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A Karyosystematic Study of the Plate Tailed Geckos of the Genus *Teratoscincus* (Sauria, Gekkonidae)

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Abstract. –Karyotypes of two subspecies of *Teratoscincus scincus* are described (*T. s. scincus* and *T. s. rustamowi*). Both have 2n=36, and 46 arms in the karyotype (N. F. =46). A minor difference in centromere position in two of the smaller chromosome pairs was noted, and may characterize the respective subspecies sampled, or may reflect intra-population variation or even error in preparation. The karyotypes differ from an earlier published description for *T. scincus*, in which de Smet (1981) reported 2n=34, N. F. =42. Whether this represents intraspecific variation, error in preparation or interpretation, or a suggestion that the name *T. scincus* is being applied to more than a single species will only be resolved with further systematic study of this gekkonid lizard.

Key words: Reptilia, Sauria, Gekkonidae, *Teratoscincus scincus*, Kazakhstan, Tadjikistan, karyology.

TABLE 1. Karyotypic data for *Teratoscincus scincus*. Legends: M- macrochromosome, m- microchromosome, v- metacentric, sT- subtelocentric, a (A)- acrocentric, NF- basic number.

Species, subspecies	Chromosomal formula	2n	NF	Author
T. scincus	4sT+4v+26A	34	42	de Smet
T. s. scincus	24M(6sT+18A)+12m(4v+8a)	36	46	our data
T. s. rustamowi	24M(6sT+18A+12m(4v+8a)	36	46	our data

Introduction

The Central Asian Gekkonid genus *Teratoscincus* is comprised of four recognized species (Szczerbak and Golubev, 1986). Karyotype data are available only for the species *Teratoscincus scincus* (de Smet, 1981). *T. scincus* is presently divided into three subspecies: *T. s. scincus; T. s. rustamowi;* and T. *s. keyserlingii*. This paper provides karyotypic descriptions of two races of *T. scincus*.

Methods

A total of seven females and four males representing four populations from Turkmenistan (20 km north of Bami station; 50 km north of Bakhardok; 45 km north of Ashkabad; and the vicinity of Gyaurs) were studied. Also, a Kazakhstan population (the Chimkent Region, Syutkent Settlement) was sampled, as were three additional males of *T. s. rustamowi* from Tadjikistan (Leninabad Region, in the vicinity of Yakkatarak Settlement).

Chromosomal samples were prepared from cellular suspensions of bone marrow, blood and testis by the smear method and by using the method of "digging out" as described in Ford and Hamerton (1956) and McGregor and Varley (1986), as modified in part by Manilo (1986).

Cellular mitotic activity was increased by injections of phytohemagglutinine solution (0.02 ml/g body mass) and chorionic gonadotrophin (50 units/g body mass).

Chromosome preparations were stained with Giemsa (2% solution) in a 0.01 M sodium-phosphate buffer (pH 6.8) for 20-30 minutes. After washing in distilled water, the preparations were passed through alcohols and xylols (ortho-xylol) and subsequently embedded in Canadian balsam.

An NU-2 microscope with a 100x10 magnification was used for microscopy and photomicrography. Chromosomes are described using the centromeric position to define morphology following the

FIG. 1. *Teratoscincus scincus scincus.* a– mitotic metaphase of a dividing cell of bone marrow; b– bivalents of diakinesis; c, d– karyotype of female and male, respectively; e– idiogram of the karyotype.

FIG. 2. *Teratoscincus scincus rustamowi.* a– mitotic metaphase of a dividing blood cell; b, c– male karyotype; d– idiogram of the karyotype.

classification suggested by Levan et al. (1964).

Karyotype descriptions
Teratoscincus scincus scincus (Schlegel, 1858).
Type locality: The Ili River in "Turkestan"

The diploid chromosome consists of 36 chromosomes. The karyotype is provisionally divisible into 24 macrochromosomes (M) and 12 microchromosomes (m), but there is no sharp demarcation between M and m. Chromosomes decrease in size gradually from largest (pair 1) to smallest (pair 18). Chromosome pairs 4, 7, and 9 appear subtelocentric; pairs 14 and 15 are metacentric; and the remaining pairs are acrocentric. The chromosomal formula could be stated: 2n=24 M (6 sT+18A) + 12m (4v+8a) = 36. The "fundamental number" (N. F.) is 46. Sex chromosomes are not evident. Male and female karyotypes do not appear to differ in chromosome number or morphology. (Fig. 1).

In male meiosis, the number of bivalents at diakinesis is 18. The bivalents which correspond to macrochromosomes have a ring-like shape; the smaller bivalents (microchromosomes) have a rod-like shape (Fig. 1b).

Teratoscincus scincus rustamowi
(Szczerbak, 1979)
Type locality: Fergan Valley in the sands in the vicinity of Cokand and Kairakkum.

As in *T. s. scincus* the diploid number is

36 with a somewhat arbitrary division between 24 macrochromosomes and 12 microchromosomes; no obvious sex chromosome heteromorphism; and chromosome pairs 4, 7, and 9 are subtelocentric. One possible difference noted between the subspecies, however, is that pairs 13 and 15 (instead of 14 and 15) appear to be metacentric. Meiotic material was not studied (Fig. 2).

Comparative analysis of karyotypes of the genus

The karyotype of *T. scincus* was first described by de Smet (1981). He reported 2n=34 with the following formula: 4sT+4V+26A. The total number of arms (Fundamental Number. or N. F.) was 42. Subsequently Manilo and Pisanets (1984) obtained a different result (2n=36). This stimulated us to re-examine the group in a more detailed manner (Table 1). Our conclusion is that two of the three subspecies have very similar karyotypes (the karyotype of *T. s. keyserlingii* remains unknown). The present studies with relatively small sample sizes, do not permit us to determine whether the difference we describe between the two subspecies represents individual variation or a real difference.

Because de Smet did not indicate the locality for his specimens, we cannot determine whether his description of 2n=34 and our description of 2n=36 represent a difference in diploid number among populations; variation within populations; or problems in preparation and description. Clearly this group of geckos should be studied more extensively.

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