

Taxonomical Notes of *Liparis fujisanensis* (Orchidaceae)

by

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近田文弘*・松本 定**：フガクスズムシ（ラン科）の分類学的ノート

The name of *Liparis fujisanensis* was illegitimately published by F. Maekawa (1971). He described this species in Japanese with color figures, but he neither gave Latin description nor the citation of types. We had chance to collect plants which could be referred to *L. fujisanensis* in Maekawa's sense in Mt. Fuji (Konta and Sugimoto 1983). The Latin description and the citation of the holotype is presented in this paper based on our collections, as well as the observations on the types of pollen tetrads and chromosome number in this species.

Description

Liparis fujisanensis F. Maekawa ex F. KONTA et S. MATSUMOTO sp. nov.

Herb epiphytica nana. Caulis mono circiter 5~13 cm longus. Folia duo usque ad 5 cm longa et 2.5 cm lata. Flores pallide purpurascens.

Inflorescences receme, vertically ascending, 1~10 flowered; flowers horizontal, purplish; ovary 10~15 mm long, being twisted; middle sepal linear-lanceolate, vertically ascending or bending backwardly, somewhat acute at apice, 7~10 mm long, 0.7~2.0 mm broad; lateral sepals free, broad linear with incurved margin, horizontally elongating or obliquely descending from receptacle, 8.0~10.0 mm long, 0.8~1.0 mm broad; lateral petals free, long subulate with strongly incurved margin, pendulous from receptacle, sometimes lightly incurved, 8~12 mm long, 0.2~0.5 mm broad; labellum ovate, minutely serrate at the apical margin, 10~12 mm long, 5~7 mm broad near the apex, basal part obliquely ascending from receptacle, strongly curving downward at the middle part on the lateral view, with a dense purplish and gleaming vertical belt bordered by scattered glands at the central part on the front view; column almost terete with angular small wings just under the stigma head, slightly bending forward at apice, 4~5 mm long, 0.8~0.9 mm broad near the base; anther hemispherical; pollinia yellow, compressed mattress form of long triangular outline with point base, 0.8~0.9 mm long, 0.4~0.6 mm broad at the broadest part.

SPECIMENS EXAMINED. Shizuoka Pref.: Omote-2-gome, Fujinomiya City, Mt. Fuji, ca. 1700 m alt., July 13th, 1977, F. KONTA, T. MASUZAWA and E. HAYAKAWA, No. 2214a (Holotype: TNS6466761); Omote-2-gome, Mt. Fuji, cult. by F. HAYASHI, June, 21th, 1989, TNS9504534; Aomori

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Pref.: Cult. by Y. Hanei, June, 13th, 1984, TNS9504241~3.

DISTRIBUTION. Honshu, Shikoku (Hashimoto and Kanda 1981, Hashimoto *et al.* 1991) and Kyushu (Hashimoto and Kanda 1981) in Japan as well as in Korea (Kim and Kim 1986, Lee 1995).

From morphological point of view, *Liparis fujisanensis* was considered the hybrid between *L. kumokiri* Maekawa and *L. makinoana* Schlechter by Maekawa (1971). He cited: *L. fujisanensis* is similar with *L. makinoana* in the pendulous lateral petals, broad and flat lateral sepals and the presence of purple color in labellum. On the other hand, *L. fujisanensis* is similar with *L. kumokiri* in the horizontally opened lateral sepals, strongly curving labellum and the angular wings at the upper part of column. It shows intermediate character of *L. fujisanensis* between *L. kumokiri* and *L. makinoana* that plant size including flower size of *L. fujisanensis* is intermediate between the latter two species. However, we could not find both species which were considered the parents of *L. fujisanensis* by Maekawa around the types in the deciduous forest of Mt. Fuji. In addition to this information on the distributional feature, our observations cited below showed that intact pollens and pollen tubes showing good pollen fertility occurred in *L. fujisanensis* and the chromosome number of this species was the same as that of *L. kumokiri* and *L. makinoana*. We, therefore, suspect that *L. fujisanensis* is an independent species, although more careful taxonomic studies are needed.

