Cytological Studies on *Cyperaceae* in the Nepal Himalaya III. Chromosome Counts of 18 Species Collected from Api Himal and Adjacent Areas, Far Western Nepal

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Chromosome numbers are presented for 18 species from seven genera of *Cyperaceae* collected from Api Himal and adjacent areas in Far Western Nepal. The chromosome numbers for *Carex cruenta* Nees (2n = 44), *C. kumaonensis* Kük. (2n = 50), *C. obscura* Nees (2n = 56), *C. stracheyi* Boott ex C. B. Clarke (2n = 44), *Kobresia esbirajbhandarii* Rajbh. & H. Ohba (2n = 62), and *Schoenoplectiella fuscorubens* (T. Koyama) Hayasaka (2n = 42) are reported for the first time. Our finding of 2n = 46 for *Blysmus compressus* (L.) Panz. ex Link and 2n = 62 for *Carex foliosa* D. Don differ from previous reports. The chromosome numbers of *Carex filicina* Nees (2n = 46), *C. inanis* Kunth (2n = 42), *C. longipes* D. Don (2n = 46), *C. microglochin* Wahlenb. (2n = 50), *C. myosurus* Nees (2n = 44), *C. rufulistolon* T. Koyama (2n = 46), *Eleocharis uniglumis* (Link) Schult. (2n = 42), *Fimbristylis complanata* (Retz.) Link (2n = 10), *F. falcata* (Vahl) Kunth (2n = 22), and *Isolepis setacea* (L.) R. Br. (2n = 28 = 14II) agree with earlier studies.

**Key words**: Aneuploidy, chromosome number, *Cyperaceae*, Himalaya, Nepal.

Cytological studies have proven to be useful for understanding the diversification of various Himalayan plant taxa (Wakabayashi and Ohba 1988, Akiyama et al. 1992, Ikeda and Ohba 1999). Chromosome numbers of *Cyperaceae* in the Nepal Himalaya have been also reported by Dietrich (1972), Hoshino et al. (2000) and Yano et al. (2010a, 2010b, 2011). They reported the chromosome numbers for 28 taxa in nine genera. However, in order to understand the evolution and diversification of *Cyperaceae* in Nepal, additional cytological studies are needed.

In 2012, a Japan-UK-Nepal botanical collecting team visited Api Himal and adjacent areas in Darchula District, Far Western Nepal, and collected materials of *Cyperaceae* for cytological examination. This is the third report of a series of papers on cytological characteristics of *Cyperaceae* in the Nepal Himalaya, with the previous studies having reported chromosome numbers in material collected from Manaslu Himal (Yano et al. 2010b) and Bajhang District.
Table 1. Species, localities, voucher specimens and chromosome numbers of 18 species of Cyperaceae collected from Far Western Nepal

