1922 and *M. arvalis ilaeus* Ognev, 1924) is 2n=46. Karyotype analysis of *M. rossiaemeridionalis* (syn.: *M. arvalis rossiaemeridionalis* Ognev, 1924, *M. arvalis epiroticus* Ondrias, 1966, *M. epiroticus* Ondrias, Ruzič, Petrov, Živkovič *et* Rimsa, 1975, *M. subarvalis* Meyer, Orlov *et* Skholl, 1972), showed that the diploid number is 2n=54, and that only one pair of chromosomes is metacentric, the rest are acrocentric (Meyer *et al.*, 1972).

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The two species often occur at the same site. In these areas, *M. arvalis* occupies mainly open fields, while *M. rossiaemeridionalis* occupies shrubby balks, areas of high grass cover, ricks and unharvested fields. When *M. rossiaemeridionalis* is absent, *M. arvalis* expands its use of habitats to include those otherwise used by *M. rossiaemeridionalis* (Dobrochotov, Baranovskij, & Demidova 1985). The relative population size of these species also seems to vary from year to year (Malygin, 1983; Dobrochotov, Baranovskij & Demidova, 1985), and they probably differ in physiological properties as well.

The only karyotypes prepared for the common vole from Poland are those of Fedyk (1974) using 38 specimens from Białowieża. These karyotypes were typical for *M. arvalis* (2n=46, NF=80). *M. rossiaemeridionalis* has not yet been found in Poland, but it has been found in the Lituania neighboring with Poland (Dobrochotov *et al.*, 1985). It has also been found in the Byelorussian and Ukrainian Republics on the basis of identification from morphological features (Pucek, 1984). The lack of karyotypes from these areas has made the identification of the specimens difficult; a 54 chromosome complement is only speculative.

There is recent evidence (Dobrochotov *et al.*, 1985) of westward range expansion by *M. rossiaemeridionalis*. With the extensive work currently underway on the small mammals of central Poland, it has became critically important to verify the species composition of the local populations.

In this study we undertook a karyotypic analysis to determine the species composition of the *Microtus* population at our study site west of Warsaw. It was our goal to verify that the site still only had specimens of *M. arvalis* (2n=46, NF=80).

2. MATERIALS AND METHODS

In April and October 1987, 16 common voles were caught at Płochocin, 20 km west of Warsaw. Trapping was done in rough grassland around drainage ditches, situated near alfalfa fields. Such habitat would be favorable for *Microtus rossiaemeridionalis*.

Mitotic preparations were made according Ford method (1966) from bone marrow using colchicine followed by orcein staining. At least eight slides with 5 to 20 metaphasal plates of each specimen were checked. The karyotype was determined on the basis of chromosome shape and counts down the microscope.

3. RESULTS

We found a diploid number of 46 chromosomes (2n=46, NF=80) in all 16 specimens that we examined. Based on the number of metacentric

and acrocentric chromosomes it appears that the karyotype is typical for *Microtus arvalis* form *arvalis* (Pl. IV).

Our trapping was conducted in habitat suitable for *M. rossiaemeridionalis*. Nonetheless, we found no evidence for its presence. As, a result, we believe *M. rossiaemeridionalis* does not occur in our study area, and since its current range is still far to the east it has probably never occured there.

It seems to us that the karyological research should be continued, especially in eastern Poland. The western border of *M. rossiaemeridionalis* range is moving and the possibility of it colonizing of Poland is great.

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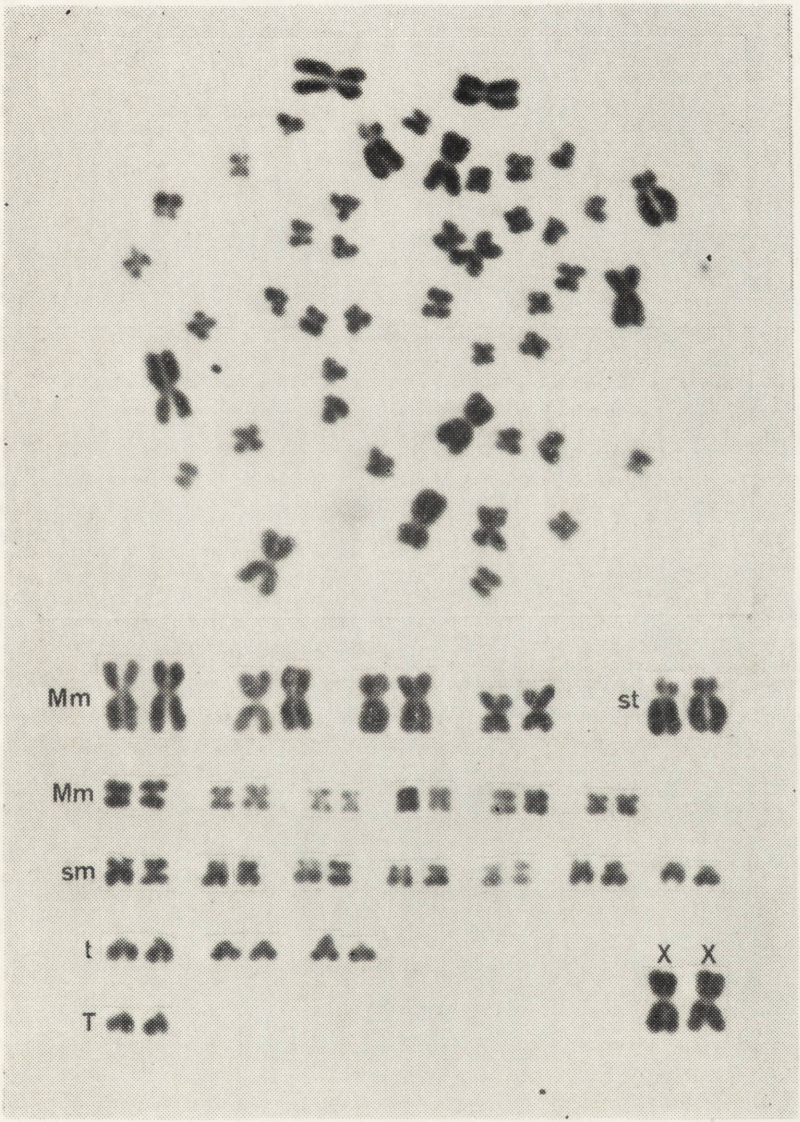
EXPLANATION OF PLATE IV

Fig. 1. Metaphase plate and karyotype of female *Microtus arvalis* form *arvalis*, from the Płochocin population near Warsaw.



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