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The Phanerogam Flora of Mt. Yûpari, Prov. Ishikari, Hokkaidô, Japan

By

Shirô NOSAKA

I. Introduction

This paper deals with a general feature of the phanerogam flora of Mt. Yûpari based on the author's own explorations undertaken during the years from 1954 to 1969, combined together with many forerunners' works since 1913.

Since Hisayoshi TAKEDA's presentation of a new primrose species, *Primula yuparensis*, many scholars have visited this mountain and many additions have been made to our knowledge of its flora. At present, the number of the phanerogam plants occurring in this district approaches 535 in the species rank.

Most of forerunners, except M. KUSAKA and H. TOYOKUNI, made ascents from the eastern foot of this mountain (KanayamaVill.), and, the herbaceous vegetation of the western foot of this mountain and the florula of Maëdake peaks were left almost unbotanized.

The present author has mainly made ascents from the western foot, and surveyed the florula of Maëdake peaks, reported a preliminary report and a supplementary note on the phanerogam flora of this mountain in the Journal of Geobotany (1960–1962 and 1969), which were only of synoptical and preliminary nature. He visited there about thirty times in the recent sixteen years and spent seventy days in total for botanical survey.

To the author's regret, in the recent years, the vegetation has partially been destroyed rapidly due to the artificial damage by increasing thoughtless climbers or campers; for instance, several noticeable plants, such as *Saxifraga laciniata*, *Dryas octopetala* var. *asiatica*, *Viola yubariana*, *Phyllodoce caerulea* form. *takedana*, *Primula yuparensis*, *Lagotis glauca* subsp. *takedana*, *Veronica schmidtiana* var. *yezoalpina*, *Saussurea chionophylla*, *Platanthera hyperborea* etc., are destined to become extinct.

It is an urgent need to record the status now of the flora of this mountain with special references to many forerunners' works. The author intends to present the status now and past of the phanerogam flora of the mountain as detailed as possible, through his researches of floristic surveys on the unexplored area, of additions of plants new to the flora and of careful observations on the serpentine florula.

In presenting this paper, the author desires to acknowledge his indebtness to Prof. Shigeo AKIYAMA, under whose direction this research has been continued. He wishes to express his cordial thanks to Prof. Emer. Yukio YAMADA and Prof. Munenao KUROGI, for their continual encouragement. His sincere gratitude is due to Prof. Hideo TOYOKUNI, for his con-

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II. History of the studies.

§ 1. Floristic researches.

In the latter half of the 19th century, plant specimens collected in the lower part of Mt. Yûpari and its vicinity were by degrees brought to and preserved in the herbarium of Faculty of Agriculture, Hokkaidô University (SAPT). However, it was 1896 that the first sheets of plant specimens from the alpine zone of this mountain—among them were those of *Pinus pumila*, *Salix reinii*, *Bistorta vivipara*, *Trautvetteria japonica*, *Trollius riederianus* var. *japonicus*, *Sieversia pentapetala*, *Sorbus matsumurana*, *Geranium erianthum*, *Mertensia pterocarpa* var. *yezoensis* etc.—were brought to the herbarium by Teiji ISHIKAWA, when the flora of Mt. Yûpari began to unveil.

Hisayoshi TAKEDA was the earliest botanist who botanically treated the respective plants occurring in the alpine zone of Mt. Yûpari. In his 'Notes on the Japanese Primulas', he distinguished a tiny primrose from the previously known ones as a new species, *Primula yuparensis*, based on Hideo YANAGISAWA's specimens in 1913 (TAKEDA, 1913). In his ensuing paper, 'Some New Plants from Japanese Mountains' (1915), he described five new species from Mt. Yûpari based on the specimens collected by H. YANAGISAWA in 1912 & 1913; those were, *Aconitum yuparense* TAKEDA, *Gentiana yuparensis* T., *Saussurea chionophylla* T., *Trisetum leve* T., and *Saxifraga laciniata* NAKAI et TAKEDA.

Since the appearance of TAKEDA's paper, many botanists have visited this mountain for botanical survey; Shôzô NISHIDA (1913 to 1916), Gen'ichi KOIDZUMI (1916), Hisayoshi TAKEDA & Misao TATEWAKI (1921), Shigeo AKIYAMA (1930 & 1963), Hiroshi HARA (1933), Jisaburô OHWI (1934), Masao

KUSAKA (1939), Hideo TOYOKUNI (1952, 1954, 1956 & 1957) and others; and much information has been added to the flora of this mountain by Kingo MIYABE (1914, 1917, 1921, 1924, 1933, 1935 & 1939), Yûshun KUDO (1914, 1917, 1921 & 1924), Misao TATEWAKI (1933, 1935 & 1939), Masao KUSAKA (1941 & 1942), Hideo TOYOKUNI (1953, 1955, 1956, 1957, 1958, 1960 & 1961), Tatsuyuki OHBA (1968) and others.

New plants described from this mountain by above mentioned scholars and others are as follows:

TAKEDA, H.; 1. *Primula yuparensis* T. (1913), 2. *Aconitum yuparense* T. (1915), 3. *Saxifraga laciniata* NAKAI et TAKEDA ex TAKEDA (1915), 4. **Gentiana yuparensis* T. (1915), 5. *Saussurea chionophylla* T. (1915), 6. **Trisetum leve* T. (1915).

NAKAI, T.; 3. *Saxifraga laciniata* NAKAI et TAKEDA ex NAKAI (1914), 7. *Aconitum corymbiferum* N. (1917), 8. *Aconitum luciduscul um* N. (1917), 9. **Draba yezoensis* N. (1932), 10. *Alchemilla japonica* NAKAI et HARA (1937).

MIYABE, K. & Y. KUDO; 11. **Tofieldia fusca* M. et K. (1914), 12. *Saxifraga nishidae* M. et K. (1917), 13. *Sedum ishidae* M. et K. (1921), 14. *Rhamnus ishidae* M. et K. (1923).

KOIDZUMI, G.; 15. *Salix yezoalpina* K. (1916), 16. **Viola glabella* NUTT. var. *crassifolia* K. (1917), 17. **Ligusticum linearilobum* K. (1917), 18. *Crepis gymnopus* K. (1917), 19. **Taraxacum officinale* WEBER var. *lividum* KOCH subvar. *dissectissimum* K. (1917), 20. *Hierochloe pluriflora* K. (1917), 21. **Veronica senanensis* MAXIM. var. *yezoalpina* K. ex NAKAI (1933).

MIYABE, K. & M. TATEWAKI; 22. **Lagotis takedana* M. et T. (1933), 23. *Potentilla nivea* L. var. *yuparensis* M. et. T. (1939).

TATEWAKI, M.; 24. **Phyllodoce caerulea* BABINGTON var. *takedana* T. (1936).

HONDA, M.; 25. **Clinelymus yubaridakensis* H. (1936).

HARA, H.; 10. *Alchemilla japonica* NAKAI et HARA ex HARA (1937).

KITAMURA, S.; 26. **Saussurea riederi* HERD. subsp. *yezoensis* (MAXIM.) K. var. *yuparensis* K. (1937).

MIYABE, K.; 27. **Ranunculus yuparensis* MIYABE ex TOYOKUNI (1953).

TOYOKUNI, H; 28. **Phyllodoce tsugifolia* NAKAI var. *oblongo-ovata* TATEWAKI form. *viridiflora* TOYOKUNI ex TOYOKUNI & IGARASHI (1952), 29. *Erigeron thunbergii* subsp. *glabratus* HARA form. *haruoi* T. (1953).

ISII, S. & M. KUSAKA; 30. *Pinus pumila* REGEL var. *yezoalpina* ISII et KUSAKA ex IWATA & KUSAKA (1954).

HAYASHI, Y.; 31. **Pentstemon frutescens* LAMBERT form. *albiflora* H. (1954).

TOYOKUNI, H. & S. NOSAKA; 32. *Adenophora pereskiaefolia* FISCHER var. *yamadae* T. et N. (1960).

NOSAKA, S.; 33. *Sedum pluricaule* KUDO subsp. *ezawae* N. (1971).

And now, the author intends to present one new species: 34. *Saxifraga yuparensis* NOSAKA, sp. nov.

Scientific names marked with the asterisk were corrected later.

The first scholar who brought the whole aspect of the flora to light was Shôzô NISHIDA. NISHIDA (1919) presented a paper concerning the plant distribution in the Yûbari Mountain Range (NISHIDA, 1919), in which he described main characters of the vegetation in this mountain, the relations of the florula to those of other districts, and drew up a list of vascular plants occurring in the Yûbari Mountain Range, based mainly upon the specimens collected by H. YANAGISAWA and A. HAMANA and his own and referred to the data of his forerunners. In his publication, NISHIDA enumerated 473 spp. and 8 varr. of phanerogam plants, among which 402 spp. and 5 varr. of phanerogams were reported from Mt. Yûpari.

After that, additions of new plants mentioned above have been made respectively, but no revised flora of this mountain has been published.

In the latter half of his paper, NISHIDA analyzed phytogeographical distribution patterns of plants occurring in the alpine zone in this mountain range, and the result showed that, Honshû was intimately connected through Hokkaidô with Saghalien and less so with the Kuriles. Based on this conclusion, he agreed with MIYABE's hypothesis (MIYABE, 1890), and objected TAKEDA's hypothesis (TAKEDA, 1914).

In 1939, Masao KUSAKA visited this mountain for vegetational study, and presented a list of ligneous plants occurring in Mt. Yûpari (KUSAKA, 1942). In the list, KUSAKA enumerated 129 spp. and 1 variety of ligneous plants, including two species of *Sasa* plants. Among them, 23 species were added to NISHIDA's list. Among those 23 species, noticeable ones were *Schisandra chinensis*, *Staphylea bumalda*, *Acer Miyabei*, *Bladhia japonica*, *Weigela hortensis* etc. The occurrence of *Bladhia japonica* in this mountain was reported only in KUSAKA's list.

Observations on the serpentine flora (ultrabasicosaxicolous flora, TOYOKUNI, 1955) in this mountain have also been made by several botanists, e.g., HIROE (1952), TOYOKUNI (1955–1960) and OHBA (1968), and a form, *Erigeron thunbergii* subsp. *glabratus* form. *haruoi* was added to the list of plants in Mt. Yûpari by TOYOKUNI (1960).

According to NISHIDA's list (1919), main phanerogam plants which occur in the Yûbari Mountain Range but not in Mt. Yûpari, were as

follows:

1. *Stellaria florida* var. *angustifolia*, 2. *Anemone taraoi* var. *nipponica*, 3. *Arabis nipponica*, 4. *Barbarea vulgaris* var. *stricta*, 5. *Cardamine resedifolia*, 6. *Sedum verticillatum*, 7. *Saxifraga bronchialis*, 8. *Dryas octopetala*, 9. *Potentilla fruticosa*, 10. *Hedysarum obscurum* var. *neglectum*, 11. *Cerastrus articulata*, 12. *Acer cissifolium*, 13. *A. miyabei*, 14. *Actinidia kolomikta*, 15. *Viola langsdorfii*, 16. *V. tokubuchiana*, 17. *Angelica multisecta*, 18. *A. refracta*, 19. *Rhododendron dauricum*, 20. *R. tschonoskii*, 21. *Primula cuneifolia*, 22. *Mertensia rivularis* var. *japonica*, 23. *Lophanthus rugosus*, 24. *Boschniakia glabra*, 25. *Galium kamtschaticum*, 26. *Valeriana officinalis*, 27. *Adenophora polymorpha* var. *lamarckii*, 28. *Artemisia keiskeana*, 29. *Carpesium triste*, 30. *Gerbera anandria*, 31. *Lactuca raddeana*, 32. *Saussurea yanagisawae*, 33. *Calamagrostis sachalinensis*, 34. *Carex augustinowiczii*, 35. *C. breviculmis* subsp. *royleana*, 36. *C. limosa*, 37. *C. olivacea*, 38. *C. stellulata*, 39. *C. umbrosa* var. *sabyensis*, 40. *C. wrightii*, 41. *Lysichiton camtschatcense*, 42. *Juncus beringensis*, 43. *Allium strictum*, 44. *Lloydia alpina*, 45. *Platanthera matsudai*, 46. *Juniperus chinensis* var. *sargentii*.

