

Report of Orchidaceae of the Lake Baikal Region *

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バイカル湖地域で観察されたラン科植物 *

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Introduction

As a purpose of preserving endangered plants, the aims of this project were to study molecular cytogenetic characteristics of the plants distributing in the Eurasian Continent and native to the Japanese-Archipelago and to establish the relationship between them. An investigation at the Lake Baikal Region, Siberia, Russia was conducted on August 1-9, 2005 by focusing to orchids. The species and habitat environments for these orchids are found as follows.

Outline of the vegetation

Two vegetations were observed within the studied area. One was the savanna seen from Ulan-Ude to the Tarbagatayskiy District, where the prairie and the pine wood forest (*Pinus sylvestris* L.) were mixed and the precipitation is about 300mm per year. The other was the forest consisting of *Betula platyphylla*, *Pinus sibirica*, *Picea* sp. and *Populus* sp. in a heavy rain/high humidity climate seen at a Lake Baikal southern region. Forests have developed along with a investigation rout started from the Kabanskiy District of Buryat Republic to the end of the observation point in Arshan City, the Tunkinskiy District of Buryat Republic, via the Irkutsk Province. The trees in these forests were populated densely and grown in large sizes. The species of herbs and low trees in the forest were abundant and grew well. This is apparently due to heavy rains of annual precipitation exceeding 3000mm and to a high-humidity environment, which is created by damp air that is brown from the Lake Baikal and collides to the mountains behind the Lake.

Species and habitat environments of Orchids

A total of 12 taxa of orchids were observed at eight places among 23 investigation points. The orchids identified in each place are as follows.

Observation point 6:

Buryat Republic: Zharchiha, Tarbagatayskiy District. At an altitude 634m.

[Environment of habitat]

A conifer forest in a dry condition, relatively bright inside.

[Species of orchids]

Neottianthe cucullata (L.) Schltr. (Japanese name: Miyama-mojizuri. Plate 1-A).

Comparatively high density was observed; several to ten plants clustered in each location. However, their growth was not at a good level, most likely due to dryness.

Goodyera repens (L.) R. Br. (Japanese name: Hime-miyama-uzura. Plate 1-B).

Only a few individuals were found. They grew rather poorly.

*Contribution from the Hiroshima Botanical Garden No. 82

1) Hiroshima Botanical Garden

Bulletin of the Hiroshima Botanical Garden, No. 24・25 : 5-9, 2007.

Observation point 12

Irkutsk Province: At near Hotel Sobolinoye, Baikalsk City, Sludyanskiy District. At an altitude 554m.

[Environment of habitat]

A mixed forest of white birch (*Betula platyphylla*) and poplar (*Populus* sp). The soil was moderately moist.

[Species of orchids]

Dactylorhiza aristata (Fisch.) Soo (Japanese name: Hakusan-chidori. Plate 1-C).

Many individuals in moderate growth were identified in spite of a dark forest.

Epipactis helleborine (L.) Crantz var. *papillosa* (Franch et Sav.) Hashimoto (Japanese name: Ao-suzuran. Plate 1-D).

One cluster around forest edge was identified. Six plants in four locations within 2m² were observed. One was in bloom. Others did not have any flowers.