<table>
<thead>
<tr>
<th>Species, locality and voucher specimen</th>
<th>Chromosome number (2n)</th>
<th>Previous report (2n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blysmus compressus (L.) Panz. ex Link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dhaulo Odar to Joge Tal, 3399 m (Ikeda &amp; al. 1215040)</td>
<td>46</td>
<td>40 (Yano et al. 2010b)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44 (Håkansson 1928, Tischler 1934, Rohwedder 1937, Mehra and Sachdeva 1975b, Pogan and Izmailow 1983, Stoeva 1992a)</td>
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<tr>
<td></td>
<td></td>
<td>79 (Stoeva 1992b)</td>
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<tr>
<td>Carex cruenta Nees</td>
<td></td>
<td></td>
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<tr>
<td>Joge Tal, 4030 m (Ikeda &amp; al. 1215052)</td>
<td>44</td>
<td></td>
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<tr>
<td>C. filicina Nees</td>
<td></td>
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<tr>
<td>Lithi to Khayekot, 2200 m (Ikeda &amp; al. 1215022)</td>
<td>46</td>
<td>42 (Mehra and Sachdeva 1971, 1975b)</td>
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<tr>
<td></td>
<td></td>
<td>44 (Nijalingappa and Leela 1990)</td>
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<tr>
<td></td>
<td></td>
<td>46 (Yano et al. 2010b)</td>
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<tr>
<td></td>
<td></td>
<td>48 (Sachdeva 1977, Mehra and Sachdeva 1979)</td>
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<tr>
<td>C. foliosa D. Don</td>
<td></td>
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<tr>
<td>Lithi to Khayekot, 2200 m (Ikeda &amp; al. 1215019)</td>
<td>62</td>
<td>58 (Mehra and Sachdeva 1971, 1975b)</td>
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<tr>
<td>C. inanis Kunth</td>
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<tr>
<td>Khayekot to Simar Kharka, 2060 m (Ikeda &amp; al. 1215024)</td>
<td>42</td>
<td>42 (Yano et al. 2010b)</td>
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<tr>
<td>C. kumaonensis Kük.</td>
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<td>50</td>
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<td>C. longipes D. Don</td>
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<tr>
<td>Khayekot to Simar Kharka, 2060 m (Ikeda &amp; al. 1215026)</td>
<td>46</td>
<td>42 (Sachdeva 1977, Mehra and Sachdeva 1979)</td>
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<td></td>
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<td>46 (Yano et al. 2010a)</td>
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<tr>
<td>C. microglochin Wahlenbh.</td>
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<td>Simar Kharka to Dhaulo Odar, 3399 m (Ikeda &amp; al. 1215038)</td>
<td>50</td>
<td>48 (Dietrich 1972, Yurtsev and Zhukova 1982)</td>
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<tr>
<td>Joge Tal, 4100 m (Ikeda &amp; al. 1215050)</td>
<td>50</td>
<td>50 (Löve and Löve 1981)</td>
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<tr>
<td></td>
<td></td>
<td>58 (Löve and Löve 1956, Moore and Chater 1971, Moore 1981)</td>
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<td>C. myosurus Nees</td>
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<td>Khayekot to Lithi, 2200 m (Ikeda &amp; al. 1215064)</td>
<td>44</td>
<td>44 (Hoshino et al. 2000)</td>
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<td>C. obscura Nees</td>
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<td>C. nufalistolon T. Koyama</td>
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<td>Simar Kharka to Dhaulo Odar, 3010 m (Ikeda &amp; al. 1215033)</td>
<td>46</td>
<td>46 (Yano et al. 2010b)</td>
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<td>C. stracheyi Boott ex C. B. Clarke</td>
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<tr>
<td>Simar Kharka to Dhaulo Odar, 2930 m (Ikeda &amp; al. 1215029)</td>
<td>44</td>
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<td>Eleocharis uniglumis (Link) Schult.</td>
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<tr>
<td>Joge Tal to Simar Kharka, 3399 m (Ikeda &amp; al. 1215059)</td>
<td>42</td>
<td>42–50 (Bureš 1998)</td>
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<td>Fimbristylis complanata (Retz.) Link</td>
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<tr>
<td>Lithi to Khayekot, 2200 m (Ikeda &amp; al. 1215021)</td>
<td>10</td>
<td>10 (Kral 1971, Nijalingappa 1972, 1975, Rath and Patnak 1974)</td>
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<td></td>
<td></td>
<td>16 (Tanaka 1939, Yano and Hoshino 2006)</td>
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<td></td>
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<td>20 (Rath and Patnaik 1978, Mehra and Sachdeva 1979)</td>
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<tr>
<td>F. falcata (Vahl) Kunth</td>
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<tr>
<td>Isolepis setacea (L.) R. Br.</td>
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<tr>
<td>Joge Tal to Simar Kharka, 3399 m (Ikeda &amp; al. 1215060)</td>
<td>28 = 14II</td>
<td>26 (Davies 1956)</td>
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<td></td>
<td></td>
<td>28 (Mičieta 1986, Hoshino et al. 2000)</td>
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<td></td>
<td></td>
<td>32 (Yano et al. 2010b)</td>
</tr>
<tr>
<td>Kobresia esbirajbhandarii Rajbh. &amp; H. Ohba</td>
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<tr>
<td>Joge Tal, 4100 m (Ikeda &amp; al. 1215049)</td>
<td>62</td>
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<tr>
<td>Schoenoplectiella fuscorubens (T. Koyama) Hayasaka</td>
<td></td>
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<tr>
<td>Okhal to Bitale, 1100 m (Ikeda &amp; al. 1215066)</td>
<td>42</td>
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</tbody>
</table>
Materials and Methods

Chromosome counts were made for 18 species of seven genera in *Cyperaceae* (Table 1). The methods for somatic chromosome observation followed Yano et al. (2010b), with meiotic chromosomes examined in pollen mother cells. Anthers were fixed with Newcomer’s fluid (see Sharma and Sharma 1980) in the field. In the laboratory the fixed anthers were stained with 1% aceto-orcein and gently squashed before being examined under the microscope. Voucher specimens are kept in the Herbarium of the University of Tokyo (TI), with duplicates available in the National Herbarium of Nepal (KATH), the Herbarium of the Royal Botanic Garden Edinburgh (E) and the Herbarium of the Okayama University of Science (OKAY).