Among the above mentioned plants, thirty-two species have later been recognized to occur on Mt. Yûpari by following botanists and plant-collectors: 1. (NOSAKA, 1958), 4. (NOSAKA, 1957), 5. (NOSAKA, 1969), 6. (TOKUBUCHI, 1893; NOSAKA, 1969), 7. (OHWI, 1934; NOSAKA, 1960 & 1967), 8. (TAKEDA & TATEWAKI, 1921; NOSAKA, 1967), 9. (KANDA, 1930), 11. (YAMAGUCHI, 1969), 12. (YAMAGUCHI, 1969), 13. (YAMAGUCHI, 1969), 14. (AKIYAMA, 1930), 19. (NOSAKA, 1958), 20. (NOSAKA, 1959), 22. (ISHIKAWA, 1896; NOSAKA, 1967), 24. (NOSAKA, 1958), 25. (TOKUBUCHI, 1893; AKIYAMA, 1930), 26. NOSAKA, 1967), 27. (KOIDZUMI, 1916; NOSAKA, 1958; TOYOKUNI & NOSAKA, 1959), 29. (NOSAKA, 1957), 30. (NOSAKA, 1955), 31. (NOSAKA, 1958), 33. (NOSAKA, 1957), 34. (NOSAKA, 1957 & 1958), 35. (AKIYAMA, 1930; NOSAKA, 1958), 36. (NOSAKA, 1967), 37. (NOSAKA, 1958), 38. (NOSAKA, 1958), 40. (NOSAKA, 1956 & 1958), 41. very common, 43. (NOSAKA, 1957 & 1962), 44. (NOSAKA, 1958), 46. (NOSAKA, 1967).

The author has presented considerable additions to the list of plants, and in the present paper, 66 spp. and 1 variety by the author's own survey and 12 spp. and 2 varr. by the re-examinations of the herbarium specimens are added to his forerunner's lists.

§ 2. Vegetational researches.

In the first half of his paper, NISHIDA (1919) stated the outlines of vegetations all over the Yûbari Mountain Range and the main features of

the vegetations of each mountain. Vegetation zones were mainly divided into two; i.e., I. Subalpine region and II. Alpine region.

Subalpine region (I) was regarded to occupy the area lower than 1,400 m[1] above s. l., and the following main patterns or formations were recognized:

I–A. Cultivated land.
I–B. Coniferous forest.
I–C. Vegetation along a stream in coniferous forest.
I–D. Upper conifer region.

In his 'Subalpine region', NISHIDA regarded the forest zone in the mountain range as the coniferous forest zone dominated by *Abies sachalinensis* and *Picea jezoensis*.

Alpine region (II) was regarded to occupy the area higher than 1,400 m[1] above s. l. As to Mt. Yûpari, the following five formations were recognized:

II–A. Alpine-wet-rock-formation.
II–B. Alpine-mat-herbage on the slope-formation.
II–C. Alpine-serpentine-fragmentary-rock-formation.
II–D. Alpine-moss-field-formation.
II–E. Alpine-rock-field-formation.

From the view point of vertical distribution, the 'Alpine region' was recognized as the alpine-shrub-region.

In Alpine-rock-field-formation (II–E), he paid special attention to the vegetation around Gama-iwa, since Gama-iwa has been keeping one of the most noticeable districts in this mountain in accordance with having many novel plants. A brief abstract of his description on the 'Alpine-serpentine-fragmentary-rock-formation' will be given in the next article.

KUSAKA's paper (1941 & 1942) treated the vegetation of the western side of this mountain with respect to forest ecological view point. In the first half of his paper, he showed the patterns of the arboreal communities from their vertical distributions. He gave the following classification on the plant communities of this mountain:

1. Alpine zone (over 1,300 m in alt.).
   i. The *Pinus pumila* Association.
      i–a. Alpine-rock-field community.
      i–b. High moor community.
   ii. The *Alnus crispa* subsp. *maximowiczii* Association.
2. Forest zone (lower than 1,300 m in alt.).

1) The highest point of this mountain was recorded at an altitude of 1,933 m in NISHIDA's paper. But, the point is 1,667. 8 m in alt. according to the recent survey. Therefore, his 1,400 m must be amended probably 1,150–1,200 m above s. l.

iii. The *Betula ermani—Picea jezoensis—Abies sachalinensis* var. *mayriana* Asssociation (700–1,300 m in alt.).
  iii–c. The *Betula ermani* Associes.
  iii–d. The *Sasa kurilensis* Associes.
iv. The *Abies sachalinensis* var. *mayriana—Picea jezoensis—Quercus mongolica* var. *grosseserrata* Association.
  iv–e. The *Tilia japonica—Quercus mongolica* var. *grosseserrata—Acer mono* var. *mayri* Associes.
  iv–f. The *Phellodendron sachalinensis—Alnus hirsuta—Salix bakko* Associes.
  iv–d. The *Sasa senanensis* Associes.
v. The *Cercidiphyllum japonicum—Acer mono* var. *mayri—Ulmus davidiana* var. *japonica* Association (lower than 600 m in alt.).
  v–f. The *Salix sachalinensis—Aralia elata* var. *canescens* Associes.
  v–g. The *Alnus hirsuta* Associes.

Among the above mentioned communities, he regarded iii–c, iii–d, iv–f and iv–d as being in secondary succession, and iv–e, iv–f and iv–d might become iv through the years in the sequence of iv–d→iv–f→iv–e→iv.

His investigations were taken mainly on the forest ecological view points on the western side of this mountain unlike the earlier forerunners' investigations which had been made on the eastern side of the mountain. The forest of the western side of the mountain was recognized as the mixed forest by KUSAKA.

In the latter half of the paper, the main subject was the matters of forestry, hence, these matters are out of consideration here.

At present, trees which grew in the area up to near 1,000 m in alt. were almost cut down, therefore, the papers of NISHIDA and KUSAKA are valuable references for making up the general view of the forest of this mountain.

In 1958, Misao TATEWAKI published the summarization of his studies during the last forty years on forest ecology, entitled 'Forest Ecology of the Islands of the North Pacific Ocean' (TATEWAKI, 1958). In the paper, his concept of 'The Pan Mixed Forest Zone' was clearly set forth. Then, the forest zone of this mountain is to be considered as one of the forests belonging to TATEWAKI's 'The Pan Mixed Forest Zone'.

§ 3. Researches on the serpentine plants.

The earliest author who referred to the serpentine plants in this mountain was Shôzô NISHIDA (1919). As was mentioned in the preceding article,

he treated the plant community in the serpentine area in the alpine zone of this mountain as a formation named 'Alpine-serpentine-fragmentsry-rock-formation'. According to his description, this formation was composed of some 40 herbaceous plants and 7 dwarf shrubs (6 belonging to *Ericaceae*, and 1, *Empetrum*). Among them, fifteen herbaceous plants were recognized as primary elements. His descriptions were not always accurate, but very remarkable being the first reports on the serpentine plants in this mountain.

The botanist who treated the serpentine flora of this mountain as a whole was Hideo TOYOKUNI (1955–1960). TOYOKUNI presented a series of papers entitled 'On the Ultrabasicosaxicolous Flora of HOKKAIDÔ, Japan' in the Journal of Geobotany. In his paper, the plants occurring in the ultrabasic rock areas were classified into the following three main categories: A) Ultrabasic rock-characteristic plants; B) Ultrabasic rock-indifferent plants and C) Ultrabasic rock-accidental plants.

A) was again divided into the following three categories: a) Ultrabasicosaxophytes (Typical ultrabasicosaxophytes and Preferential ultrabasicosaxophytes); b) Ultrabasicosaxicolous relics and c) Ultrabasicosaxicolous ubiquists.

In part 3 of the series, he described the ultrabasicosaxicolous flora of this mountain. His list showed that 95 species occur in the serpentine area in this mountain. In that part, four new combinations and status of scientific names were proposed. In the last part of the series, 'A List of Ultrabasicosaxicolous Plants in Hokkaidô', 35 species were recognized as Ultrabasicosaxophytes or Ultrabasicosaxicolous relics. Seventeen plants from this mountain were described; i.e., *Deschampsia caespitosa* var. *levis*, *Allium maximowiczii* form. *shibutsuense* (KITAMURA) TOYOKUNI (comb. et stat. nov.), *Arenaria katoana*, *Draba japonica*, *Potentilla matsumurae* var. *yuparensis*, *Tithymalus sieboldianus* form. *montanus* (TATEWAKI) TOYOKUNI (stat. nov.), *Rhamnus ishidae*, *Viola sacchalinensis* var. *alpina*, *V. yubariana*, *Angelica stenoloba*, *Primula yuparensis*, *Lagotis glauca* subsp. *takedana* (MIYABE et TATEWAKI) TOYOKUNI et NOSAKA (stat. nov.), *Adenophora pereskiaefolia* var. *yamadae*, *Crepis gymnopus*, *Erigeron thunbergii* subsp. *glabratus* form. *haruoi*, *Saussurea chionophylla* and *Taraxacum yuparense*.

Tatsuyuki OHBA investigated the serpentine plant communities in Japanese mountains, and established in his paper, the *Minuartetalia vernae japonicae* which corresponds partly to the *Thlaspetea rotundifolii* in the Alps (OHBA, 1968). He distinguished two Alliances in it, the *Drabo-Arenarion katoanae* and the *Cerasteo-Minuartion vernae japonicae*. In Mt. Yûpari, two types of the Alliance *Drabo-Arenarion katoanae* were reported; one,

Saussuretum chionophyllae, and the other, the *Viola yubariana* community. His paper was the first one which treated the plants occurring in the ultra-basic rock area of this mountain from the plant sociological view point.

The present author surveyed the serpentine plant communities in this mountain in 1964 and 1966, and announced the result of his works at the 20th Annual Meeting of the Hokkaidô Branch, Botanical Society of Japan, held in September, 1968. By him, the relation between the plants and their habitats on the serpentine soil was disclosed to some extent.

III. Environment.

§ 1. Topography and geology.

The Yûbari[2] Mountain Range, near the southern end of which Mt. Yûpari stands, extends over 45 km from north to south slightly southwest of the central Hokkaidô. Geological surveys in this district have been taken by many geologists. In the recent years, important papers were presented by Y. OINOUE (1912), N. YABE (1951), K. OTATSUME (1951) and others. The latest ones were issued by Hokkaidô Development Agency concerning the geology in the districts of Yamabe (HASHIMOTO, W., 1953), of Ôyûbari (NAGAO, S., OSANAI, H. & SAKO, S., 1954) and of Ishikari-kanayama (OSANAI, H., NAGAO, S., MITANI, K., HASEGAWA, K. & HASHIMOTO, W., 1958). The following geological account is mainly after these papers.

The back-bone ridge of this mountain range is supported with an anticlinal axis which is assumed to be caused by Epi-Cretaceous Orogeny. Geological formations of the ridge consist of some metamorphic rocks with the vast intrusion of serpentine. In the western part of the back-bone ridge, mountains stand ranging parallel with the ridge reaching 700 m to 900 m in altitude which consist of the Upper Cretaceous and the Tertiary formations; while in the eastern part of it, two or three dissected planes develop[3], being different in altitude, which characteristically incline from northwest to southeast.

Mt. Nokanan (906 m in alt.), Mt. Shimofurano (1,331 m in alt.), Mt. Nunobe (1,348 m in alt.), Mt. Ashibetsu (1,727 m in alt.) and Mt. Yûpari (1,667.8 m in alt.), are principal projects along the back-bone ridge in a row

2) 'Mt. Yûpari' is the name of this mountain in Ainu language. Nowadays it is called 'Mt. Yûbari' in Japanese, but in the first paper concerning the plant from this mountain by H. TAKEDA (1913), its name was introduced in Ainu language, and the Japanese name of a new species of primrose (*Primula yuparensis*) was named '*Yûpari-kozakura*'. The present author used the name 'Mt. Yûpari' in his previous reports.

