Hiroshi INOUE*: **Chromosome numbers of some Japanese Hepaticae (1)**

井上 浩: 日本産苔類数種の染色体数 (1)

It is well known that a large number of the Hepaticae have the chromosome of n=9, and that there are only a few species of polyploid number (Steere, 1972). The monotonous number of chromosome is one of reasons for the rather scanty contributions to the cytological field of Hepaticae. The present paper deals with the chromosome numbers of Japanese Hepaticae, and it aims to accumulate the cytological data and to compare them with the reports from other parts of the world.

The technique used for the chromosome counts was the same with the previous reports (Inoue, 1967, 1968). The voucher specimens studied for this paper are all in the herbarium of National Science Museum, Tokyo (TNS).

In the following, the locality and sexuality of specimen, and the chromosome number and its formula are given after the species name; the specimen number is given in the parenthesis after the chromosome formula. The chromosome number is reported here for the first time in the species with an asterisk mark.

*1. *Blepharostoma minus* Horik. (Fig. 1, 2). Mt. Amagi, Shizuoka Pref.; male; n=18=2H+14+2h (*no. 20715*). In the resting nucleus there are observed two, large, distinct heteropycnotic bodies. This is the first report of the chromosome number of the genus *Blepharostoma* which includes three species.

2. *Herberta adunca* (Dicks.) Gray (Fig. 3). Mt. Kajigamori, Kochi Pref.; female; n=9=H+4V+3J+h (*no. 20828*). Tatuno (1947) reported the chromosome formulae of *H. longifissa*, *H. longifolia*, and *H. remotiusculifolia* as V(H)+4V+2J+1+m(h); I have observed the Tatuno's l-chromosome to be J-chromosome with subterminal, weak constriction. *H. remotiusculifolia* studied by Tatuno (1947) is now treated as a synonym of *H.*

* Department of Botany, National Science Museum, Tokyo. 国立科学博物館植物研究部.

*adunca* (Inoue, 1974).

3. *Bazzania pompeana* (S. Lac.) Mitt. (Fig. 4). Mt. Kajigamori, Kochi Pref.; sterile; n=9=H+7+h (*no. 20830*). This species was studied by Tatuno (1941) and Segawa (1965) reporting the same number.

4. *Bazzania trilobata* (L.) Gray (Fig. 5). Mt. Muine, Jyozankei, Hokkaido; sterile; n=9=H+7+h (*no. 20584*). Heitz (1927) reported the chromosome number of this species to be n=9~10 in the European plants, but the above number was confirmed in the Japanese plants.

*5. *Lepidozia filamentosa* (Lehm. et Lindbg.) Gott. subsp. *subtransversa* (Steph.) Hatt. (Fig. 6). Mt. Kajigamori, Kochi Pref.; sterile; n=9=H+4V+3J+h (*no. 20827*). The chromosome number and formula were the same with *Lepidozia holoriza* (Inoue, 1968). Tatuno (1941, 1947) reported the chromosome number of *Lepidozia obtusistipula* Steph. from Taiwan and Isl. Amami-oshima of the Ryukyu Isls. Although *L. obtusistipula* is recently treated as a synonym of the above subspecies, Tatuno's reports may be based on misidentification of species; this subspecies very much unlikely occurs in such lowland and subtropical area.

6. *Calypogeia integristipula* Steph. (Fig. 7). Mt. Muine, Jyozankei, Hokkaido; sterile; n=9=H+4V+3J+h (*no. 20581*). This species was studied by Tatuno (1941) with the name *Calypogeia neesiana* (Mass. et Car.) Müll. reporting 9 chromosomes.

7. *Calypogeia trichomanes* (L.) Corda (Fig. 8). Mt. Amagi, Shizuoka Pref.; female; n=9=H+4V+3J+h (*no. 20780*). I have reported the chromosome number (n=9) of this species from Taiwan (Inoue, 1968) and Japan (Inoue, 1966). In Europe, Lorbeer (1934), Müller (1956) and, recently, Newton (1973) reported n=18 for this species. In the Japanese populations of this species, the plants are always dioicous; the capsule walls have rather continuous, band-like thickenings on alternating longitudinal walls, lacking radial extension of thickenings; the spores are small and 10–12$\mu$ in diam. Taxonomic evaluation of these points, together with the chromosome number, will be discussed later.

*8. *Lophozia fauriana* Steph. (Fig. 9). Mt. Muine, Jyozankei, Hokkaido; n=9=H+7+h (*no. 20568*).

9. *Jungermannia infusca* (Mitt.) Steph. (Fig. 10). Oirase, Hakkoda, Aomori Pref.; female; n=9=H+4V+3J+h (*no. 21405*). This species was


Fig. 1-20. Resting nucleus (fig. 2) and chromosomes of some Japanese Hepaticae. For explanation see text. All figs. ×3200.

studied by Segawa (1965) reporting the same number.

*10. *Nardia subclavata* (Steph.) Amak. (Fig. 11). Mt. Muine, Jyozankei, Hokkaido; female; n=18=2H+14+2h (*no. 20583*). In the genus *Nardia*,

three species have been cytologically studied, i.e. *N. scalaris* (Schr.) Gray (n=9; Lorbeer, 1934), *N. geoscyphus* (De Not.) Lindb. (n=18; Heitz, 1927), and *N. insecta* Lindb. (n=36; Müller, 1954).

