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CHROMOSOME NUMBERS IN NORTH AMERICAN SPECIES
OF *CERASTIUM* (CARYOPHYLLACEAE)

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ABSTRACT

Chromosome numbers are reported for 85 collections of *Cerastium* (Caryophyllaceae) from continental North America belonging to 22 taxa. First published reports include those for *C. nutans* var. *objectum* Kearney & Peebles ($2n = 34$) and *C. texanum* Britton ($2n = 36$). First reports for material of North American origin include *C. bialynickii* Tolm. ($2n = 108$), *C. brachypodum* (Eng. ex Gray) B.L. Robinson ($2n = 34$), *C. dichotomum* L. ($2n = 38$), *C. diffusum* Pers. ($2n = 72$), *C. fischerianum* Ser. ($2n = 66$ & 72), *C. glomeratum* Thuill. ($2n = 72$) and *C. semidecandrum* L. ($2n = 36$).

RESUMEN

Se citan los números cromosómicos de colecciones de *Cerastium* (Caryophyllaceae) de Norte América continental pertenecientes a 22 taxa. Entre ellos se encuentran los primeros recuentos de *C. nutans* var. *objectum* Kearney & Peebles ($2n = 34$) y *C. texanum* Britton ($2n = 36$). Primeros recuentos en materiales de origen norteamericano de *C. bialynickii* Tolm. ($2n = 108$), *C. brachypodum* (Eng. ex Gray) B.L. Robinson ($2n = 34$), *C. dichotomum* L. ($2n = 38$), *C. diffusum* Pers. ($2n = 72$), *C. fischerianum* Ser. ($2n = 66$ & 72), *C. glomeratum* Thuill. ($2n = 72$) y *C. semidecandrum* L. ($2n = 36$).

INTRODUCTION

The purpose of this paper is to put on record previously unpublished data on chromosome numbers in the species of *Cerastium*, both native and introduced, occurring in continental North America.

METHODS AND MATERIALS

Mitotic chromosomes were studied in root-tip preparations. Plants were raised in the greenhouse, either from seed or from material transplanted from the wild. Root-tips were taken from actively growing plants, prefixed for about one hour in a saturated aqueous solution of paradichlorobenzene and fixed in 1:3 glacial acetic acid and ethanol (absolute). They were hydrolyzed in N hydrochloric acid at 60°C for 10–15 minutes and squashed in aceto-carmin. In a few cases flower buds were used for counts of meiotic chromosomes. The buds were fixed in Carnoy's Fluid (acetic acid 1:chloroform 1:ethanol 3). Developing anthers were teased out and squashed in aceto-carmin or aceto-orcin. The cultivated plants were grown to maturity and voucher specimens taken for comparison with those collected in the wild. Voucher specimens are retained in the author's re-

TABLE 1. Chromosome numbers in *Cerastium*. Collection numbers prefixed with NA are J.K. Morton or J.K. Morton and Joan M. Venn collections.

Taxon	Locality & collection number	Chromosome no. (2n)
<i>C. alpinum</i> L. subsp. <i>alpinum</i>	Nfld.: Northern Peninsula – St. Anthony NA5272 & NA5275	72
	N.W.T.: Gt. Slave Lake Cody 16059	72
	Ont.: Lake Superior – Leadman Is. NA4532	72
	Ont.: Hudson Bay – SE of Winisk Sims 2304	108
	Que.: James Bay – Gt. Whale River Forest & Brisson s.n.	72
	<i>C. alpinum</i> L. subsp. <i>lanatum</i> (Lam.) Cesati	Ont.: Hudson Bay – Cape Henrietta Maria Winterhalder 3512
<i>C. arcticum</i> Lange	Nun.: Baffin Is. – Fox 2 Dewline Site, Parmalee & Seaborn 4052a	108
<i>C. beeringianum</i> Cham. & Schltl.	Alta.: Kananaskis to Coleman rd., NA4679	72
	Alta.: Jasper Nat. Pk. – Wilcox Mt., Morton s.n.	72
	Alaska: Taylor Hwy. – Chicken, NA2122	72
	Alaska: Alaska Pen. – Ugashik, Talbot 103-25	72
	B.C.: Alaska Hwy. – Summit Lake, NA14139 & NA14140	72
	Calif.: Alpine Co. – Round Top Mt., Stebbins s.n.	72
	Colo.: Rocky Mt. Nat. Pk., NA7334	72
	Colo.: Mt. Evans, NA7345	72
	Nfld.: Northern Pen. – Bellburns, NA12405	72
	Nfld.: Cape St. George, NA5409	72
	N.Mex.: Sante Fe Basin, NA7144	72
	N.W.T.: Mackenzie Dist. – rd to Flat Lake, Spicer 1638	72
	N.W.T.: Mackenzie Dist. – Canada Tungsten Mine, Cody & Spicer 17702	72
	N.W.T.: Mackenzie Dist. – June Lake, Cody 17022	72
	Que.: Gaspé Pen. – Ste. Anne des Montes, NA2977	72
	Que.: Gaspé Pen. – Percé, NA4128	72
	Wyo.: Park Co. – Snow Lake, Scott 976	72
	Wyo.: Beartooth Mts. – Beartooth Pass, NA4805	72
	Yukon: Dempster Hwy. – North Fork Pass, NA13761	72
	Yukon: Alaska Hwy. – Koidern, NA2075 & NA2076	72

