

Chromosome Numbers in The Genus *Cirsium*, II

By

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The chief purpose of the present investigation was to determine the number of chromosomes in *Cirsium*. The observations were made with root tips and pollen mother cells.

The material examined was taken for the most part from the collection in the Botanical Garden, Kyoto Imperial University, but for some from the plants collected by Mr. KITAMURA in the suburbs of Kyoto, to whom my thanks are due. In fixing the root tip cells NAWASHIN's solution was exclusively used, no special treatment being made, and for the pollen mother cells the method of fixation reported in the previous paper¹⁾ was adopted.

In the root tip cells two chromosome numbers were found. In *C. purpuratum*, *C. yezoense* and *C. dipsacolepis*, the number counted at the metaphase was 34 as illustrated in Figs 1, 2 and 3 respectively, and in *C. hokkokuense* and *C. kantschaticum* it was 68 (Figs. 4, 5).

In the pollen mother cells the number of bivalents counted at the first metaphase was 34 in *C. hokkokuense* (Fig. 6), *C. Yoshinoi* var. *sikokianum* (Fig. 7) and *C. Yoshinoi* var. *inflatum* (Fig. 8), and 17 in all the other species examined, as expected from the results obtained from the somatic mitosis (Figs. 9-15). Counting was also made in the first anaphase and the second metaphase, and the corresponding numbers were obtained. In both pollen mother cells and root tip cells no marked difference in size and shape of chromosomes was found between species having the same chromosome number.

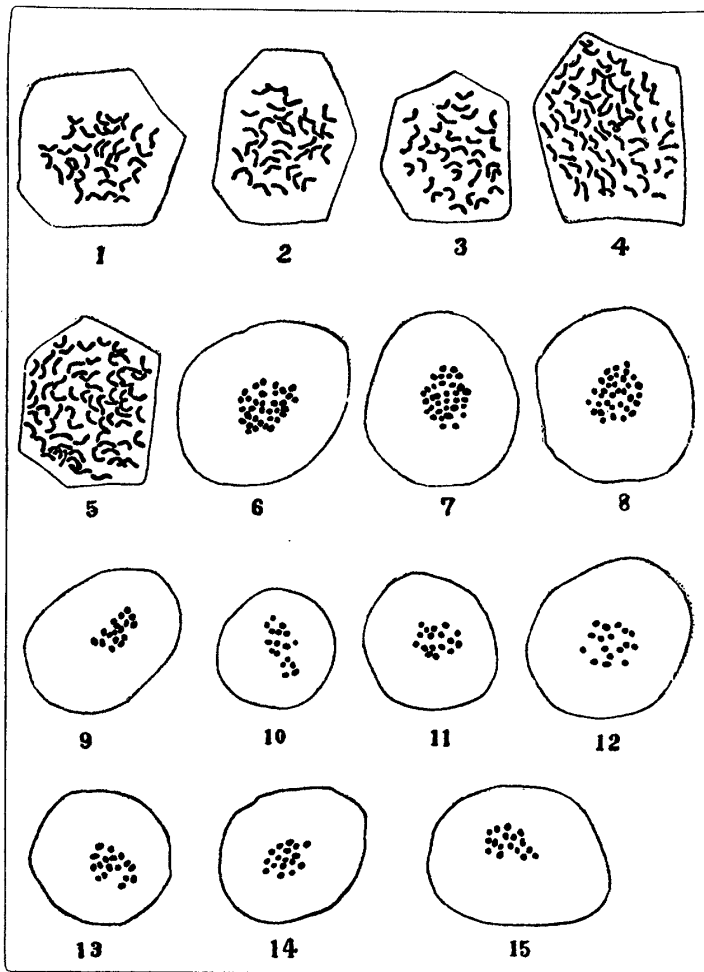
The chromosome numbers determined in the present investigation are given in the following table, the plants being arranged after KITAMURA's classification system.²⁾

Plant	P.M.C.	R.T.C.
Sect. <i>Megalocephala</i>		
<i>C. purpuratum</i> MATSUM.....	17	34

¹⁾ AISHIMA, T. (1934), Chromosome Numbers in the Genus *Cirsium* I. Bot. Mag. (Tokyo), XLVIII. p. 150

²⁾ KITAMURA, S. (1934) Les *Cirses* de l'Asie Orientale. Acta Phytotaxonomica et Geobotanica III. In the corresponding table in the previous paper (AISHIMA, 1934) too, the plants have been arranged according to the same system.

Sect. Megalophylla	
<i>C. yezoense</i> MAK.	17 34
Sect. Onotrophe	
Subsect. Sinocirsium	
<i>C. japonicum</i> var. <i>takaoense</i> KITAM.	17 —
<i>C. Maackii</i> MAXIM.	17 —
<i>C. Schantarensis</i> TRAUTV. et MEY.	17 —
Subsect. Tubulosae	
<i>C. Buergeri</i> MIQ.	17 —
Subsect. Dipsacolepis	
<i>C. dipsacolepis</i> MATSUM.	— 34
Subsect. Arenicola	
<i>C. Morii</i> HAYATA.	17 —
Subsect. Nipponocirsium	
<i>C. hokkokuense</i> KITAM.	34 68



Figs. 1-3. Somatic metaphase, showing 34 chromosomes; 1. *C. purpuratum*; 2. *C. yezoense*; 3. *C. dipsacolepis*.

Figs. 4-5. Somatic metaphase, showing 68 chromosomes 4. *C. hokkokuense*; 5. *C. kamtschaticum*.

Figs. 6-8. Heterotype metaphase, showing 34 bivalent chromosomes; 6. *C. hokkokuense*; 7. *C. Yoshinoi* var. *sikokianum*; 8. *C. Yoshinoi* var. *inflatum*.

Figs. 9-15. Heterotype metaphase, showing 17 bivalent chromosomes; 9. *C. purpuratum*; 10. *C. yezoense*; 11. *C. japonicum* var. *takaoense*; 12. *C. Maackii*; 13. *C. Schantarensis*; 14. *C. Buergeri*; 15. *C. Morii*.

<i>C. Yoshinoi</i> var. <i>sikokianum</i> KITAM.	34	—
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C. Yoshinoi var. inflatum KITAM.....	34	—
Subsect. Borealicola		
C. kamtschaticum LEDEB.....	—	68

As is seen from the table, in 11 species belonging to the sections *Megalocephala*, *Megalophylla* and *Onotrophe*, the chromosome number is either $2n=34$ or 68, or either $n=17$ or 34.

Summing up the results obtained in the present and previous investigations we find that in 41 species in the genus *Cirsium* there are found only chromosome numbers which are multiples of 17, i. e. $n=17$, 34 (17×2), 51 (17×3), and this seems to suggest that there is only one cardinal number in this genus.

摘 要

ここに表示した通り、アザミ属 11 種に於て染色体数は $2n=34$ 又は 68, 即ち $n=17$ 又は 34 である。

今回及前回の観察に依り、アザミ属 41 種に就て、染色体数が何れも 17 の倍数、即ち $n=17$, 34 (17×2), 51 (17×3) なる事が明らかになつた。この結果からアザミ属の基本数は唯一つ(17)しかないやうに思はれる。