3) One of them develops more than 900 m in altitude, the others, 600 m to 800 m.

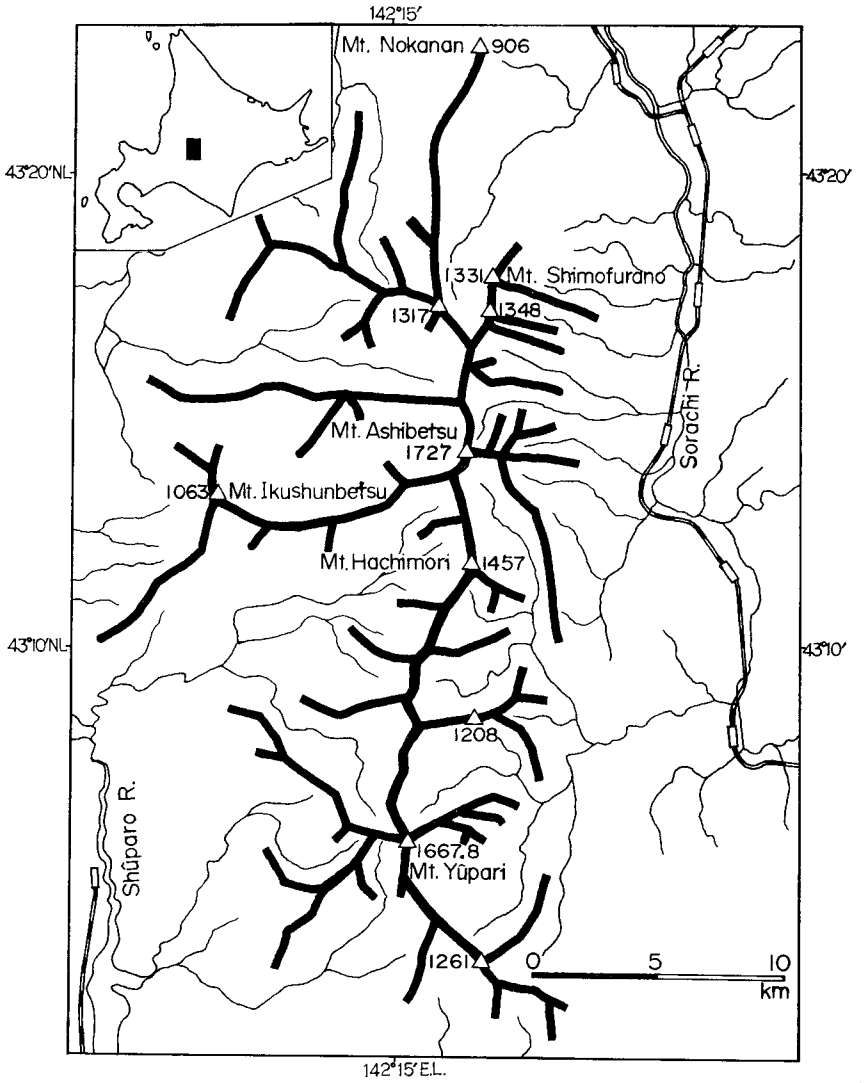


Fig. 1. The Yûpari Mountain Range.

from north to south. Main streams are the Sorachi River and the Shûparo River. The former runs along the eastern side of the dissected plane from south to north, the tributaries of it run from west to east. The latter runs through the western part of the southern half of the back-bone ridge from north to south and the tributaries of it run from east to west (Fig. 1).

It is assumed that main peaks in the mountain range began to upheave

in the end of Cretaceous Period or in the beginning of Tertiary Period. This is called the Epi-Cretaceous Orogeny. It is supposed that this orogeny and the previous one (in the Middle Cretaceous) and the subsequent one (in the Neogene Tertiary) caused many overthrusts and the Pre-Cretaceous or the Jurasso-Cretaceous formations to dynamometamorphose, with the vast intrusion of ultrabasic rocks.

In the Pleistocene of the Quaternary Period, it is suggested that the uppermost parts of this mountain range (Mt. Ashibetsu and Mt. Yûpari) partially underwent glacier erosion, but cirques are uncertain. This suggestion may be one of the important keys to occurrence of some epibiotic plants in the alpine zone of this mountain range.

Projects of Mt. Yûpari are topographically divided into two groups; so called 'Hondake peak' and 'Maëdake peaks[4)]'. Between these two projects lies a gently sloping plateau forming a rather broad bog. Hondake peak has the highest point in this mountain reaching 1,667. 8 m in altitude, and the point stands 43°05′12″ N. L., and 142°15′18″ E. L., and the narrow ridge reaching over 1,600 m follows the summit about 600 meters from north to south. Maëdake peaks consist of three minor peaks, the highest one is called 'O-dake' (means 'male peak') reaching 1,490 m in alt. and the second one is uncertain in its altitude (probably 1,400 m in alt or so), and the lowest one is called 'Hime-dake' (means 'daughter peak') reaching 1,352 m in altitude. These minor peaks soar striking steeples with rocky cliffs over 100 meters on the northwest side.

The Shûparo River runs through the western part of this mountain from north to south. One of its tributaries, the Shirokane River, runs from the foot of Hondake peak, the other one, the Penke-moyûparo River (the Takinosawa River) runs from the foot of Maëdake peaks; the two tributaries join the Shûparo River in the northern corner of the Shûparo Lake at Akashi Town. Headwaters of the Ebanazawa River and the Tonashibetsu River, both are tributaries of the Sorachi River, are near the east side foot of Hondake peak. These tributaries run through the eastern side of the mountain from west to east and join the Sorachi River at Kanayama Village.

The map of Mt. Yûpari district is shown in Fig. 2.

The uppermost part of Mt. Yûpari consists mainly of metamorphic rocks called the Yûbaridake Metamorphic Group which is considered to be equivalent to the Kamuikotan Metamorphic Group (s. lat.) in central Hok-

4) Here the present author uses 'Maëdake peaks' for them as the local people call them, notwithstanding the name of 'Yûbari-nishi-dake' according to the alpine guide book. The name 'Mt. Koyûbari' was sometimes used, e. g., in H. HARA's paper (1939) etc.

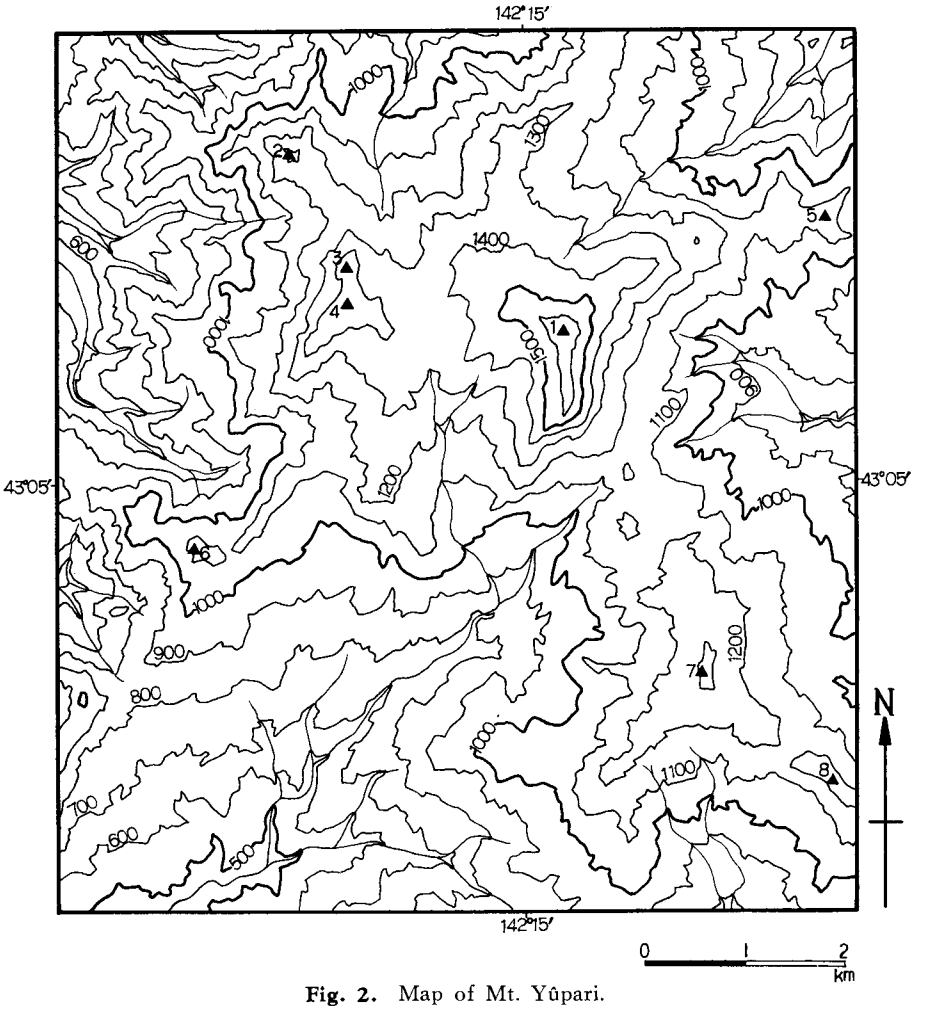


Fig. 2. Map of Mt. Yûpari.

1. The summit of Mt. Yûpari (Hondake peak, 1,667.8 m).
2. (Hime-dake, 1,352 m), 3. (O-dake, 1,490 m) and
   4. Maëdake peaks.
5. Mt. Shôyûpari (Mt. Koyûbari, 1,234 m).
6. 1,110 m. peak.
7. 1,312 m. peak.
8. Mt. Byôbu-yama (1,261m).

kaidô. These metamorphic rocks consist of phyllitic rocks and schistosed rocks which are considered to be slightly altered from some parts of the Sorachi Group, and, geological age of the Group is supposed probably to be Pre-Cretaceous. Ultrabasic rocks, especially serpentine, occur as large

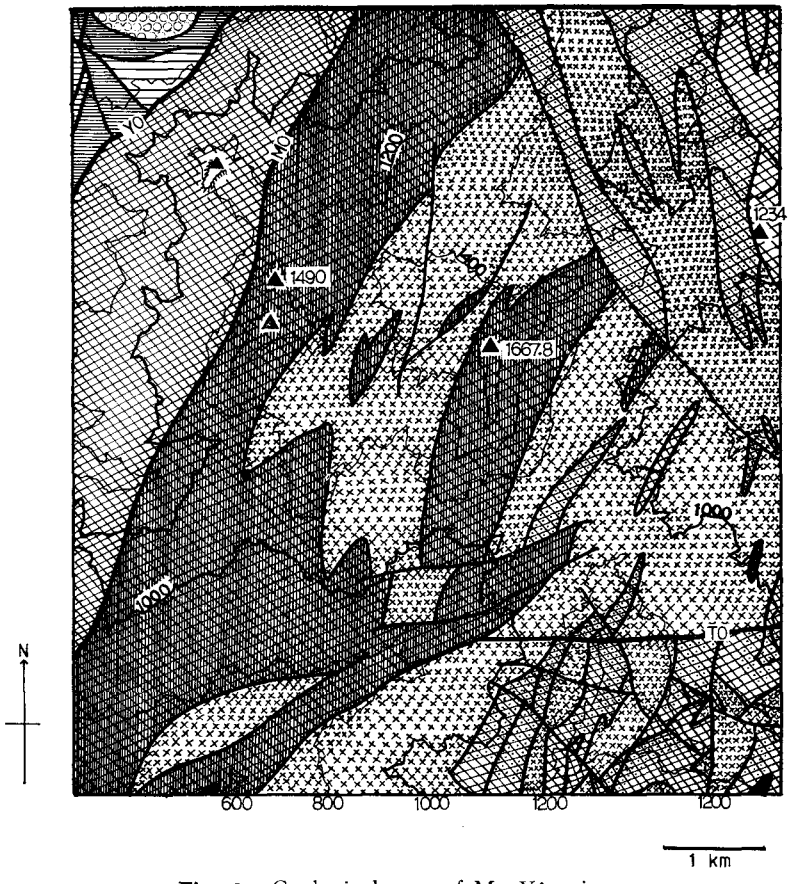


Fig. 3. Geological map of Mt. Yûpari.
adapted from EXPLANATORY TEXT OF THE GEOLOGICAL MAP OF JAPAN: ÔYÛBARI (1954) and ISHIKARIKANAYAMA (1958). (Hokkaidô Development Agency).