11. *Lophocolea heterophylla* (Schrad.) Dum. (Fig. 12). Oirase, Hakkoda, Aomori Pref.; paroicous; n=9=H+4V+3J+h (*no. 21390*). This species was studied by Müller (1954) reporting the same number. Among three J-chromosomes, two are very small as in the case of other *Lophocolea* species (Inoue, 1968).

*12. *Plagiochila semidecurrens* (Lehm. et Lindbg.) Lehm. et Lindbg. (Fig. 13). Mt. Kajigamori, Kochi Pref.; female; n=9=H+4V+3J+h (*no. 20830*).

13. *Diplophyllum plicatum* Lindb. (Fig. 14). Mt. Muine, Jyozankei, Hokkaido; sterile; n=9=H+7+h (*no. 20587*). This species was studied by Tatuno (1941) reporting the same number.

14. *Radula auriculata* Steph. (Fig. 15). Mt. Rakko, Hidaka Mts., Hokkaido; sterile; n=6 (*no. 20519*). In the resting nucleus three heteropycnotic bodies were observed.

15. *Radula japonica* Gott. (Fig. 16). Oirase, Hakkoda, Aomori Pref.; female; n=8=H+6+h (*no. 21413*). This species was studied by Segawa (1965) reporting the same number.

16. *Radula koyana* Steph. (Fig. 17). Mt. Kuriko, Yonezawa, Yamagata Pref.; sterile; n=8=H+6+h (*no. 20714*). Tatuno (1935) reported the chromosome number n=6 for this species, but Segawa (1965) reported n=8. I confirmed 8 chromosomes.

*17. *Lejeunea parva* (Steph.) Mizutani (Fig. 18). Mt. Amagi, Shizuoka Pref.; female; n=9 (*no. 20746*).

18. *Metzgeria hamata* Lindb. (Fig. 19). Mt. Kajigamori, Kochi Pref.; sterile; n=9=H+4V+3J+h (*no. 20829*). This species was studied by Segawa (1965) reporting the same number.

*19. *Moerckia erimona* (Steph.) Hatt. (Fig. 20). Oirase, Hakkoda, Aomori Pref.; male; n=8=4V+V(H)+3J. (*no. 21294*). Lorbeer (1934) reported the number n=9 for *Moerckia blytii* (Moerck) Brock., *M. flotowiana* (Nees) Schiffn., and *M. hibernica* (Hook.) Gott. Japanese *M. erimona* has many problems for its generic status and for this problems Schuster and Inoue (1974) discussed in detail. The chromosomes of *M. erimona* are very

much like those of *Pallavicinia longispina*, on which Tatuno (1941) and Segawa (1965) made detailed observations.

## Literature Cited

Heitz, E. (1927). Abh. Naturw. Ver. Hamburg, 21: 48-58. Inoue, H. (1967). Bot. Mag. Tokyo, 80: 172-175. —— (1968). Bull. Nat. Sci. Mus. Tokyo, 11: 397-403. —— (1974). Illust. Jap. Hepat., pp. 189, Tokyo. Lorbeer, G. (1934). Jahrb. Wiss. Bot. 80: 567-818. Müller, K. (1954). In Rabenhorst's Kryptogamen-Fl. v. Deuts., Oester. u. Schw., 6(4): 481-640. —— (1956). Ibidem 6(8): 1077-1220. Newton, M.E. (1973). Journ. Bryol. 7: 379-398. Schuster, R.M. and H. Inoue (1974). Bull. Nat. Sci. Mus. Tokyo (in press). Segawa, M. (1965). Journ. Sci. Hiroshima Univ. ser. B, div. 2, 10: 81-148, 149-178. Steere, W. (1972). Journ. Hattori Bot. Lab. 35: 99-125. Taturo, S. (1935). Bot. Mag. Tokyo, 49: 628-635. —— (1941). Journ. Sci. Hiroshima Univ. ser. B, div. 2, 4: 73-187. —— (1947). Jap. Journ. Genet., suppl. 1: 119-121.

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日本産苔類19種の染色体数を調べた。このうち8種については染色体数がはじめて報告されるものである。また，*Blepharostoma minus* および *Nardia subclavata* の2種は倍数体起源のものであることがわかった。苔類の染色体は大部分の種で n=9 であり，変異性にとぼしいが，これまで報告された種類数も蘚類などと比べて少なく，充分な解析がおこなわれているとはいえない。しかし，*Calypogeia* 属や *Nardia* 属では倍数性の問題も含め，種の分類に染色体数が充分考慮されなければならないことを示すデータが出ている。同じことが日本特産とされる *Moerckia erimona* についてもいうことができ，ヨーロッパ産の *Moerckia* 属では n=9 が報告されているが，日本のものは n=8 で，他の形態的なことからも，*Moerckia*属に含められるかどうか問題となる。

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□大井次三郎・太田洋愛： **日本桜集** pl. 154, pp. 325. 平凡社，東京 (1973) ¥27,000 (J. Ohwi and Y. Ohta: Flowering cherries of Japan). こゝ数年，太田洋愛氏が毎春桜をたずねて日本中を歩いているときいていたが，それがこの見事な画集に結果をした。画は一々頁大に描かれ，対面に大井氏が解説を与え，また太田氏の花の縦断面が載せてある。全体は品種名の横文字のアルファベット順である。各解説の末尾には