Results and Discussion

Chromosome numbers determined in this study are shown in Table 1. None of the species had a primary constriction in their chromosomes.

1. *Blysmus compressus* (L.) Panz. ex Link (2n = 46, Fig. 1A)

*Blysmus compressus* is widely distributed in Europe and Asia (Iran, Pakistan, Nepal, N India, and SW China) (Koyama 1978). Although the chromosome number of European *B. compressus* has previously been reported as 2n = 44 (Håkansson 1928, Tischler 1934, Rohweder 1937, Pogan and Izmailow 1983, Stoeva 1992a) and 79 (Stoeva 1992b), that of Himalayan *B. compressus* has previously been reported as 2n = 40 (Yano et al. 2010b; Manaslu Himalaya, Central Nepal) and 2n = 44 (Mehra and Sachdeva 1975b; Kashmir Himalaya, India, as *Scirpus compressus* (L.) Pers.). In the present study, a new number, 2n = 46, was observed. Somatic metaphase chromosomes were less than 1.1 µm in length. Our present result also supported the observation that *B. compressus* consists of a series of aneuploids (Yano et al. 2010b), a fairly common phenomenon in *Cyperaceae* species which possess diffuse centromeric chromosomes.

2. *Carex cruenta* Nees (2n = 44, Fig. 1B)

*Carex cruenta* is distributed in the Himalaya (Kashmir to Sikkim) and Tibet (Koyama 1978). *Carex cruenta* had the chromosome number of 2n = 44, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 1.4 µm in length. This species has often been included within the *C. atrofusca* complex (Noltie 1994), and the chromosome number for *C. atrofusca s.l.* has variously been reported as 2n = 36, 38, 40, ca. 42, 48 or 56 (Heilborn 1924, Jørgensen et al. 1958, Löne and Löne 1965, Dietrich 1967, 1972, Hedberg 1967, Hoshino et al. 1993, Yano et al. 2010b). These results indicate that this complex consists of a series of aneuploids. However, the relationships between chromosome numbers and taxonomic treatments of the *C. atrofusca* complex are still unresolved. Further, large scale studies with material from the whole distribution range of this species complex are needed to fully understand the relationships between chromosome numbers and their taxonomic treatments.

3. *Carex filicina* Nees (2n = 46, Fig. 1C)

*Carex filicina* is distributed in the Himalaya, Eastern India, east to China and Taiwan, and south to Malaysia (Koyama 1978). Chromosome numbers of *C. filicina* have previously been reported as 2n = 42, 44, 46, 48 (Mehra and Sachdeva 1971, 1975b, 1979, Sachdeva 1977, Nijalingappa and Leela 1990, Yano et al. 2010b) (Table 1). The chromosome number, 2n = 46, in this study, was congruent with one of the numbers in the aneuploid series reported by Yano et al. (2010b) from Manaslu Himalaya. Somatic metaphase chromosomes were less than 1.4 µm in length.
4. Carex foliosa D. Don (2n = 62, Fig. 1D)

Carex foliosa is distributed in Bhutan, India, Nepal and Pakistan (Koyama 1978, Kukkonen 1987, Noltie 1994). In the present study we observed 62 somatic chromosomes, and they were less than 1.1 µm in length. This is a new chromosome number for C. foliosa as it has previously been reported as 2n = 58 by Mehra and Sachdeva (1971, 1975b: as C. muricata L. var. foliosa (D. Don) C. B. Clarke) from the Nainital, Kumaon in India, western Himalaya (Table 1). It seems that C. foliosa may also consist of a series of aneuploids.

5. Carex inanis Kunth (2n = 42, Fig. 1E)

Carex inanis is distributed from the highlands of Central Asia, and Kashmir to the Sikkim Himalayas (Koyama 1978). The chromosome number of C. inanis from Api Himal and adjacent areas was 2n = 42, confirming our previous report from the Manaslu Himalaya (Yano et al. 2010b). Somatic metaphase chromosomes were less than 1.4 µm in length.