Remarks :

Higher Gravel Bed (Quaternary)
Itagakizawa Formation (Tertiary)
Middle Yezo Group (Cretaceous)
Lower Yezo Group (Cretaceous)
Phyllite
Sorachi Group (Jurasso-Cretaceous)
Yubaridake Metamorphic Group (Pre-Cretaceous)
Serpentine
Diabase
Micro-Diorite
— Igneous Rocks

—YO— : Yûbaridake Overthrust
—MO— : Maëdake Overthrust
—TO— : Tonashibetsu Overthrust

masses on the western side of the back-bone ridge and as small masses along the tectonic lines in the eastern area. They are treated as intrusive bodies.

A brief geological map is shown in Fig. 3.

Generally speaking, geological formations lie symmetrically from the back-bone ridge to both eastern and western sides in the following order: the Yûbaridake Metamorphic Group and Serpentine (Pre-Cretaceous), the Sorachi Group (Jurasso-Cretaceous), the Yezo Group (Cretaceous), the Tertiary Formrtions, and, the Terrace Deposits and Alluvial Deposits (Quaternary).

The main overthrust mass extends in almost NS direction, inclining toward E, showing a reversed order of succession.

From the ecological and phytogeographical point of view, it is important that this mountain range had already upheaved in the age of Tertiary, then had likely undergone glacier erosion in the glacial age, and preserved the intrusion of a large mass of serpentine. These facts are the most noticeable characteristics for making up the feature of alpine flora of this mountain.

§ 2. Climate.

Meteorological data in this mountain district are uncertain. Only the data obtained at the western foot of the mountain, viz., at the Nambu Branch, Ôyûbari Forestry Office (about 220 m in alt.) are known. Recent ones of them are given in Table 1.

1. Temperature.

At Nambu Town (about 220 m in alt.), the atomospheric temperatures range on the annual average from about 5.5°C to 9.5°C. The maximum monthly mean value is marked in August being as high as 20.2°C, while the minimum one is marked in January, being as low as −14.8°C. The hottest day comes from late in July to middle in August, showing the daily mean record from 24°C to 27°C. There, warmth index ranges from 60 to 70, while coldness index ranges from −50 to −40. Judging from the data published by Sapporo Regional Forestry Office (1969), the line showing 45 in warmth index runs roughly corresponding with the contour line at an altitude of 800 m, which indicates as a whole the upper limit of the mixed forest in TATEWAKI's sense (TATEWAKI, 1955–1957 & 1958).

2. Rainfall and snow.

This district is of a heavy snowfall zone more than 2.5 m in depth a year. In the upper part of the mountain, there is generally seen consider-

TABLE 1. Meteorological data obtained at the Nambu Branch, Ôyûbari Forestry Office (220 m. in alt.).
Each numerical value is the mean value in the recent five years (1964–1968).

(1) Atomospheric temperature

Values in parentheses are simply calculated by means of lapse rate in the altitude of 1,400 m.

Month	1	2	3	4	5	6	7	8	9	10	11	12	mean
Temperature (°C)	−8.3	−7.8	−1.6	5.1	12.2	16.2	19.8	20.2	15.3	9.5	2.1	−5.3	6.0
monthly mean value	(−14.8)	(−14.3)	(−8.1)	(−1.4)	(5.7)	(9.7)	(13.3)	(13.7)	(8.8)	(3.0)	(−4.4)	(−11.8)	(0.0)

(2) Rainfall

Values marked with asterisks are converted ones from snowfall.

Month	1	2	3	4	5	6	7	8	9	10	11	12	total
Rainfall (mm)	*184.6	*171.2	*53.8	76.0	102.8	144.8	152.8	162.1	179.6	102.3	*71.7	*79.0	1480.9

(3) Weather

(monthly number of days)

Month		1	2	3	4	5	6	7	8	9	10	11	12	total
Weather	fine	13	13	15	14	13	12	12	12	12	17	10	15	158
	cloudy	10	11	12	11	14	13	16	17	14	11	13	11	153
	rain	0	0	0	4	4	5	3	2	4	3	1	0	26
	snow	8	4	4	1	0	0	0	0	0	0	6	5	28
total		31	28	31	30	31	30	31	31	30	31	30	31	365

able remaining snow late in June. Middle in July, there is a little remaining snow, and nearly every year, there is no snow in August. Late in September, the first snow of the year falls on the upper part.

At Nambu Town, it is recorded 10 rainy days and 460 mm of rainfall in the months from June to August. In the upper part, humidity or water volume seems to be rather large caused by fogs and thawing snow.

IV. Outlines of vegetations.

§ 1. Observations.

In the area up to the altitude of 900 m or occasionally 1,000 m in this mountain, trees were almost cut down and partially afforested, and only

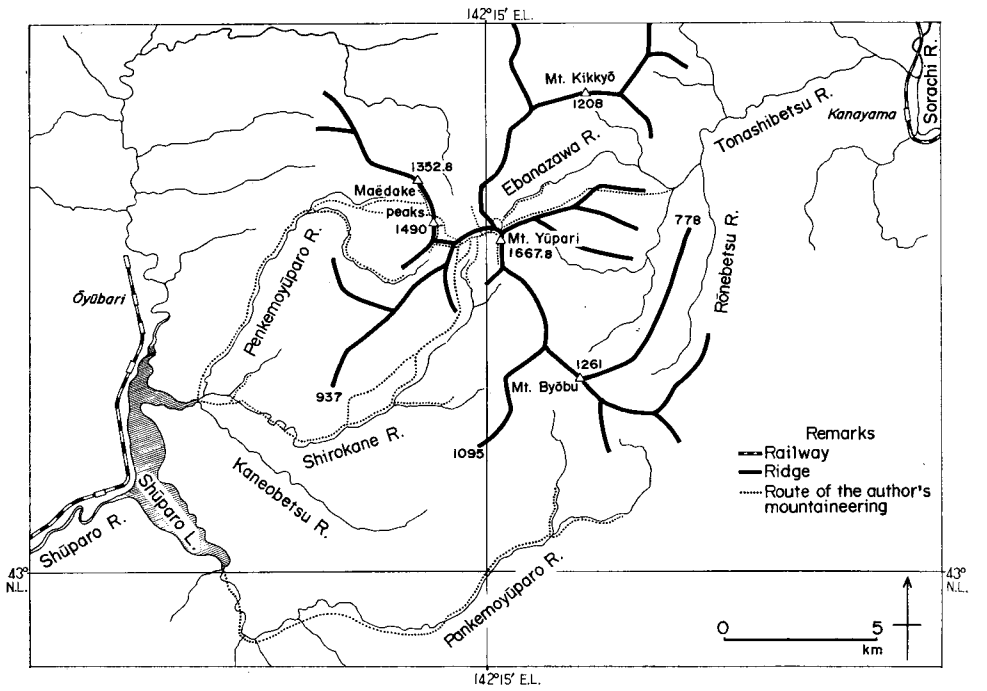


Fig. 4. Route of the author's mountaineering.

the limited area along the small tributary of the Penke-moyûparo River (the Takinosawa River) retains the premeval aspect; there, the mixed forest is left as it was naturally.

In this paper, Mt. Yûpari district is divided into the following three areas according to the patterns of vegatations: i. e., 1. the area covered with the mixed forest (lower than 900 m in alt.), 2. the area covered with the *Betula ermani* forest (between 900 m and 1,300 m in alt.) and 3. the alpine area (higher than 1,300 m in alt.).

1. The area covered with the mixed forest (lower than 900 m in alt.).

This area is again divided into two areas; i. e., the area lower than 600 m in alt. and the area between 600 m and 900 m in alt.

i. *The area lower than 600 m in altitude.*

In the area lower than 600 m in altitude, trees had been almost cut down and the riverside areas of the Shirokane R., the Penke-moyûparo R. (the Takinosawa R.), the Kaneobetsu R., the Tonashibetsu R. etc. have been afforested. So, there is nothing for the author to refer his forerunners'

papers (NISHIDA, 1919 and KUSAKA, 1941) and his observations on the vegetation in the limited area to infer aspects of the primeval vegetation.

It is certain that, in this area, there develop assemblages of the mixed forest.

Along the riverside, there develops the forest of *Cercidiphyllum japonicum—Acer mono* var. *mayri—Ulmus davidiana* var. *japonica*. This forest includes many species of broad leaved trees and a few of needle leaved ones. Such trees are as follows: *Salix hultenii* var. *angustifolia*, *S. sachalinensis*, *Populus maximowiczii*, *Carpinus cordata*, *Quercus mongolica* var. *grosseserrata*, *Ulmus laciniata*, *Acer miyabei*, *Fraxinus mandshurica*, *Abies sachalinensis* var. *mayriana*, *Picea jezoensis* etc.

The undergrowth is dominated by some large herbs such as *Angelica ursina*, *Cacalia hastata* subsp. *orientalis*, *Petasites japonicus* var. *giganteus* etc. and large ferns such as *Dryopteris crassirhizoma* etc. Partially, the undergrowth is the *Sesa senanensis—Cephalotaxus harringtonia* var. *nana* community.

On the hillsides, the forest is mainly dominated by *Abies sachalinensis* var. *mayriana*, *Picea jezoensis* and *Quercus mongolica* var. *grosseserrata*, *Acer mono* var. *mayri*, *Tilia japonica*, *Tilia maximowicziana* etc. Accompanied with them, the following trees are found: *Alnus hirsuta*, *Betula maximowicziana*, *Juglans ailanthifolia*, *Carpinus cordata*, *Magnolia kobus* var. *borealis*, *Sorbus alnifolia*, *Prunus sargentii*, *P. ssiori*, *Acer japonicum*, *Kalopanax pictus*, *Fraxinus sieboldiana* var. *serrata*, *Taxus cuspidata* etc.

The forest floor is covered mainly by *Sasa senanensis* with *Cephalotaxus harringtonia* var. *nana*. At an altitude of 500 m or so, *Cephalotaxus* is hardly to be found. Accompanied with *Sasa senanensis*, such shrubs as *Hydrangea* spp., *Euonymus* spp., *Eubotryoides grayana*, *Rhododendron fauriae* var. *roseum*, *Vaccinium smallii* etc. are found.

Main herbs and ferns sparsely found in the forest floor are as follows: Herbs; *Aconitum yesoense*, *Impatiens noli-tangere*, *Filipendula kamtschatica*, *Viola selkirkii*, *V. verecunda*, *Circaea alpina*, *Aralia cordata*, *Osmorhiza aristata*, *Tripterospermum japonicum*, *Cacalia auriculata* var. *kamtschatica* form. *bulbifera*, *Carex mollicula*, *Lilium cordatum*, *Smilacina japonica*, *Disporum sessile*, *Trillium smallii*, *T. tschonoskii* etc., Ferns; *Dryopteris austriaca*, *D. crassirhizoma*, *Polysticum tripteron*, *Adiantum pedatum*, *Matteuccia struthiopteris* etc.

These aspects are commonly seen in the mixed forest of the Ishikari Depression district reported by TATEWAKI (1931) and TATEWAKI & MATSUI (1935).

In the shady places along the streams, saxifrages such as *Saxifraga japonica*, *S. fortunei* and *S. fusca* are abundant.

Along the mountain path in the higher elevation, the following plants are relatively frequently seen: *Daphniphyllum macropodum* subsp. *humile*, *Pachysandra terminalis*, *Viola selkirkii* (incl. form. *variegata*), *Chamaepericlymenum canadense*, *Maianthemum dilatatum*, *Lastrea phegopteris* etc.

