CHROMOSOME NUMBERS IN *CYANELLA* (TECOPHILAEACEAE)[1]

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ABSTRACT

Chromosome numbers are reported for the four species of *Cyanella* that occur in South Africa. Seven collections of *C. hyacinthoides* had $n = 12$, five had $n = 24$, and one had $n = 14$. Two collections of *C. alba* had $n = 12$. One collection of *C. orchidiformis* had $n = 12$. Four collections of *C. lutea* had $n = 12$, two had $n = 24$, an unusual color variant had $n = 8$. Three other genera of the family are recorded as having $n = 10$, $n = 11$, 12, and $n = 12$, respectively. It is likely that $x = 12$ for the family and that other numbers represent examples of aneuploid increase or reduction from this base number.

Cyanella is a small genus of six to eight species found in the Cape Province of South Africa and in adjacent South West Africa (Namibia). Placement of the genus has been a matter of some dispute, though current opinion puts it in the small family Tecophilaeaceae (sensu Airy Shaw, 1973) comprising six genera, each with one or a few species. Three of these genera—*Tecophilaea*, *Conanthera*, and *Zephyra*—are restricted to Chile, *Odontostomum* is endemic to California, and *Cyanastrum* occurs in tropical Africa. Chromosome counts have been reported for single species each of *Cyanastrum* ($n = 11$, Satô, 1942; $n = 12$, Nietsch, 1941), *Tecophilaea* ($n = 12$, LaCour, 1956), and *Odontostomum* ($n = 10$, Cave, 1949). No chromosome numbers have been reported for the remaining three genera. This paper presents a chromosomal survey of the four species of *Cyanella* that occur in South Africa; Mauve (pers. comm.) regards *C. pentheri* Zahlbr. as synonymous with *C. hyacinthoides* L.

MATERIALS AND METHODS

During 1970–1971 living specimens of *Cyanella* were collected in the Cape Province and sent to the University of California Botanical Garden (Berkeley). When planted specimens flowered, anthers were removed, fixed, and squashed in aceto-carmine for examination of microsporogenesis.

RESULTS

Twenty-three collections of four species were examined. Chromosome numbers of $n = 8$, 12, 14, and 24 were obtained (Table 1).

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TABLE 1. Chromosome numbers in *Cyanella*. Collection numbers are the author's. All localities are in the Cape Province, South Africa.

Taxon	Chromosome Number (n)	Locality
Cyanella alba L.f.	12	Bidouw Valley: *7424*.
Cyanella hyacinthoides L.	24	3 mi N of Citrusdal: *7399*.
	24	Btw. Citrusdal and Clanwilliam: *7403*.
	12	4 mi W of Clanwilliam: *7412*.
	12	1.5 mi W of Clanwilliam: *7416*.
	12	Doringbos: *7420*.
	12	Near Doringbos: *7425*.
	12	Bulshoek Dam: *7440*.
	12	Klipkoppies, Nieuwoudtville: *7457*.
	12	Bidouw Valley: *7475*.
	24	1 mi W of Clanwilliam: *7481*.
	14	Bainskloof: *7501*.
	24	Modderrivier, near Darling: *7526*.
	24	Kirstenbosch (native): *7632*.
Cyanella lutea L.f. var. *lutea*	ca. 12	Worcester: *7355*.
	24	Swartberg Pass: *7561*.
	24	Swartberg Pass: *7565*.
	12[a]	11 mi E of Avontuur: *7598*.
	12	24 mi W of Knysna: *7655*.
	8	Tygerberg: *7697*.
Cyanella lutea L.f. var. *rosea* Bak.	12	White's Farm, Grahamstown: *7658*.
Cyanella orchidiformis Jacq.	12	Nuwerus: *7187*.

[a] With laggards.

DISCUSSION

The most widely sampled species was *Cyanella hyacinthoides*, of which thirteen collections were examined. Seven of these had $n = 12$, including an unusual orange-flowered variant (*7457*) from the vicinity of Nieuwoudtville. One collection (*7501*) from Bainskloof had $n = 14$; whether this number is typical for the population is uncertain. Five collections had $n = 24$ and are probably tetraploid based on $n = 12$. There are no obvious morphological or distributional traits that separate the diploid and tetraploid races of *C. hyacinthoides*. Both occur very near each other in the vicinity of Clanwilliam. The two collections examined of *C. alba* L.f. both had $n = 12$; these included a color variant (*7463*) that possessed tepals with dark maroon lower surfaces. The single collection of