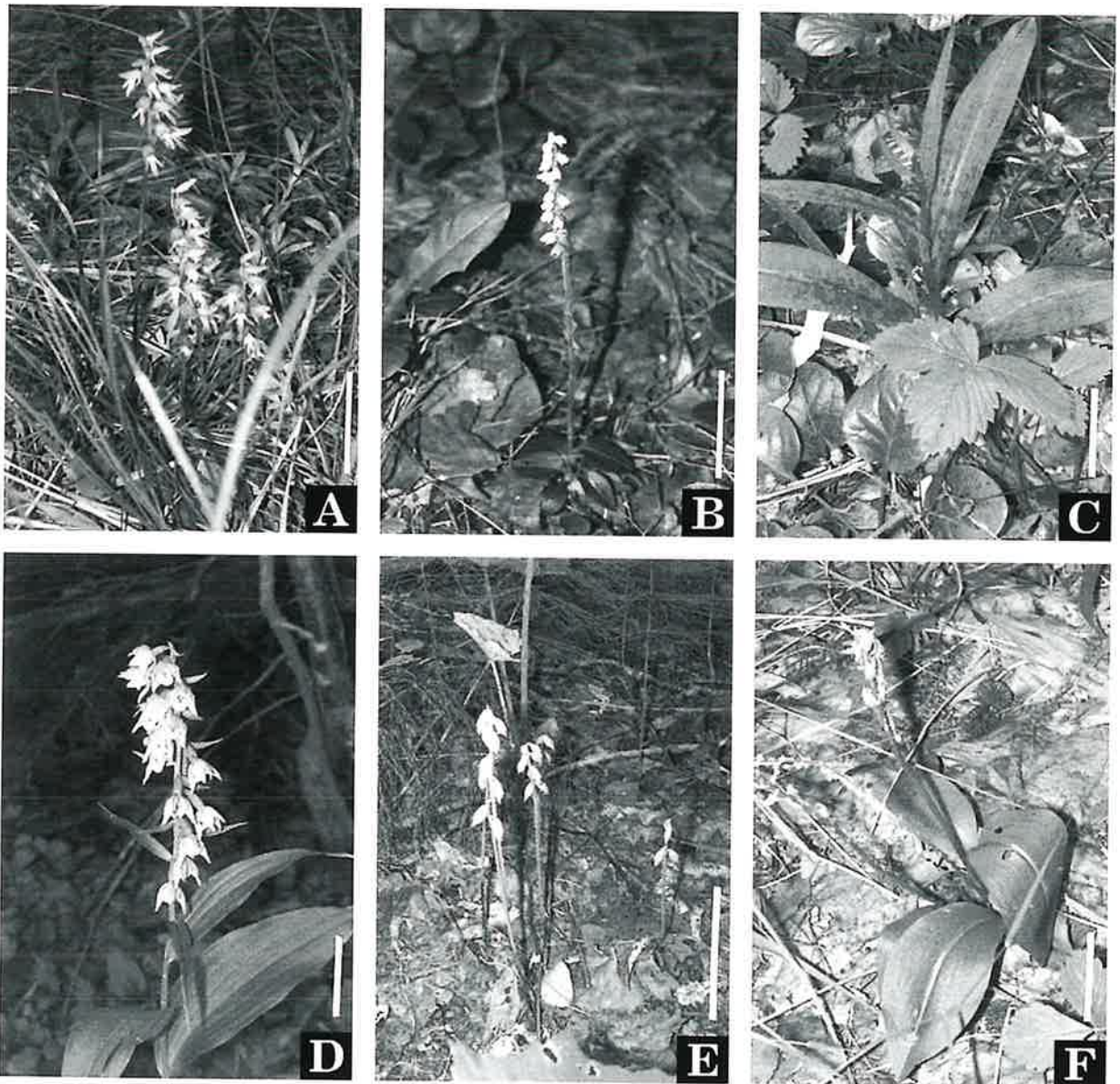


Plate 1. A, *Neottianthe cucullata* (L.) Schltr.. B, *Goodyera repens* (L.) R. Br.. C, *Dactylorhiza aristata* (Fisch.) Soo. D, *Epipactis helleborine* (L.) Crantz var. *papillosa* (Franch et Sav.) Hashimoto. E, Saprophytic orchid sp.. F, *Malaxis monophyllos* (L.) Sw.. Bars indicate 5.0cm.

Saprophytic orchid sp. (Plate 1-E).

Five flower stalks with fruits, in about 10cm heights from ground, were identified.

Observation point 13

Irkutsk Province: On the left side of the Solzan River, up stream from a bridge on the road M55 in the Sludyanskiy District. At an altitude 540m.

[Environment of habitat]

At an artificial river bank with 6m width, many trees of medium-low heights were grown on both sides of the bank, where orchids were growing within other grasses.

[Species of orchids]

Dactylorhiza aristata (Fisch.) Soo (Japanese name :Hakusan-chidori).

Plants seemed to be in an unproductive growth state due to darkness. Remains of flowering were found for few plants.

Malaxis monophyllos (L.) Sw. (Japanese name: Hozaki-ichiyou-ran. Plate 1-F).

Many plants could be observed at various locations in the bank in relatively high population density. Some of them were in bloom, some others had fruits. Many small seedlings were also observed.

Observation point 17

Irkutsk Province: Near a cross of the Republic Road M55 and railway; near a bridge across the Kultushnaya River, Sludyanskiy District. At an altitude 531m.