In the areas along the Shirokane River, the Takinosawa River and the Kaneobetsu River, afforestation has been carried on since 1953, the artificial forests develop in those areas over 480 ha (in the total area, 2,300 ha). Species of afforested trees in those areas are as follows: the area along the Shirokane River; *Abies sachalinensis*—ca. 145 ha, *Picea jezoensis*—ca. 6 ha, *Picea glehni*—ca. 14 ha; the area along the Takinosawa River; *Abies sachalinensis*—ca. 200 ha, *Picea glehni*—ca. 60 ha, *Larix leptolepis*—ca. 20 ha, *Pinus banksiana*—ca. 9 ha; the area along the Kaneobetsu River; *Abies sachalinensis*—ca. 30 ha.

State of afforestation on the eastern side of the mountain is uncertain. Afforestation in the eastern side area of the mountain was certainly carried on earlier than that in the western side, and main afforested trees were *Abies sachalinensis*, *Picea jezoensis* and *Picea glehni*.

On the sunny ground and slope after deforestation, such herbs as follows are found as introduced secondary elements: *Verbascum thapsus*, *Breea setosa*, *Erigeron annuus*, *E. canadensis*, *Dactylis glomerata*, *Phleum pratense*, *Avena sativa* (brought in as fodder for horses).

Woody climbers in this area are *Clematis ochotensis*, *Schisandra chinensis*, *Hydrangea petiolaris*, *Schizophragma hydrangeoides*, *Rhus ambigua*, *Celastrus strigillosus*, *Vitis coignetiae*, *Actinidia arguta*, *A. kolomikta* and *A. polygama*.

The number of plants which were added to the flora of this area by the author is 28. Among them, *Acer cissifolium*, *Alangium platanifolium* var. *macrophyllum*, *Glechoma hedracea* subsp. *grandis*, *Leonurus macranthus*, *Cacalia delphiniifolia* are noticeable from the phytogeographical view point.

KUSAKA (1942) reported the occurrence of *Bladhia joponica* in this area; this is very noticeable.

ii. *The area between 600 m and 900 m in altitude.*

In the area higher than 600 m in altitude, many broad leaved trees are gradually substituted by *Betula ermani*. *Abies sachalinensis* var. *mayriana* and *Picea jezoensis* are seen very abundantly. The forest is the *Abies sachalinensis* var. *mayriana—Picea jezoensis—Betula ermani* forest. Besides these characteristic trees, *Picea glehni* is comparatively frequently seen.

Besides them, the following trees are randomly found in the forest: *Alnus hirsuta*, *Quercus mongolica* var. *grosseserrata*, *Prunus nipponica* var. *kurilensis*, *Sorbus alnifolia*, *S. commixta*, *Acer japonicum*, *A. tschonoskii*, *A. ukurunduense*, *Tilia japonica*, *Fraxinus sieboldiana* var. *serrata*.

In the higher elevation of this area, *Alnus hirsuta*, *Acer tschonoskii* and *A. ukurunduense* become to be shrubby forms.

Forest floor is covered mainly by *Sasa kurilensis* partially with *Dryopteris austriaca*, *Euonymus* spp., *Eubotryoides grayana*, *Menziesia pentandra*, *Rhododenron albrechti*, *Vaccinium smallii*, *Viburnum furcatum* etc.

Along the mountain path, the following plants are found: *Coptis trifolia*, *Glaucidium palmatum*, *Diphylleia grayi*, *Fragaria iinumae*, *Rubus idaeus* var. *aculeatissimus* (incl. form. *concolor*), *R. pseudo-japonicus*, *Oxalis acetosella*, *Pachysandra terminalis*, *Viola blandiformis*, *V. brevistipulata*, *Skimmia japonica* var. *intermedia* form. *repens*, *Ilex crenata*, *I. rugosa*, *I. sugeroki* subsp. *brevipedunculata*, *Circaea alpina*, *Pyrola alpina*, *P. secunda*, *Monotropastrum globosum*, *Tripterospermum japonicum*, *Galium kamtschaticum*, *G. nakaii*, *Peracarpa carnosa* var. *circaeoides*, *Cacalia auriculata* var. *kamtschatica* form. *bulbifera*, *Allium victorialis* subsp. *platyphyllum*, *Clintonia udensis*, *Ephippianthus schmidtii*, *Epipactis papillosa* etc.

In the upper half of this area, there predominate *Betula ermani* and *Picea jezoensis*. At the altitude of 900 m or so, there may be a demarcation line of the upper limit of the mixed forest.

Along the Shirokane River, the artificial forest of *Abies sachalinensis* has been organized up to an altitude of 750 m since 1956.

Ferns found along the mountain path are as follows: *Dryopteris amurensis*, *D. austriaca*, *Phegopteris polypodioides*, *Polysticum tripteron*, *Plagiogria matsumureana*, *Lycopodium chinense*, *L. complanatum*, *L. obscurum*, *L. serratum* etc.

2. **The area covered with the *Betula ermani* forest** (between 900 m and 1,300 m in alt.).

The prominent feature of the forest of this area is the extensive forest of *Betula ermani* with *Sasa kurilensis*. It is widely spread over the mountainside and sometimes forms a pure stand. The mixed trees are *Abies sachalinensis* var. *mayriana*, *Picea glehni*, *P. jezoensis*, *Alnus crispa* subsp. *maximowiczii*, *Acer tschonoskii*, *Sorbus matsumurana*, *Prunus nipponica* var. *kurilensis* etc. In the higher altitude (ca. 1,200 m in alt.) of this area, *Alnus crispa* subsp. *maximowiczii* is very abundantly seen.

The undergrowth is mostly marked by *Sasa kurilensis*, accompanied with some shrubby plants such as *Ilex sugeroki* subsp. *brevipedunculata*,

Euonymus sachalinensis var. *tricuspis*, *Vaccinium praestans*, *Macrodiervilla middendorffiana* etc.

In the upper part between 1,200 m and 1,300 m, the height of each tree diminishes, and the forest is rather complex assemblage. The forest of this part is the *Alnus crispa* subsp. *maximowiczii—Betula ermani* forest. *Sorbus matsumurana*, *S. sambucifolia* var. *pseudogracilis*, *Rhododendron albrechti* etc. are rather frequently seen in the forest.

The timber line in this mountain lies in altitude between 1,200 m and 1,300 m.

3. The alpine area (higher than 1,300 m in altitude).

The forest in this area is mostly dominated by *Pinus pumila*. As the *Pinus pumila* thicket is more or less found here and there in various parts in this area, the author treats the forest collectively in the last part of this article.

This area is topographically divided into the following three components: i. the rocky ridge and projects, ii. the flat or gently sloping ground and iii. the rather steep slopes along the water-course. And lastly, iv. the forest of *Pinus pumila* will be sketched.

i. *The rocky ridge and projects.*

The rocky ridge and projects are covered partially with the dense *Pinus pumila* thicket, while on the surface of cliff and in the exposed place with disintegrated rocks, small mat of shrublets composed of *Arcterica*, *Arctous*, *Vaccinium*, *Diapensia* etc. and sparsely crowded xerophytic or mesophytic herbs are found. Hondake ridge, Tsurigane-iwa, Futago-iwa, Gama-iwa and the upper halves of Maëdake peaks, which consist of the Yûbaridake Metamorphic Group in a wide sense, belong to these categories (Fig. 5.) Among them, Gama-iwa is the most noticeable district.

Hondake ridge.

Hondake ridge soars as a keen ridge extending over 600 m in direction from north to south. On the steep slope of the western side of this ridge, *Pinus pumila* scrumbles densely, while on the eastern side of it, the mat consisting of dwarf shrublets with xerophytic herbs develops. The mat is mainly composed of *Arcterica nana*, *Arctous alpina* var. *japonica*, *Phyllodoce nipponica* var. *oblongo-ovata*, *Vaccinium vitis-idaea* var. *minus*, *Empetrum nigrum* var. *japonicum*, *Diapensia lapponica* subsp. *obovata* etc. Near the summit, *Salix reinii* and *S. yezoalpina* are scatteringly found in the mat.

In the mat, the following plants are scatteringly found: *Pleuropteropyrum ajanense* (very rare), *Spiraea betulifolia* subsp. *aemiliana*, *Alchemilla*

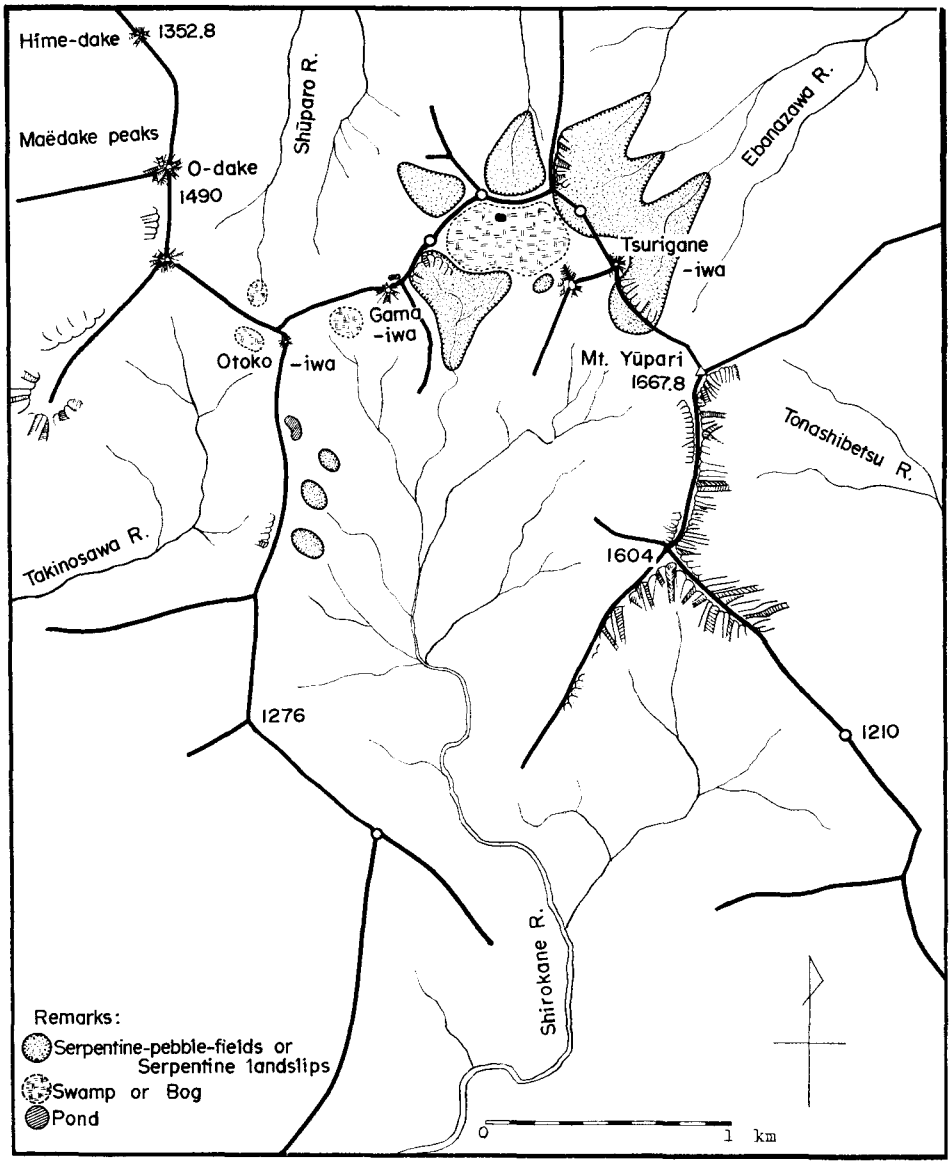


Fig. 5. Schematic figure of alpine district of Mt. Yûpari.

japonica (rare), *Epilobium cephalostigma*, *Peucedanum multivittatum*, *Tilingia ajanensis*, *Cassiope lycopodioides* (mainly on the surface of rock), *Gaultheria miqueliana*, *Therorhodion camtschaticum*, *Vaccinium uliginosum*, *Trientalis europaea*, *Gentiana triflora* var. *japonica* form. *montana*, *Pennellianthus*

frutescens, *Veronica stelleri* var. *longistyla*, *Linnaea borealis*, *Arnica unalaschcensis*, *Artemisia arctica*, *Erigeron thunbergii* subsp. *glabratus*, *Senecio kawakamii*, *Agrostis flaccida*, *Deyeuxia langsdorffii*, *Elymus yubaridakensis* (very rare), *Festuca ovina* var. *supina*, *Trisetum spicatum*, *Carex hakkodensis*, *C. blepharicarpa* var. *dueensis*, *C. stenantha* var. *taisetsuensis*, *Luzula oligantha*, *L. plumosa*, *Heloniopsis orientalis*, *Orchis aristata* etc.

