

Geographic variation of chromosomes and somatic morphology in the Japanese polymorphic species *Leiobunum hiraiwai* (Arachnida: Opiliones: Sclerosomatidae)

NOBUO TSURUSAKI

Laboratory of Biology, Faculty of Regional Sciences, Tottori University, Tottori, 680-8551 Japan.

Abstract

The *hiraiwai*-subgroup of the *Leiobunum curvipalpe*-species group (Opiliones: Sclerosomatidae: Leiobuninae) is revised on the basis of somatic morphology, genitalia and karyotypes. This subgroup is distributed mainly in the mountainous areas of the Japanese Beech (*Fagus crenata*) forest zone (usually above 700 m in altitude in the southwestern part of Japan) in the western part of the Japanese Islands and corresponds to a single polytypic species, *Leiobunum hiraiwai* (Sato & Suzuki, 1939) with eight geographic races. *Leiobunum tamanum* Suzuki, 1957 and *L. tsushimense* Suzuki, 1976 are here synonymized with *L. hiraiwai*. All the races, except for the Tsushima race, were chromosomally analyzed. The number of chromosomes varies geographically from $2n = 18$ to 22 eastwards, irrespective of the variation in somatic morphology or male genitalia. Component chromosomes in these karyotypes are invariably metacentric or submetacentric in structure. Some morphological characters show a geographic pattern of variation that conforms to the stasipatric model of speciation. The possible processes of geographical differentiation of the species and direction of character evolution are inferred on the basis of such geographical patterns. The distribution of some character states suggests that the closest relative of the subgroup is the *curvipalpe*-subgroup (= *Leiobunum curvipalpe* Roewer, 1910 and *L. tohokuense* Suzuki, 1976) that inhabits the northeastern part of Honshu, Japan. The *hiraiwai*-subgroup (= *Leiobunum hiraiwai*) shows a mutually exclusive or checkerboard pattern of geographical distribution with regards to the *montanum*-subgroup (= *Leiobunum montanum* Suzuki, 1953) in southwestern Japan, suggesting some possible reproductive interference between these two species.

Key words: Checkerboard distribution, chromosomes, genital morphology, geographic variation, Japan, new synonymy