6. Carex kumaonensis Kük. (2n = 50, Fig. 1F)

Carex kumaonensis is distributed in the Himalaya (Kumaon to Nepal) and China (Koyama 1978). Carex kumaonensis had the chromosome number of 2n = 50, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 1.5 µm in length. Kükenthal (1909) assigned C. kumaonensis to subsect. Decorae Kük. together with C. stracheyi Boot ex C. B. Clarke (for further discussion, see 12. C. stracheyi).

7. Carex longipes D. Don (2n = 46, Fig. 1G)

Carex longipes is distributed in the Himalayas (Kashmir to Bhutan), Nilgiri Mts., Indo-China, and Central China (Koyama 1978). The chromosome number of C. longipes has previously been reported as 2n = 42, 44, 46 (Sachdeva 1977, Mehra and Sachdeva 1979, Nijalingappa and Leela 1990, Hoshino et al. 2000, Yano et al. 2010a) (Table 1). In the present study the chromosome number, 2n = 46, corresponds to one of the numbers in the aneuploid series reported by Yano et al. (2010a) from Bajhang district, Far Western Nepal. Somatic metaphase chromosomes were less than 1.2 µm in length.

8. Carex microglochin Wahlenb. (2n = 50, Fig. 1H)

Carex microglochin is distributed in Kashmir, Nepal and arctic-alpine regions in the Northern Hemisphere (Koyama 1978). The chromosome number of C. microglochin from Api Himal was 2n = 50, confirming the previous report from Canada (Löve and Löve 1981). Somatic metaphase chromosomes were less than 1.2 µm in length. Chromosome numbers for C. microglochin have been reported as 2n = 48 (Dietrich 1972, Yurtsev and Zhukova 1982), 2n = 50 (present study, Löve and Löve 1981) and 2n = 58 (Löve and Löve 1956, Moore and Chater 1971, Moore 1981) (Table 1). It seems that C. microglochin may also consist of a series of aneuploids.

9. Carex myosurus Nees (2n = 44, Fig. 1I)

Carex myosurus is distributed in the Himalaya and India (Koyama 1978). The chromosome number of C. myosurus from Api Himal was 2n = 44, confirming a previous report from the Langtang Himal, Central Nepal (Hoshino et al. 2000). Somatic metaphase chromosomes were less than 1.3 µm in length.

10. Carex obscura Nees (2n = 56, Fig. 2A)

Carex obscura is distributed in the Himalaya (Kashmir to Sikkim) and Tibet (Koyama 1978). Carex obscura was found to have the chromosome number 2n = 56, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 1.0 µm in length. Carex obscura belongs to sect. Atratae Kunth and is closely related to C. augustinowiczii Meinsh, C. hallii...
Olney, *C. parryana* Dewey, *C. soyaeensis* Kük., or *C. alpina* Swartz complex (Kükenthal 1909). Among these species chromosome numbers have been reported as 2n = 54, 56, and 66 for *C. augustinowiczii* (Okuno 1939, 1940, Tanaka 1948), 2n = 54 for *C. hallii* and *C. parryana* (Löve and Löve 1981), and 2n = 52, 56, 60, 66 for the *Carex alpina* complex (see Yano et al. 2010a). In *Carex*, closely related species within the same section possess similar number of chromosomes (Heilborn 1924, Yano et al. 2008, 2010b). Our present cytological results also support a close relationship among *C. obscura*, *C. augustinowiczii*, *C. hallii*, *C. parryana*, or *C. alpina* complex within sect. *Atratae*.

11. *Carex rufulistolon* T. Koyama (2n = 46, Fig. 2B)

*Carex rufulistolon* is endemic to the alpine regions of Nepal (Koyama 1978, Katsuyama 2008). The chromosome number of *C. rufulistolon* from Api Himal was 2n = 46,
confirming our previous report from Manaslu Himal (Yano et al. 2010b). Somatic metaphase chromosomes were less than 1.2 µm in length.

12. Carex stracheyi Boott ex C. B. Clarke (2n = 44, Fig. 2C)

Carex stracheyi is distributed in the Himalaya (Kumaon and Nepal) (Koyama 1978). Carex stracheyi had the chromosome number of 2n = 44, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 1.4 µm in length. Although Kükenthal (1909) recognized 18 species in subsect. Decorae, the chromosome number had been previously reported for only one species, C. insignis Boott, with 2n = 48 (Sachdeva 1977, Mehra and Sachdeva 1979). This study has provided chromosome numbers for two species in subsect. Decorae, and we now have chromosome numbers for three species in the subsection C. stracheyi (2n = 44), C. insignis (2n = 48) and C. kumaonensis (2n = 50). Our cytological results also support the close relationship among C. stracheyi, C. insignis, and C. kumaonensis because of their similar chromosome numbers. Further cytological studies are needed for other species in subsect. Decorae, to understand the relationships among members of the subsection.