Along the margin of the mat, dwarf shrub of *Sorbus matsumurana*, *S. sambucifolia* var. *pseudogracilis*, *Alnus crispa* subsp. *maximowiczii* and *Macrodiervilla middendorffiana* are often found.

Near the serpentine landslip just below the summit, there is a natural small rock garden. This place is rather damp, one of special types of rocky ridge and projects in the mountain. In this rock garden, the following plants are found: *Bistorta vivipara*, *Oxyria digyna*, *Rumex arifolius*, *Aquilegia flabellata* var. *pumila*, *Anemone yezoensis*, *Ranunculus acris* var. *nipponicus*, *Thalictrum foetidum* var. *glabrescens*, *Thlaspi japonicum*, *Boykinia lycoctonifolia*, *Parnassia palustris* var. *multiseta*, *Prunus nipponica* var. *kurilensis*, *Spiraea betulifolia*, *Viola biflora*, *V. brevistipulata*, *Conioselinum filicinum*, *Peucedanum multivittatum*, *Tilingia ajanensis*, *Empetrum nigrum* var. *japonicum*, *Arcterica nana*, *Cassiope lycopodioides*, *Ledum palustre* subsp. *diversipilosum*, *Phyllodoce nipponica* var. *oblongo-ovata* form. *viridiflora*, *Rhododendron aureum*, *R. tschonoskii*, *Vaccinium ovalifolium* var. *coriaceum*, *V. uliginosum*, *V. vitis-idaea* var. *minus*, *Gentiana nipponica*, *G. triflora* var. *japonica* form. *montana*, *Pedicularis chamissonis* var. *japonica*, *P. yezoensis*, *Pennellianthus frutescens* (incl. form. *albiflora*), *Veronica stelleri* var. *longistyla*, *Galium kamtschaticum*, *Macrodiervilla middendorffiana*, *Artemisia arctica*, *Erigeron thunbergii* subsp. *glabratus* (incl. form. *haruoi*), *Saussurea riederi* var. *yezoensis*, *Senecio kawakamii*, *Poa hayachinensis*, *Trisetum spicatum*, *Carex flavocuspis*, *C. hakkodensis*, *C. scita* var. *riishirensis*, *Heloniopsis orientalis*, *Tofieldia coccinea* var. *fusca*, *T. okuboi*, *Orchis aristata* etc.

The plant community is a comlex assemblage, having no distinct dominant plant.

Tsurigane-iwa and Futago-iwa.

These two projects stand between Hondake and the central broad bog in a row from east to west. The *Pinus pumila—Betula ermani—Alnus crispa* subsp. *maximowiczii* thicket covers the western side of Tsurigane-iwa and the eastern side of Futago-iwa. The eastern side of the former and the western side of the latter show precipitous cliffs vertically. At the small rocky shelves, dwarf shrubs of Ericaceous plants are found, those are

as follows: *Arctous alpina* var. *japonica*, *Arcterica nana*, *Cassiope lycopodioides*, *Vaccinium vitis-idaea* var. *minus*, *Phyllodoce nipponica* var. *oblongo-ovata* form. *viridiflora*, *Therorhodion camtschaticum*.

Besides them, *Diapensia lapponica* subsp. *obovata* and *Empetrum nigrum* var. *japonicum* are commonly found.

Accompanied with them, the following herbs are frequently found: *Sedum kamtschaticum*, *S. ishidae*, *Saxifraga sachalinensis*, *S. fortunei*, *Arabis lyrata* var. *kamtschatica*, *Acomastylis calthifolia* var. *nipponica*, *Tilingia ajanensis*.

On Tsurigane-iwa cliff, a noticeable fern, i. e., *Cryptogramme crispa*, is sparsely found.

Gama-iwa and its circumference.

Gama-iwa is a gigantic rock tower consisting of the Yûbaridake Metamorphic Group which soars at the west edge of the central broad bog, reaching 1,380 m in altitude. As has been said, it is the most noticeable cliff, and many remarkable plants occur on this cliff.

On the eastern side of it, the vegetation is similar to a damp grassy one, and the following herbs are prominent: *Bistorta major* var. *ovata*, *Rumex arifolius*, *Lycoctonum gigas* var. *tatewakii*, *Macropodium pterospermum*, *Boykinia lycoctonifolia*, *Saxifraga fusca*, *Filipendula yezoensis*, *Acomastylis calthifolia* var. *nipponica*, *Geranium erianthum*, *Mimulus sessilifolius*, *Cirsium kamtschaticum*, *Ligularia hodgsoni*, *Petasites japonicus* var. *giganteus*, *Veratrum japonicum*.

Besides them, the following herbs are scatteringly found: *Bistorta vivipara*, *Dianthus superbus* var. *speciosus*, *Aconitum yuparense*, *Aquilegia flabellata* var. *pumila*, *Trautvetteria japonica*, *Barbarea orthoceras*, *Sedum aizoon*, *S. ishidae*, *Alchemilla japonica*, *Viola biflora*, *Aegopodium alpestre*, *Angelica anomala*, *Conioselinum filicinum*, *Nepeta subsessilis*, *Pinguicula vulgaris*, *Adenophora pereskiaefolia* var. *heterotricha*, *A. p.* var. *yamadae*, *Arnica unalaschcensis*, *Artemisia arctica*, *Solidago virga-aurea* subsp. *leiocarpa*, *Senecio kawakamii*, *Deyeuxia langsdorffii*, *D. purpurascens*, *Carex augustinowiczii*, *C. blepharicarpa* var. *dueensis*, *C. hakkodensis*, *Luzula oligantha*, *L. plumosa*, *Orchis aristata*.

Along the margin of the herbage, the following ligneous plants are found: *Prunus nipponica* var. *kurilensis*, *Spiraea betulifolia*, *Sorbus matsumurana*, *Menziesia pentandra*, *Lonicera chamissoi*, *Macrodiervilla middendorffiana*.

On the surface of rocky cliff of upper part on the eastern side of Gama-iwa, phanerogams are very sparsely found only in rock crevices and on small

rocky shelves; a few species are met with. Those are as follows: *Bistorta vivipara, Dianthus superbus* var. *speciosus, Aquilegia flabellata* var. *pumila, Sedum ishidae, Saxifraga fortunei, Acomastylis calthifolia* var. *nipponica, Pinguicula vulgaris, Carex hakkodensis.*

At the debris of disintegrated rocks along the southern foot of Gama-iwa, *Alnus crispa* subsp. *maximowiczii* and *Betula ermani* are creeping up; among them, *Rhamnus ishidae* is occasionally found.

The summit of Gama-iwa is covered with *Pinus pumila* which trespassed from the thicket of the northern side.

From the western side to the southern side of it, the ground is an inclined plane covered with disintegrated rocks of various size. On this ground and the surface of cliff, various novel plants flourish. In the rock crevices and on the rocky shelves, the following plants are found: *Stellaria nipponica* var. *yezoensis, Draba japonica, Thlaspi japonicum, Sedum ishidae, Saxifraga nishidae, S. yuparensis* (sp. nov.), *Potentilla nivea* var. *yuparensis, Hedysarum ussuriense, Oxytropis rishiriensis, Rhamnus ishidae, Bupleurum longeradiatum, Phyllodoce nipponica* var. *oblongo-ovata* form. *viridiflora, Primula modesta, Gentianella yuparensis, Eritrichium nipponicum, Campanula dasyantha* var. *chamissonis, Crepis hokkaidoensis, Senecio kawakamii, Carex omiana* var. *monticola, Allium splendens, Lloydia serotina, Tofieldia coccinea* var. *fusca.*

Sedum ishidae and *Saxifraga nishidae* are commonly found in the rock crevices. Among the debris, *Hedysarum ussuriense, Campanula dasyantha* var. *chamissonis* and *Crepis hokkaidoensis* are commonly seen. One of endemic grasses of this mountain, *Elymus yubaridakensis* occurs in the debris. At the lower margin of the debris, *Saxifraga yuparensis* and *Oxyria digyna* occur.

Besides the above mentioned plants, *Bistorta vivipara, Stellaria fenzlii, Aquilegia flabellata* var. *pumila, Saxifraga fortunei, Potentilla matsumurae* var. *yuparensis, Vaccinium vitis-idaea* var. *minus, Erigeron thunbergii* subsp. *glabratus, Pinguicula vulgaris, Deyeuxia langsdorffii, D. purpurascens, Carex hakkodensis, Lloydia serotina* etc. are found.

It is very difficult to determine the type of community in this district, however, the community is of rather xeric type, especially those in the debris. In this limited area, many novel plants, either endemic or of very limited distribution, are found.

Maëdake peaks.

As these peaks have no ordinary path to climb np and the persons who dare to visit there are very few, it seems that the vegetation is not

so altered from its primeval composition. The floristic composition and the vegetation of this district were firstly reported by the present author in 1969 (NOSAKA, 1969).

They stand about 2.5 km west-northwest of Hondake peak. The lower halves of them are covered with the *Pinus pumila—Betula ermani—Sasa kurilensis* thicket. Partially, *Sasa kurilensis* is absent, and *Alnus crispa* subsp. *maximowiczii* is accompanied with *Pinus pumila* and *Betula ermani*. The upper halves of them stand as precipitous cliffs consisting of exposed metamorphic rocks.

The plant community of these peaks is characterized by the mat of Ericaceous shrublets, *Diapensia lapponica* subsp. *obovata* and *Empetrum nigrum* var. *japonicum*, the mat of *Dryas octopetala* var. *asiatica*, the mat of *Juniperus sargentii*, and the sparse herbage of several xerophytic herbs such as *Sedum ishidae*, *Saxifraga nishidae*, *Bupleurum triradiatum* var. *alpinum*, *Eritrichium nipponicum*, *Mertensia pterocarpa* var. *yezoensis*, *Campanula dasyantha* var. *chamissonis*, *Carex hakkodensis*, *C. stenantha* var. *taisetsuensis* etc.

Main phanerogams occurring in this district are as follows: Ligneous elements; *Pinus pumila*, *Juniperus sargentii*, *Salix reinii*, *Alnus crispa* subsp. *maximowiczii*, *Betula ermani*, *Dryas octopetala* var. *asiatica*, *Diapensia lapponica* subsp. *obovata*, *Arcterica nana*, *Arctous alpina* var. *japonica*, *Cassiope lycopodioides*, *Phyllodoce nipponica* var. *oblongo-ovata* form. *viridiflora*, *Vaccinium smallii*, *V. vitis-idaea* var. *minus*, *V. uliginosum* var. *alpinum*, *Lonicera caerulea* subsp. *edulis*, *Macrodiervilla middendorffiana*. Herbaceous elements; *Bistorta vivipara*, *Sedum ishidae*, *Saxifraga nishidae*, *Potentilla matsumurae* var. *yuparensis*, *Bupleurum triradiatum* var. *alpinum*, *Tilingia ajanensis*, *Primula modesta*, *Cortusa matthioli* subsp. *pekinensis* var. *yezoensis*, *Eritrichium nipponicum*, *Mertensia pterocarpa* var. *yezoensis*, *Adenophora pereskiaefolia* var. *heterotricha*, *A. p.* var. *yamadae*, *Campanula dasyantha* var. *chamissonis*, *Boschniakia rossica*, *Valeriana fauriei*, *Lloydia serotina*, *Carex hakkodensis*, *C. stenantha* var. *taisetsuensis*, *Microstylis monophyllos*.