Types of pollen tetrads and chromosome number of *Liparis fujisanensis*

Tetrad types: Pollen mass can be divided into tetrads. Tetrads of five different types were recognized among 2,238 tetrads in ten pollinia of the holotype. These types were cross, rhomboidal, square, t-shaped and linear which were the same as previously confirmed in the Orchidaceae (Konta and Tsuji 1982). Each pollens have two nuclei and intact shape, which show these pollens are formed through normal process of the tetrad formation. Frequencies of these types of pollen tetrads were shown in Table 1. Percentages of the number of each types to total number of the tetrads were calculated as follows; cross tetrads 55.58: rhomboidal tetrads 11.85: square tetrads 23.97: t-shaped tetrads 6.56:

Table 1. Tetrads types and numbers of tetrads belonging to each types

| | Cross | Rhomboidal | Square | T-shaped | Linear | Total |
|-------|-------|------------|--------|----------|--------|-------|
| 1 | 173 | 94 | 38 | 28 | 12 | 345 |
| 2 | 98 | 36 | 25 | 6 | 5 | 170 |
| 3 | 92 | 41 | 13 | 7 | 0 | 150 |
| 4 | 192 | 88 | 25 | 26 | 7 | 338 |
| 5 | 117 | 49 | 18 | 14 | 3 | 201 |
| 6 | 104 | 45 | 21 | 10 | 2 | 182 |
| 7 | 127 | 43 | 30 | 19 | 6 | 225 |
| 8 | 136 | 51 | 41 | 17 | 6 | 251 |
| 9 | 89 | 53 | 22 | 15 | 3 | 182 |
| 10 | 108 | 40 | 28 | 11 | 4 | 191 |
| Total | 1,236 | 500 | 261 | 153 | 48 | 2,235 |
| % | 55.58 | 11.85 | 23.97 | 6.56 | 2.04 | 100 |

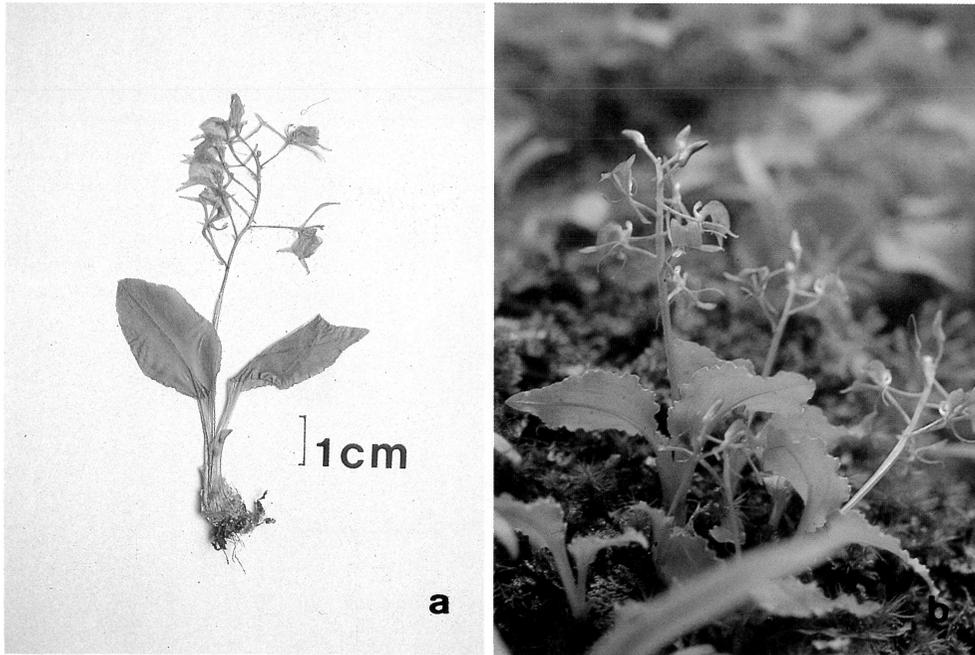


Fig. 1. Holotype and habit of *Liparis fujisanensis*: a. holotype, b. habit of holotype in Mt. Fuji.