[Environment of habitat]

At a mild slope facing southeast with trees growing sparsely. Sunlight penetrated well. The orchids formed small colonies mixing with many grasses. Many small seedlings were observed near by the colonies. The soil was rich in leaf mold and moist.

[Species of orchids]

Cypripedium macranthos Sw. (Japanese name: Atsumorisou. Plate 2-A).

The plants were out of bloom, and some of them had fruited already. The plants were well grown and the large one was measured at a height of 40cm.

Cypripedium guttatum Sw. (Japanese name: Kibana-no-atsumorisou. Plate 2-B).

The plants were found in surroundings of *Cypripedium macranthos*. They were in a good growth state. They also were out of bloom and some of them formed dark-green fruits at the top of stalks.

Observation point 20

Buryat Republic: Tori Village, Tunkinskiy District. At an altitude 712m.

[Environment of habitat]

At the open swamp along a national highway. Water level was not at an appreciable height. The soil was clayish and heavy. No high grasses were observed.

[Species of orchids]

Herminium sp. (Japanese name: Mukagosou sp. Plate 2-C).

A few plants in cluster were observed. They were all out of bloom.

Spiranthes sinensis (Pers.) Ames (Japanese name: Nejibana. Plate 2-D).

In three locations, blooming plants were recognized.

Malaxis monophyllos (L.) Sw. (Japanese name: Hozaki-ichiyou-ran).

Many plants were seen.

Observation point 21:

Buryat Republic: Left side of the Irkut River, near Nikolskoye Village, Tunkinskiy District. At an altitude 752m.

[Environment of habitat]

A sunny river bank of sandy soil.

[Species of orchids]

Spiranthes sinensis (Pers.) Ames (Japanese name:Nejibana).

One blooming group was found. They were in a better growth state than those found in the swamp described above. The leaves extended upward and the flower stalks were longer than those in the swamp.

Observation point 22:

Buryat Republic: Taloye Village, Tunkinskiy District.

[Environment of habitat]

A pine forest in a grazing land along with a national highway. The ground was entirely covered with moss.