TABLE 1. cont.

Taxon	Locality & collection number	Chromosome no. (2n)
	Yukon: Taylor Hwy. – on Alaska border, NA2163	72
<i>C. bialynickii</i> Tolm.	Nun.: Devon Is., <i>Bliss s.n.</i>	108
	Nun.: Axel Heiberg Is., <i>Kuc 272</i>	108
<i>C. brachypetalum</i> Pers.	Miss.: Lee Co. – Tupelo, NA16924	90
subsp. <i>tauricum</i> (Sprengel) Murb.	N.C.: Wilkes Co. – rte 421, 36 mi W of Winston Salem, NA4385	88 also n = 44
	N.C.: Rutherford Co. – US-74 between Rutherfordton & Lake Lure, NA4419	n = 44
	N.C.: Claiborne Co. – nr Tazewell, NA14988 & NA14991	90
<i>C. brachypodum</i> (Eng. ex Gray)	Ariz.: Apache Co. – White Mts., NA7015	34
B.L. Robinson	Ariz.: Apache Co. – S of Show Low, NA16711	34
<i>C. dichotomum</i> L.	Wash.: Walla Walla Co. – Walla Walla, <i>Old s.n.</i>	38
<i>C. diffusum</i> Pers.	Calif.: Mendocino Co. – Fort Bragg, <i>Morton s.n.</i>	72
<i>C. dubium</i> (Bast.) Guèpin	Idaho: Gem Co. – Emmett, <i>Old s.n.</i>	38
<i>C. fischerianum</i> Ser.	B.C.: Queen Charlotte Is. – Tasu Mt. at ca. 2000 ft., NA13402	72
	B.C.: Queen Charlotte Is. – Tasu on mine workings near sea level, NA13440	66
<i>C. fontanum</i> Baumg. subsp.	B.C.: Vancouver, NA13504	144
<i>vulgare</i> (Hartman) Greuter & Burdet	B.C.: Queen Charlotte Is. – Tasu, NA13403	144
	N.Mex.: Catron Co. – Mogollon, <i>Pinkhava 12546</i>	ca. 122
	Ont.: Bruce Co. – Inverhuron Provincial Park, NA1493	144
<i>C. fontanum</i> Baumg. subsp.	B.C.: Stewart Hwy. – on W side of summit, NA13668	ca. 144
<i>vulgare</i> (a glandular variety)	Man.: Cowan – on rte 10 E of Swan River, NA4549	ca. 144
	Ont.: Lanark Co. – nr Almonte, NA2722	144
	Ont.: Bruce Pen. – Tobermory, NA3702	144
<i>C. glomeratum</i> Thuill.	Calif.: Mendocino Co. – Westport, <i>Morton s.n.</i>	72
	Ont.: Middlesex Co. – London, <i>Oldham 9097</i>	72
	Yukon: Dawson City, NA2172	72

TABLE 1. CONT.

