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J. Travis Columbus
Rancho Santa Ana Botanic Garden

Nancy F. Refulio-Rodriguez
Rancho Santa Ana Botanic Garden

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THE CHROMOSOME NUMBER OF *SCHAFFNERELLA GRACILIS* (GRAMINEAE, CHLORIDOIDEAE)

J. Travis Columbus and Nancy F. Refulio-Rodriguez

Rancho Santa Ana Botanic Garden
1500 North College Avenue
Claremont, Calif. 91711-3157
e-mail: j.travis.columbus@cgu.edu

ABSTRACT

The first ever chromosome report for the monotypic genus *Schaffnerella* (Gramineae, Chloridoideae) is $2n = 20$ (10 II) from pollen parent cells at diakinesis, which indicates diploidy and a base number of 10. The close relative *Lycurus* likewise has $x = 10$, but is tetraploid ($2n = 4x = 40$).

Key words: Chloridoideae, chromosome number, Gramineae, *Lycurus*, Mexico, San Luis Potosí, *Schaffnerella*, *Schaffnerella gracilis*.

RESUMEN

El primer reporte cromosómico para el género monotípico *Schaffnerella* (Gramineae, Chloridoideae) procedente de celulas parentales de pollen en diaquinesis es $2n = 20$ (10 II), lo cual indica diploidia y un número base de 10. *Lycurus*, el más relacionado a *Schaffnerella*, también tiene $x = 10$, pero es tetraploide ($2n = 4x = 40$).

INTRODUCTION

Rediscovery of *Schaffnerella gracilis* (Benth.) Nash near the city of San Luis Potosí, Mexico (Columbus et al. 2002), a species previously known only from collections made between 1876 and 1880, has made possible studies that require live plants. Owing to its distinctive morphology and uncertain affinities, beyond placement in Chloridoideae (e.g., Clayton and Renvoize 1986), this diminutive, annual grass has been positioned in its own genus since its description (Bentham 1882). Recent morphological, anatomical, and DNA nucleotide sequence studies have uncovered a close relationship to *Lycurus* Kunth (Columbus et al. 2000, in prep.), a genus of three perennial species (Reeder 1985; Sánchez and Rúgolo de Agrasar 1986).

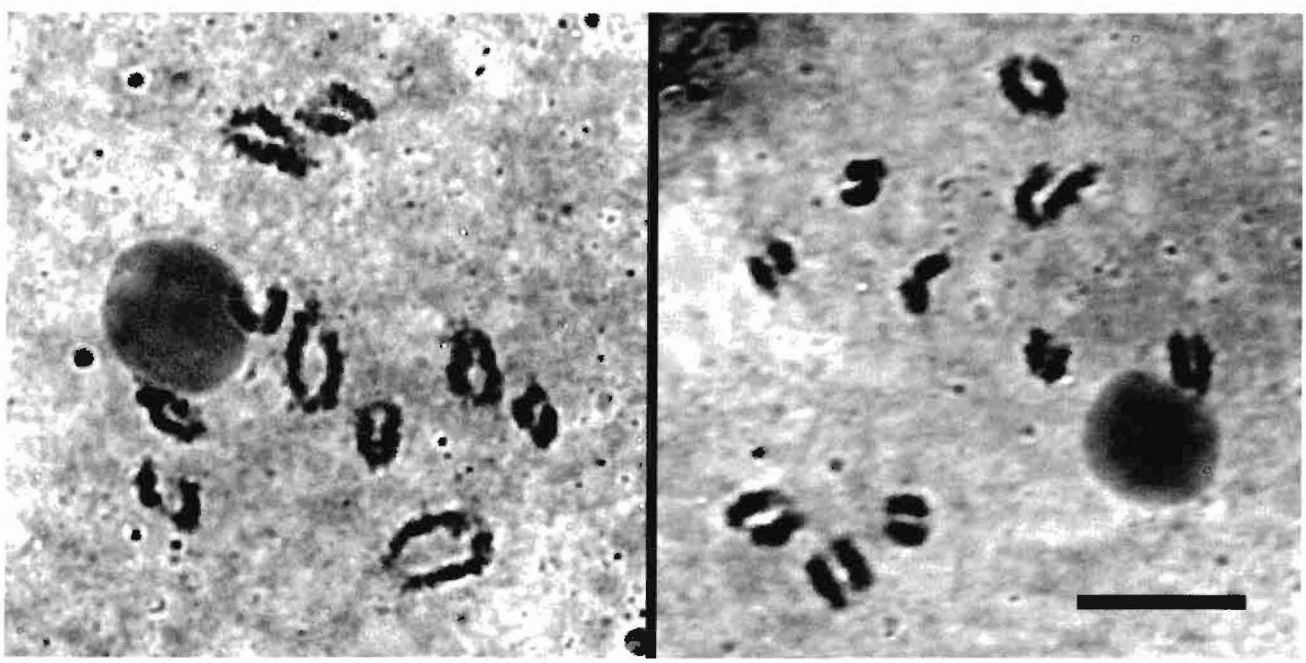

Fig. 1. Two pollen parent cells from *Schaffnerella gracilis* at diakinesis. $2n = 20$ (10 II). Scale bar = 10 μm.

MATERIALS AND METHODS

Fruits (caryopses) of *S. gracilis* were obtained from the field and from transplants grown in a controlled environment chamber at Rancho Santa Ana Botanic Garden (RSABG). A voucher (*Columbus 4040*) is deposited in the herbarium (RSA) at RSABG. Caryopses were sown and plants grown to maturity in a screen (liner) house at RSABG. Working from plants in two pots (i.e., at least two plants), developing inflorescences completely enclosed by the subtending leaf sheath were removed between 6:00 and 8:00 AM and immediately placed in 3:1 100% ethanol:glacial acetic acid. Twenty-four hours later the inflorescences were transferred to 70% ethanol (two changes) and stored at 4°C.

Using an iron needle, anthers were removed from spikelets in acetocarmine (Sharma and Sharma 1994) on a microscope slide and squashed under a coverslip. Pollen parent cells (microsporocytes) were examined under a compound microscope for chromosome figures. Selected cells were imaged using film or digital photomicrography.

RESULTS AND DISCUSSION

Of seven pollen parent cells, all at diakinesis, for which unequivocal counts could be made, all had $2n = 20$ (10 II). Two of the cells, from separate plants, are shown in Fig. 1.

The base chromosome number in genera of Chloridoideae is known to vary from 7 to 12 (Clayton and Renvoize 1986), 10 being most prevalent. The count for *Schaffnerella* indicates diploidy and $x = 10$. The close relative *Lycurus* also has a base number of 10; all reliable counts for the genus have been $2n = 40$ or ca. 40 (Reeder 1985), indicating tetraploidy.

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