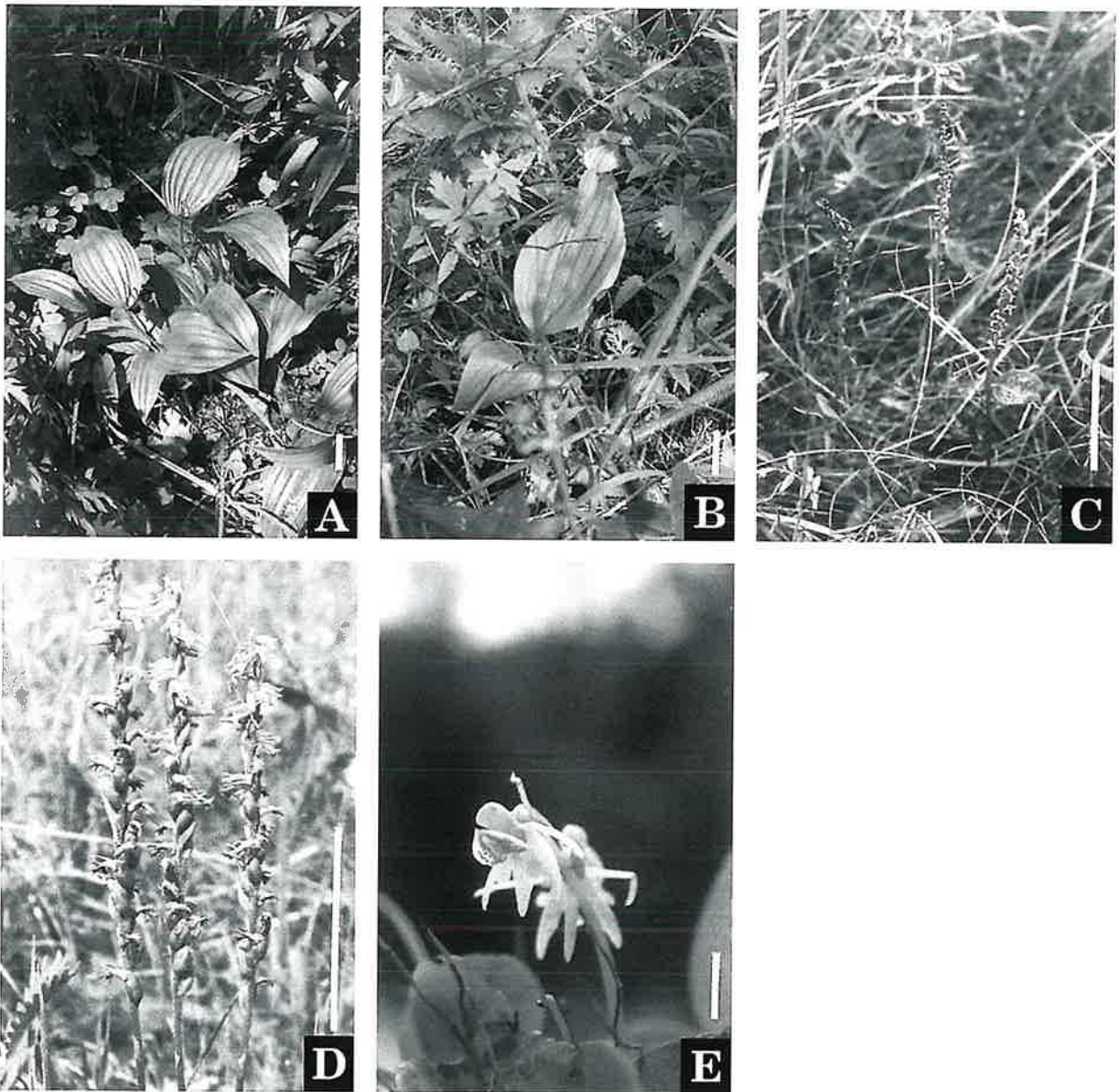


Plate 2. A, *Cyripedium macranthos* Sw.. B, *Cyripedium guttatum* Sw.. C, *Herminium* sp.. D, *Spiranthes sinensis* (Pers.) Ames. E, *Epipogium aphyllum* (F. W. Schmidt) Sw.. Bars indicate 5.0cm in A-D and 1.0cm in E.

[Species of orchids]

Neottianthe cucullata (L.) Schltr. (Japanese name: Miyama-mojizuri).

The plants were found in large numbers. They were in bloom.

Goodyera repens (L.) R. Br. (Japanese name: Hime-miyama-uzura).

Large numbers of plants were observed. Many were in bloom.

Observation point 23:

Buryat Republic: A forest in Arshan City, Tunkinskiy District. At an altitude 874m.

[Environment of habitat]

A mixed forest of large white birch (*Betula platyphylla*) and pine, spreading from the behind of a lodge (we stayed at the final day).

[Species of orchids]

Neottianthe cucullata (L.) Schltr. (Japanese name: Miyama-mojizuri).

Many plants were seen at various locations throughout the forest floor.

Epipogium aphyllum (F. W. Schmidt) Sw. (Japanese name: Torakichi-ran. Plate 2-E)

One blooming plant was identified next to a white birch. This is a very rare saprophytic orchid, limited only in an alpine belt in Japan.

Calypso bulbosa (L.) Oakes (Japanese name: Hotei-ran).

One plant was found on the forest floor, which had a dried flower stalk of 10cm height with one fruit. Several small bulbs in line were observed in the ground.

Dactylorhiza aristata (Fisch.) Soo (Japanese name: Hakusan-chidori).

Many plants were seen at various locations.

Malaxis monophyllos (L.) Sw. (Japanese name: Hozaki-ichiyou-ran).

Many plants were seen at various locations.

Summary

A total of 12 orchid taxa were identified by our investigation at the Lake Baikal region. The majority of the orchids were found within a heavy-rain climate zone. The orchids checked in both heavy-rain and arid zones were limited. Ten out of the 12 taxa were common to those found in Japan.

Acknowledgements

I would like to thank Professor Katsuhiko Kondo, Laboratory of Plant Chromosome and Gene Stock, Graduate School of Science, Hiroshima University, and Irina V. Tatarenko, Research and Education Center of Population Biology, Moscow State Pedagogical University, for assistance in the field trip and identifying the orchids of the Lake Baikal Region. I am also thanks to Dr. Noriko Murakami for her advices on the manuscript.

This study was supported by Grant-in-Aid for Scientific Research Program (A) 14255014 (Representative: Katsuhiko Kondo) of the Japan Society for the Promotion of Science.

Reference

Hashimoto, T., K. Kanda and H. Murakawa. 1991. Japanese Indigenous Orchids in Color Revised and Enlarged (In Japanese) . Ienohikari Association, Tokyo.