13. Eleocharis uniglumis (Link) Schult. (2n = 42, Fig. 2D)

Eleocharis uniglumis is widely distributed in Europe, Asia (Turkey, Iraq, Iran, Afghanistan, Pakistan, India, China, Kazakhstan, Kyrgyzstan, Mongolia, Uzbekistan), Russia, North America, and North West Africa (Kukkonen 1998, Smith et al. 2002, Dai and Strong 2010), and was recently recorded from Nepal by Yano et al. (2014). Eleocharis uniglumis had the chromosome number 2n = 42, and the somatic metaphase chromosomes showed a bimodal karyotype with 8 large (L) and 34 small (S) chromosomes. L-chromosomes ranged from 4.4 to 5.8 µm in length while S-chromosomes ranged from 2.2 to 3.6 µm.

Eleocharis uniglumis belongs to subser. Eleocharis (González-Elizondo and Peterson 1997). Several taxa of subser. Eleocharis have a bimodal karyotype, e.g. 2n = 16 = 4L + 12S for E. palustris (L.) Roem & Schult. (Yano et al 2010a). Yano and Hoshino (2006b) reported 2n = 42 = 8L + 34S for E. kamtschatica (C. A. Mey.) Kom. and 8L chromosomes caused by the duplication of 4L chromosomes of taxa with 2n = 16. In the present study the chromosome number, 2n = 42 = 8L + 34S for E. uniglumis might have arisen by a similar process.

Although chromosome numbers of 2n = 42–50 have been reported for E. uniglumis, the most frequent and stable chromosome number was 2n = 46 (Bureš 1998). Strandhede (1966) reported chromosome numbers of 2n = (41–)42(–43) for the interspecific hybrid between E. uniglumis subsp. uniglumis and E. palustris subsp. vulgaris Walters from Europe. However, it is not known whether the chromosome number of 2n = 42 for E. uniglumis in Nepal has arisen as a result of hybridization, because we did not find E. palustris or other species growing sympatrically in the field. Further studies are needed to understand the cytological diversification for this species group in Nepal.

14. Fimbristylis complanata (Retz.) Link (2n = 10, Fig. 2E)

Fimbristylis complanata is widely distributed in pantropical areas, extending northwards to South China and temperate Japan (Koyama 1978). The chromosome number of F. complanata has previously been reported as 2n = 10 (Kral 1971, Nijalingappa 1972, 1975, Rath and Patnaik 1974), 2n = 16 (Tanaka 1939 as F. complanata var. kraussiana C. B. Clarke, Yano and Hoshino 2006a), and 2n = 20 (Sachdeva 1977, Rath and Patnaik 1978, Mehra and Sachdeva 1979) (Table 1). In the present study the chromosome number, 2n = 10, confirms the previous reports by Kral (1971) from Mexico, and Nijalingappa (1972, 1975), Rath and
Patnaik (1974) from India. Somatic metaphase chromosomes ranged from 1.5 to 2.3 µm in length.

Koyama (1959) recognized two forms in *F. complanata* in Asia: (1) *f. complanata* from India to Taiwan and Malaysia, through Indo-China, and (2) *f. exalata* T. Koyama (including var. *kraussiana*) from Japan and China. This and previous studies suggest that there may be cytological differences between these two forms. Chromosome numbers of *F. complanata* var. *complanata* from India and Nepal are 2n = 10 and 20, while *f. exalata* from Japan has 2n = 16.

15. *Fimbristylis falcata* (Vahl) Kunth (2n = 22, Fig. 2F)

*Fimbristylis falcata* is distributed in Bhutan, Ceylon, India, and Nepal (Koyama 1978, Noltie 1994). The chromosome number of *F.*
**falcata** had previously been reported as 2n = 22 (Sharma and Sarkar 1967–1968, Sanyal and Sharma 1972, Mehra and Sachdeva 1975a, 1976: as *F. junciformis* Kunth, Bir et al. 1986, 1988, 1992, Paramjeet et al. 1992) and 2n = 44 (Nijalingappa 1975, 1977) from India. The chromosome number of *F. falcata* from Api Himal was 2n = 22, confirming the diploid number of the previous reports. Somatic metaphase chromosomes ranged from 1.4 to 2.2 µm in length.