Taxon	Locality & collection number	Chromosome no. (2n)
<i>C. nutans</i> Raf.	Alta.: rte 16, Vermilion, NA3796	36
	Alta.: WNW of Edmonton – Lac St. Anne, Morton s.n.	36
	N.Mex.: Grant Co. – NM-90, W of Emory Pass, NA15933	36
	Tenn.: Gatlinburg, NA4443	36
	N.Mex.: Catron Co. – Gila Nat. Forest, Willow Ck. campground, Pinkava et al. 12636	34
<i>C. pumilum</i> Curtis	B.C.: Vancouver Is. – Saanichton, NA13548	72
	Ind.: Huntington Co. – I-69 at exit 73, NA15024	72
	N.C.: Robeson Co. – Maxton nr Laurinburg, NA4408	72
	Va.: Richmond, NA2602	72
<i>C. semidecandrum</i> L.	B.C.: Victoria – McNeil Bay, NA13565	36
	Ont.: Bruce Co. – Inverhuron, Morton s.n.	36
	Ont.: Essex Co. – Point Pelee, NA3540 & NA4478	36
<i>C. terrae-novae</i> Fern. & Wieg.	Nfld.: Bonne Bay – Table Mt., NA12183	108
<i>C. texanum</i> Britton	Ariz.: Pima Co. – Kitt Peak, NA11233	36
	Ariz.: Pima Co. – Nogales, Sycamore Canyon, Churchill 70-604	36
	Ont.: Bruce Pen. – N of Warton, Morton s.n.	72
<i>C. tomentosum</i> L. <i>C. velutinum</i> Raf.	Mo.: Jefferson Co. – De Soto, NA19069	72
	N.Y.: New York City – Staten Is., NA3580	72
	Ohio: Erie Co. – Catawba Is., Sandusky, NA3660	72
	Ont.: Essex Co. – Pelee Is., Morton s.n.	72
	Ont.: Essex Co. – Point Pelee, NA4476	72
	Pa.: Chester Co. – Nottingham, NA3571a	72
	Pa.: Chester Co. – Lees Bridge, NA3770	72
	Calif.: Marin Co. – Pt. Reyes, NA19200	72
<i>C. viride</i> Heller (<i>C. arvense</i> L. subsp. <i>maximum</i> (Hollick & Britt.) Ugborogho)	Calif.: Mendocino Co. – Fort Bragg, Stebbins 7007	72
	Calif.: Sonoma Co. – Bodega Beach, Stebbins s.n.	72
	Oreg.: Clatsop Co. – Cannon Beach, Chambers s.n.	72
	Oreg.: Clatsop Co. – Onion Pt., Chambers 3160	72

search collections and partial sets of duplicates have been distributed to WAT, MICH, DAO and VDB. Collection numbers prefixed with NA are J.K. Morton or J.K. Morton and Joan M. Venn collections (Table 1).

DISCUSSION

Many of these chromosome counts confirm those from previous workers. However, the following appear to be the first published counts for their respective taxa: *Cerastium nutans* var. *objectum* - $2n = 34$ and *C. texanum* - $2n = 36$. That for *C. terrae-novae* - $2n = 108$, is the first definitive count for that species though Böcher (1977) reported a chromosome number of "lower than 72 (perhaps 68)."

The following chromosome counts appear to be the first published counts for North American material of these alien species: *C. dichotomum* - $2n = 38$, *C. diffusum* - $2n = 72$, *C. glomeratum* - $2n = 72$ and *C. semidecandrum* - $2n = 36$.

Amongst native species that also occur in other regions, that for *C. bialynickii* - $2n = 108$, is new. *Cerastium bialynickii* has not previously been reported from North America, having been originally described from Siberia, where it is reported to have a chromosome number of $2n = 72$. It is a very compact and hispid relative of *C. beeringianum* with obtuse sepals.

Also our count for *C. fischerianum* is the first from this continent. The presence of two different chromosome numbers in adjacent populations of this species is unusual. The differences appear to be genuine, for the preparations were carefully checked. The explanation may be that the population at sea level, with $2n = 66$, was growing in a weedy situation on mine tailings. As *C. fischerianum* frequently intergrades with *C. beeringianum* it is possible that these plants were of hybrid origin.

The count for *C. brachypodum* ($2n = 34$) is the first for North America, but Beaman et al. (1962) reported the same chromosome number in material from Central America.

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