Cortusa matthioli subsp. *pekinensis* var. *yezoensis* is found in other districts of Hokkaidô commonly in the half shaded place, but in this district, it occurs in the exposed sunny slope or debris accompanied with *Mertensia pterocarpa* var. *yezoensis*.

At present, in this mountain, the following five plants occur only on Maëdake peaks and their circumference: *Juniperus sargentii*, *Dryas octopetala* var. *asiatica*, *Cortusa matthioli* subsp. *pekinensis* var. *yezoensis*, *Boschniakia*

rossica and *Valeriana fauriei.*

ii. *The flat or gently sloping ground.*

Between Hondake peak and Maëdake peaks, there spreads a flat ground gently sloping from NE to SW, extending a distance of 800 meters. This flat ground spreads on the dissected serpentine plateau. Most parts of it make a broad bog with some small ponds, borders of it collapse at several points along the headwaters of respective streams. There, serpentine landslips or serpentine-pebble-fields stretch.

Plant communities in this ground, exclusive the forest dominated by *Pinus pumila*, are distinctly divided into three divisions as follows: Alpine meadow, Swamp and bog, and Heath.

Alpine meadow.

Plant communities in the alpine meadow are again divided into two divisions: i. e., the herbaceous communities of both eastern and western sides of the central bog and the frigorideserta developing on the serpentine-pebble-fields.

The herbaceous communities of both eastern and western sides of the central bog.

These communities do not occupy any large area in the upper part of this mountain. Only on both eastern and western sides of the central bog, may two communities be recognized: i. e., the *Deschampsia caespitosa* subsp. *levis—Allium maximowiczii* form. *shibutsuense* community and the *Trollius riederianus* var. *japonicus—Saussurea riederi* var. *yezoensis* community.

The *Deschampsia caespitosa* subsp. *levis—Allium maximowiczii* form. *shibutsuense* community is found on the eastern side of the central bog. *Deschampsia caespitosa* subsp. *levis* and *Allium maximowiczii* form. *shibutsuense* are dominant. As there is a considerable supply of water, the following additional plants are found in this community: *Bistorta major* var. *ovata*, *Sanguisorba stipulata*, *Fauria crista-galli* subsp. *japonica*, *Gentiana triflora* var. *japonica* form. *montana*, *G. nipponica*, *Ligularia hodgsoni*, *Saussurea riederi* var. *yezoensis*, *Scirpus maximowiczii*, *Poa hayachinensis.*

Approaching the central bog, *Deschampsia caespitosa* subsp. *levis* decreases markedly in its number, while many hygrophytic plants such as *Anemone narcissiflora*, *Fauria crista-galli* subsp. *japonica*, *Ligularia hodgsoni*, *Scirpus caespitosus*, *S. maximowiczii* etc. show marked increase. Thus, this community is substituted by the swamp community.

The *Trollius riederianus* var. *japonicus—Saussurea riederi* var. *yezoensis* community occupies the part near the slope beside the serpentine landslip.

Trollius riederianus var. *japonicus* and *Saussurea riederi* var. *yezoensis* are characteristic herbs often with *Geranium erianthum.*

Accompanied with them, the following herbs are seen: *Anemone narcissiflora, Parnassia palustris* var. *multiseta, Pedicularis chamissonis* var. *japonica, Arnica unalaschcensis, Erigeron thunbergii* subsp. *glabratus, Senecio kawakamii, Solidago virga-aurea* subsp. *leiocarpa, Deyeuxia langsdorffii, Carex hakkodensis, C. flavocuspis, Hemerocallis middendorfii, Platanthera ophrydioides, P. chorisiana.*

Some shrubby plants such as *Spiraea betulifolia, Sieversia pentapetala, Tripetaleia bracteata, Vaccinium ovalifolium* var. *coriaceum* etc. associate with them.

The frigorideserta developing on the serpentine-pebble-fields.

Along the margin of this ground, several serpentine-pebble-fields are found. They are nearly flat, and the surface of them is composed of serpentine pebbles and clay. They are the patches which are whitish-brown or grayish-brown or grayish-blue in colour, including several ultrabasicosaxicolous plants. The whole aspect of the plant communities on these fields is most likely to be regarded to that of frigorideserta.

These fields are unique signs of alpine meadows of this mountain; considerable part of characteristic features of alpine flora and vegetation of this mountain is represented by the plants on these fields. There, ultrabasicosaxicolous plants[5] are prominent, such plants are as follows: *Arenaria katoana, Minuartia verna* var. *japonica, Potentilla matsumurae* var. *yuparensis, Lagotis glauca* subsp. *takedana, Saussurea chionophylla* and *Allium maximowiczii* form. *shibutsuense.*

Besides them, the following plants occur: *Pinus pumila, Bistorta vivipara, Pleuropteropyrum ajanense, Dianthus superbus* var. *speciosus, Minuartia arctica, Stellaria nipponica* var. *yezoensis, Thlaspi japonicum, Parnassia palustris* var. *multiseta, Saxifraga laciniata, Sieversia pentapetala, Viola crassa, Tilingia ajanensis, Empetrum nigrum* var. *japonicum, Vaccinium vitis-idaea* var. *minus, Pinguicula vulgaris, Patrinia sibirica, Erigeron thunbergii* subsp. *glabratus* (incl. form. *haruoi*), *Festuca ovina* var. *supina, Poa hayachinensis, Carex capillaris, C. melanocarpa, Scirpus maximowiczii, Tofieldia coccinea* var. *fusca, T. okuboi, Orchis aristata.*

The plant community is recognized as the *Saussurea chionophylla—Lagotis glauca* subsp. *takedana* community. The cover degree of each plant is very small. Detailed discussion on the serpentine vegetation is to be

5) The terms 'ultrabasicosaxicolous plants' and 'ultrabasicosaxicolous flora' were proposed by H. TOYOKUNI instead of 'serpentine plants' and 'serpentine flora' (TOYOKUNI, 1955).

presented in the next article.

Swamp and bog.

Most parts of this ground are occupied with the swamp vegetation. The broadest bog extends over 800 meters from east to west holding many small ponds (at the center of it, the largest pond is situated) in various sizes.

The plant communities of the swamp and bog are not uniform, partially, pure stands of respective plants are met with. In the high moors in Hokkaidô, there commonly occur *Carex limosa*, *C. michauxiana*, *C. middendorffii*, *Eriophorum vaginatum*, *Rhynchospora alba*, *Hosta rectifolia* subsp. *atropurpurea* and *Platanthera tipuloides*, while the broadest bog in Mt. Yûpari, these plants are almost absent. Only in the fringing small swamps, are some of these plants mentioned above found.

Swamps and bog in this mountain are here treated under the following two categories: i. e., the central peat bog and swamps between Otoko-iwa and Maëdake peaks.

The central peat bog: This bog is gently sloping to southwest, contiguous to serpentine-pebble-fields on both eastern and western sides. In the center of this bog, a pond 20–25 cm in depth and 10 m in diameter is situated. Several small ponds are scattered in the fringing area. In the eastern corner of this bog, there spreads the *Bryanthus gmelini* community, but this community hardly possesses potency in characterizing the plant communities of the swamp and bog because of its small extent.

The plant communities are treated here as follows: a) the *Scirpus maximowiczii—Allium maximowiczii* form. *shibutsuense* community, b) the *Scirpus maximowiczii—Scirpus caespitosus* community, c) the *Fauria crista-galli* subsp. *japonica* community and d) the *Ligularia hodgsoni* community.

a) The *Scirpus maximowiczii—Allium maximowiczii* form. *shibutsuense* community.

At first sight, the vegetation is veiled mainly by spikes of *Scirpus* and racemes of *Allium* in midsummer, however, many plants are found scattered in the community. Those are as follows: *Bistorta major* var. *ovata*, *Ranunculus acris* var. *nipponicus*, *Parnassia palustris* var. *multiseta*, *Drosera rotundifolia*, *Acomastylis calthifolia* var. *nipponica*, *Sieversia pentapetala*, *Peucedanum multivittatum*, *Tilingia ajanensis*, *Empetrum nigrum* var. *japonicum*, *Andromeda polifolia*, *Rhododendron aureum*, *Vaccinium ovalifolium* var. *coriaceum*, *V. uliginosum* var. *alpinum*, *Fauria crista-galli* subsp. *japonica*, *Gentiana nipponica*, *G. triflora* var. *japonica* form. *montana*, *Swertia perennis* subsp. *cuspidata*, *Veronica stelleri* var. *longistyla*, *Pinguicula vul-*

garis, *Arnica unalaschcensis*, *Deschampsia caespitosa* subsp. *levis*, *Poa hayachinensis*, *Scirpus caespitosus* etc.

This community develops in the eastern half of the bog. In this community, the *Sphagnum* stratum is developing slightly. In the southeastern neighbours, the *Deschampsia caespitosa* subsp. *levis*—*Allium maximowiczii* form. *shibutsuense* community develops.

b) The *Scirpus maximowiczii*—*Scirpus caespitosus* community.

In the center of this bog, there are sveral small ponds. The largest one is about 10 m in diameter, 20–25 cm in depth. In the surroundings of these ponds, the *Scirpus maximowiczii*—*Scirpus caespitosus* community is prominent. This community includes the *Sphagnum* layer several centimeters thick on the surface of the ground. The northern margin is bordered with the *Pinus pumila* thicket.

The following herbs and shrubs are commonly found in this community: *Drosera rotundifolia*, *Andromeda polifolia*, *Vaccinium uliginosum* var. *alpium*, *Fauria crista-galli* subsp. *japonica*, *Swertia perennis* subsp. *cuspidata*, *Pinguicula vulgaris*.

The cover degree and frequency of the plants occurring in the belt-transect in this pond district of the bog are given in Table 2. In the northern corner of this belt, the *Pinus pumila* thicket appears. In the quadrates close by this thicket, the vegetation becomes sparse and a few shrubby plants become rather conspicuous.

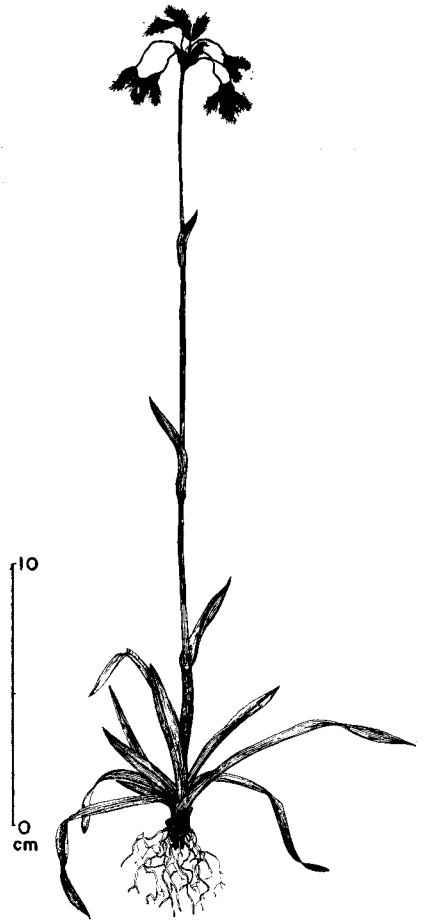


Fig. 6. *Scirpus maximowiczii* C. B. CLARKE.
One of the dominant herbs of the peat bog vegetation.

In the ponds, *Eleocharis mamillata* and *Scirpus caespitosus* are sparsely found. The vascular underwater vegetation is almost lacking. Colonies of *Nostoc commune*, an alga belonging to the *Cyanophyta*, are occasionally found.

TABLE 2. Cover degree and frequency of the plants appearing in the belt transect (1 × 19 m, 19 Q in direction from south to north) on the central peat bog. The belt is set from the small pond to the *Pinus pumila* thicket in direction from south to north.