16. *Isolepis setacea* (L.) R. Br. (2n = 28 = 14II, Fig. 2I)

*Isolepis setacea* is widely distributed in the Himalayas, Asia, Europe, and Africa (Katsuyama 2008). Chromosome number of *I. setacea* has previously been reported as 2n = 26, 28, 32 (Davies 1956, Mičieta 1986, Hoshino et al. 2000, Yano et al. 2010b) (Table 1). In the present study the chromosome number, 2n = 28 = 14II, corresponds to one of the numbers in the aneuploid series reported by Mičieta (1986) from Slovakia and Hoshino et al. (2000) from Langtang Himal, Central Nepal. *Isolepis setacea* had 14 normal bivalents pairing in meiotic division. The meiotic metaphase chromosomes ranged from 0.8 to 2.1 µm in length.

17. *Kobresia esbirajbhandarii* Rajbh. & H. Ohba (2n = 62, Fig. 2G)

*Kobresia esbirajbhandarii* is endemic to the alpine regions in Nepal (Rajbhandari and Ohba 1991). *Kobresia esbirajbhandarii* was found to have the chromosome number of 2n = 62, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 0.9 µm in length. Starr and Ford (2009) reported the monophyly of unispicate *Kobresia* species in the tribe *Cariceae*, based on DNA sequence data. Yano et al. (2011) reported that the unispicate *Kobresia* species showed a polyploid series, 2n = 32, ca. 36, 52–56, 58, 60–66, ca. 84, ca. 114, and ca. 122, as well as some aneuploids. The chromosome number of 2n = 62 for *K. esbirajbhandarii* which has a unispicate inflorescence fits within the polyploid series.

18. *Schoenoplectiella fuscorubens* (T. Koyama) Hayasaka (2n = 42, Fig. 2H)

*Schoenoplectiella fuscorubens* is distributed in Bhutan, China, and Nepal (Koyama 1969, 1978, Noltie 1994: as *Schoenoplectus fuscorubens* (T. Koyama) T. Koyama). *Schoenoplectiella fuscorubens* was found to have the chromosome number of 2n = 42, and this is the first chromosome count to be determined for this species. Somatic metaphase chromosomes were less than 1.5 µm in length. Koyama (1969, 2008) noted that this species resembled to *S. juncoideus* (Roxb.) Lye or *S. kandawlayensis* (T. Koyama) Hayasaka. Yano et al. (2010b) reported the chromosome number for *S. juncoideus* from Nepal to be 2n = 74, which is quite different from that of *S. fuscorubens* in this study. Further studies are needed to understand the phylogenetic relationships among these species, using not only cytological but also by the molecular analyses.

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**References**


English abstract).


矢野興一a, 池田 博b, C. A. Pendryc, K. R. Rajbhandarid:
ネパールヒマラヤ産カヤツリグサ科植物の細胞学的研究

III. アピ・ヒマラヤ周辺地域（ネパール極西部）より採集した18種の染色体数

ネパール極西部のアピ・ヒマラヤ周辺地域より採集したカヤツリグサ科植物7属18種について染色体数を報告した。Carex cruenta Nees (2n = 44), C. kumaonensis Kük. (2n = 50), C. obscura Nees (2n = 56), C. stracheyi Boott ex C. B. Clarke (2n = 44), Kobresia esbirajbhandarii Rajbh. & H. Ohba (2n = 62), Schoenoplectiella fuscorubens (T. Koyama) Hayasaka (2n = 42)の染色体数は今回が初めての報告である。

Blysmus compressus (L.) Panz. ex Link (2n = 46)とCarex foliosa D. Don (2n = 62)は、これまでの報告と異なった染色体数が算定された。

C. filicina Nees (2n = 46), C. inanis Kunth (2n = 42), C. longipes D. Don (2n = 46), C. microglochin Wahlenb. (2n = 50), C. myosurus Nees (2n = 44), C. rufulistolon T. Koyama (2n = 46), Eleocharis uniglumis (Link) Schult. (2n = 42 = 8L + 34S), Fimbristyliis complanata (Retz.) Link (2n = 10), F. falcata (Vahl) Kunth (2n = 22), Isolepis setacea (L.) R. Br. (2n = 28 = 14II)については、これまでの報告と一致した。

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