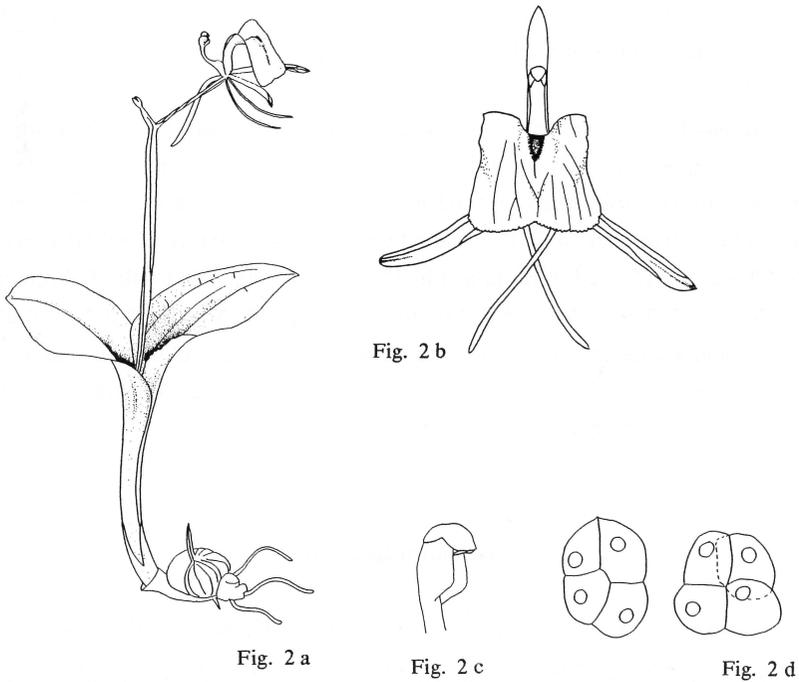


Fig. 2. A small plant of *Liparis fujisanensis* collected at Umegashima by F. Konta.
 a. habit, growing on mossy tree trunk of deciduous tree in moist valley ($\times 1$), b. front view of flower ($\times 2$), c. apex of column with angular lateral wings ($\times 2$), pollen tetrads; rhomboidal (left) and square (right) types ($\times 200$).

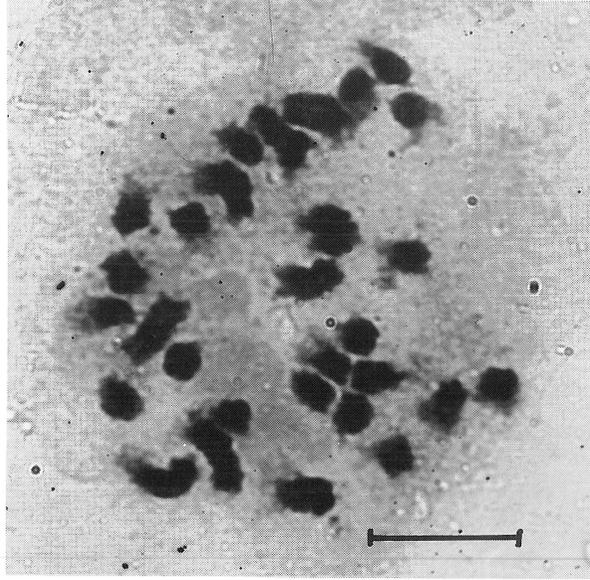


Fig. 3. Chromosomes of *Liparis fujisanensis*, $2n=30$.
Scale: $10\mu\text{m}$.

linear tetrads 2.04. Among these pollen tetrads, the cross type occupies about half in the percentage and number of this type was followed by the square and rhomboidal ones. Both the t-shaped and the linear tetrads were very few. Many pollens with elongating pollen tubes were observed when pollinia were placed on the stigma. One pollen tube elongated from each pollen.

Chromosome number: The material was collected from Umegashima (Oya-kuzure), Shizuoka City, Shizuoka Pref. by KONTA on May, 30th, 1975 (Fig. 2a). Chromosome was counted in the root tip cells. The root tips were pretreated in 0.002 mol/l 8-oxoquinoline for 4 hr. at 18°C , and were fixed in 45% acetic acid for 10 min. at 10°C . They were hydrolysed in a mixture of 1N HCl and 45% acetic acid (1:1) for 20 sec. at 60°C , and were stained in 1% acetic orcein. The result of chromosome count was $2n=30$ with partially heterochromatin chromosomes (Fig. 3). According to lists of chromosome numbers (Tanaka and Kamemoto 1984, Goldblatt 1984, 1985, 1988, Goldblatt and Johnson 1990, 1991, 1994, 1996), the chromosome number of this species was for the first time in Japan but has already been reported from Korea by Kim and Kim (1986).

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Summary

Liparis fujisanensis F. Maekawa ex F. Konta et S. Matsumoto is described based on the types collected from Mt. Fuji. Observation on the pollen tetrads and chromosome number of this species are also given in this paper.

摘 要

フガクスズムシ *Liparis fujisanensis* F. Maekawa は、前川文夫博士 (1971) が富士山にちなんで名付けられたが、ラテン語の記載と模式標本の指定が無く、学名上は、いわゆる裸名である。筆者らは、富士山で本種の良い標本を採集する機会を得たので、改めて正式な学名として *L. fujisanensis* F. Maekawa ex F. Konta et S. Matsumoto を発表した。また本種の花粉四分子の型と出現頻度及び染色体数を調査したのであわせて発表した。

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