Name of plant	Quadrat number																			Frequency (%)	Average Cover Degree
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Vaccinium uliginosum v. alpinum	−	+	+	+	1′	+	+	+	+	−	+	+	+	+	1	+	1	+	−	84.2	0.14
Swertia perennis ssp. cuspidata	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	−	84.2	0.03
Scirpus maximowiczii	3	2	1	1	+	1	+	2	1	1	+	+	+	1	+	−	−	−	−	78.9	0.70
Fauria crista-galli ssp. japonica	1′	1	1′	+	1	+	+	1′	+	−	+	−	−	+	1	1′	1	1	−	78.9	0.32
Tilingia ajanensis	+	−	+	+	+	+	−	+	−	+	+	+	+	−	+	+	+	+	+	78.9	0.03
Scirpus caespitosus	+	+	2	2	2	3	1	1	2	2	2	1	2	1	−	−	−	−	−	73.7	1.11
Pinguicula vulgaris	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	73.7	0.03
Drosera rotundifolia	+	+	+	+	−	+	+	+	+	+	+	+	+	+	−	−	−	−	−	68.4	0.03
Sanguisorba stipulata	+	+	+	1	+	+	−	+	−	+	−	−	−	−	+	−	1	2	2	63.2	0.33
Andromeda polifolia	−	−	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	63.2	0.025
Sieversia pentapetala	−	−	+	+	+	−	−	+	+	+	−	+	+	1	1	−	−	−	−	52.6	0.12
Gentiana nipponica	+	+	−	+	−	+	+	−	+	+	−	−	+	+	+	−	−	−	−	52.6	0.02
Allium maximowiczii f. shibutsuense	−	+	−	+	1	+	1	+	−	−	−	−	−	−	+	+	−	−	+	47.4	0.12
Carex omiana v. monticola	+	+	−	−	−	−	−	+	+	+	1	+	+	+	−	−	−	−	−	47.4	0.07
Gentiana triflora v. japonica f. montana	+	+	+	−	−	+	−	−	−	−	+	+	−	−	+	+	+	−	−	47.4	0.02
Rhododendron aureum	−	−	+	−	−	−	−	+	−	−	−	+	−	+	+	+	+	+	+	47.4	0.02
Tofieldia okuboi	−	+	+	−	−	+	−	+	+	−	+	+	−	−	−	−	−	−	−	36.8	0.01
Anemone narcissiflora	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	1	+	+	+	31.6	0.06
Pinus pumila	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	+	−	+	2	21.0	0.11
Parnassia palustris v. multiseta	−	−	+	−	−	−	−	−	−	+	−	−	−	−	−	−	+	−	−	15.7	0.006
Carex hakkodensis	−	+	−	−	−	−	1′	−	−	−	−	−	−	−	−	−	−	−	−	10.5	0.01
Bistorta major v. ovata	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	+	10.5	0.004
Pedicularis resupinata f. pubescens	+	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	10.5	0.004
Heloniopsis orientalis	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	10.5	0.004
Ixeris dentata v. alpicola	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	10.5	0.004
Oxycoccus quadripetalus	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	10.5	0.004
Empetrum nigrum v. japonicum	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	+	10.5	0.004
Vaccinium vitis-idaea v. minus	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	10.5	0.004
Orchis aristata	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	5.3	0.002
Arnica unalaschcensis	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	5.3	0.002
Solidago virga-aurea ssp. leiocarpa	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	5.3	0.002

c) The *Fauria crista-galli* subsp. *japonica* community and d) The *Ligularia hodgsoni* community.

These two communities form almost pure stands, but cover comparatively narrow areas. They are observed mainly in the southwestern half of this bog.

Swamps between Otoko-iwa and Maëdake peaks: As shown in Fig. 5, there are several limited swamps with the *Sphagnum* layer between Otoko-iwa and Maëdake peaks. Plant communities of these swamps seem to differ from those of the centaral bog. There are rather mixed assemblages of different plants having no distinct dominant ones.

The following plants are commonly recorded from these swamps: *Bistorta major* var. *ovata*, *Anemone narcissiflora*, *Ranunculus acris* var. *nipponicus*, *Trollius riederianus* var. *japonicus*, *Sanguisorba stipulata*, *Sieversia pentapetala*, *Geranium erianthum*, *Drosera rotundifolia*, *Tilingia ajanensis*, *T. holopetala*, *Empetrum nigrum* var. *japonicum*, *Eubotryoides grayana*, *Vaccinium ovalifolium* var. *coriaceum*, *V. smallii*, *V. uliginosum* var. *alpinum*, *V. vitis-idaea* var. *minus*, *Fauria crista-galli* subsp. *japonica*, *Gentiana nipponica*, *G. triflora* var. *japonica* form. *montana*, *Swertia perennis* subsp. *cuspidata*, *Pinguicula vulgaris*, *Pedicularis chamissonis* var. *japonica*, *P. resupinata*, *Arnica unalaschcensis*, *Erigeron thunbergii* subsp. *glabratus*, *Ligularia hodgsoni*, *Saussurea riederi* var. *yezoensis*, *Carex limosa*, *C. omiana* var. *monticola*, *Scirpus maximowiczii*, *Eriophorum vaginatum*, *Festuca ovina* var. *supina*, *F. rubra*, *Hemerocallis middendorffii*, *Hosta rectifolia* subsp. *atropurpurea*, *Tofieldia okuboi*, *Iris setosa*, *Orchis aristata* etc.

Heath.

As was mentioned in the preceding article, the eastern corner of the central bog is covered with the heath community dominated by *Bryanthus gmelini*. It spreads on the mat of lichens only within about 100 square meters limit. In this community, the following plants are randomly found: *Tilingia ajanensis*, *Loiseleuria procumbens*, *Gentiana jamesii*, *G. nipponica*, *Tofieldia coccinea* var. *fusca*.

In Mt. Yûpari, *Bryanthus gmelini* and *Gentiana jamesii* are found only in this community.

iii. *The rather steep slopes along the water-course.*

Headwaters of the tributaries of the Shûparo River and of the Sorachi River begin to run out from several points of this mountain. Both sides of them wear away soils and rocks showing rather steep slopes. These slopes can be classified into two types; viz., serpentine landslip with sparse

vegetation and slopes covered densely with mesophytic to hygrophytic herbs and shrubs. Conspicuous ones of the former type are found along the headwaters of the Ebanazawa River, the Shûparo Rivere and the Shirokane River (Fig. 7), and those of the latter type are in contact with the former respectively.

Serpentine landslips.

The plant community in this slope is composed of very sparsely scattered herbs and shrublets, cover degree of each plant is extremely small. On the whole, plant community is recognized as the *Viola yubariana—Gentianella yuparensis* community. In the serpentine landslips on this mountain, *Arenaria katoana*, *Viola yubariana*, *Angelica stenoloba*, *Gentianella yuparensis* and *Veronica schmidtiana* var. *yezoalpina* are found almost without exception. In these five species, *Viola yubariana* sometimes forms vigorous crowds. Partially, *Primula yuparensis* appears in place of *Gentianella yuparensis*.

In this community, the following herbaceous plants are sparsely scattered (Table 3): *Bistorta vivipara*, *Minuartia arctica*, *Aconitum yuparense*, *Ranunculus acris* var. *nipponicus* form. *yuparensis*, *Draba japonica*, *Thlaspi japonicum*, *Drosera rotundifolia*, *Parnassia palustris* var. *multiseta*, *Saxifraga laciniata*, *Potentilla matsumurae* var. *yuparensis*, *Sanguisorba stipulata*, *Geranium eriantum*, *Tithymalus sieboldianus* var. *montanus*, *Hypericum erectum*, *H. kamtschaticum*, *Viola sacchalinensis* var. *alpina*, *Tilingia ajanensis*, *Pedicularis chamissonis* var. *japonica*, *Pinguicula vulgaris*, *Crepis gymnopus*, *Erigeron thunbergii* subsp. *glabratus*, *Saussurea riederi* var. *yezoensis*, *Taraxacum yuparense*, *Festuca ovina* var. *supina*, *F. rubra*, *Hierochloe pluriflora*, *Poa hayachinensis*, *Scirpus maximowiczii*, *Allium maximowiczii* form. *shibutsuense*, *Tofieldia okuboi*, *Microstylis monophyllos*, *Orchis aristata*.

Besides the above mentioned herbs, the following shrubby plants occur occasionally: *Pinus pumila*, *Sieversia pentapetala*, *Empetrum nigrum* var. *japonicum*, *Thymus quinquecostatus* var. *ibukiensis*.

Along the margin of the serpentine landslips in the higher altitude, *Rhamus ishidae* is sometimes met with.

Only three species of ferns, i.e., *Botrychium lunaria*, *Selaginella selaginoides* and *S. shakotanensis*, are found in the landslips.

Slopes covered densely with herbs and shrubs.

Main herbaceous community is the *Trollius riederianus* var. *japonicus—Saussurea riederi* var. *yezoensis* community. Partially, *Bistorta major* var. *ovata*, *Sanguisorba stipulata*, *Geranium erianthum*, *Arnica unalaschcensis*, *Deyeuxia* spp. etc. are conspicuous. Such shrubby plants as *Sieversia*

pentapetala, *Empetrum nigrum* var. *japonicum*, *Phyllodoce aleutica*, *P. caerulea* (incl. form. *yesoensis* and form. *takedana*), *Vaccinium* spp. etc. are accompanied with above mentioned herbs. In places, such arboreal plants as *Picea glehni*, *Pinus pumila*, *Alnus crispa* subsp. *maximowiczii*, *Betula ermani*, *Acer tschonoskii* etc. join with the community.

In gentle slopes near the serpentine landslip along the headwaters of the Ebanazawa River (station no. 7 in Fig. 7), there spreads the *Phyllodoce* community. In the community, *Phyllodoce caerulea*, *P. aleutica* and various intermediate phases between *P. caerulea* and *P. aleutica* are found. This community consists exclusively of *Phyllodoce* plants, spreading in a rather limited area.

iv. *Forest.*

At the last part of this article, it is necessary to refer to the forest in the alpine area of this mountain. The forest is rather poor in the arboreal flora and the main woddy plants are *Pinus pumila*, *Alnus crispa* subsp. *maximowiczii* and *Betula ermani*.

The ridge and the upper parts of main projects are covered mostly with the *Pinus pumila* thicket, while the margin of the *Pinus pumila* thicket and the parts below it are covered with the *Alnus—Betula* thicket. The communities of the forests are divided into the following two divisions: i. e., the *Pinus pumila* thicket and the *Alnus—Betula* thicket.

The *Pinus pumila* thicket.

The general aspect of the forest in the alpine area of this mountain is the *Pinus pumila* thicket. On the whole, it is uniform in appearance, generally forming a pure thicket. Main ascending branches are commonly 1.5–2.5 m in height above the ground. *Alnus crispa* subsp. *maximowiczii*, *Betula ermani*, *Sorbus matsumurana* and *S. sambucifolia* var. *pseudogracilis* are found sparsely in the thicket of lower altitude. The herbaceous and shrubby undergrowth is sparse, sometimes completely absent.

The following plants are found in this thicket: *Juniperus communis* var. *sibirica*, *Salix reinii*, *S. yezoalpina*, *Rubus pedatus*, *Chamaepericlymenum canadense*, *Empetrum nigrum* var. *japonicum*, *Rhododendron aureum*, *Vaccinium vitis-idaea* var. *minus*, *V. uliginosum* var. *alpinum*, *Linnaea borealis*, *Lonicera chamissoi*, *Maianthemum dilatatum*, *Trisetum spicatum*.

The *Alnus—Betula* thicket.

In the surroundings of the *Pinus pumila* thicket of the central peat bog and of the serpentine landslips, the *Alnus crispa* subsp. *maximowiczii—Betula ermani* thicket develops. Along the ridge between Otoko-iwa and

Type of ground	Station no.	Altitude (m)	Additions
Level ground	1	1400	
	2	1420	
	3	1480	alias 'Fukitôshi'.
Slope	4	1250	
	5	1350	
	6	1400	
	7	1400	alias 'Fukitôshi'.
	8	340	alias 'Ishiwata-yama'.
	9	360	

Notes. The Yûbaridake Path had deen closed since 1956.
The Yûbaridake roadway had been closed since 1968.

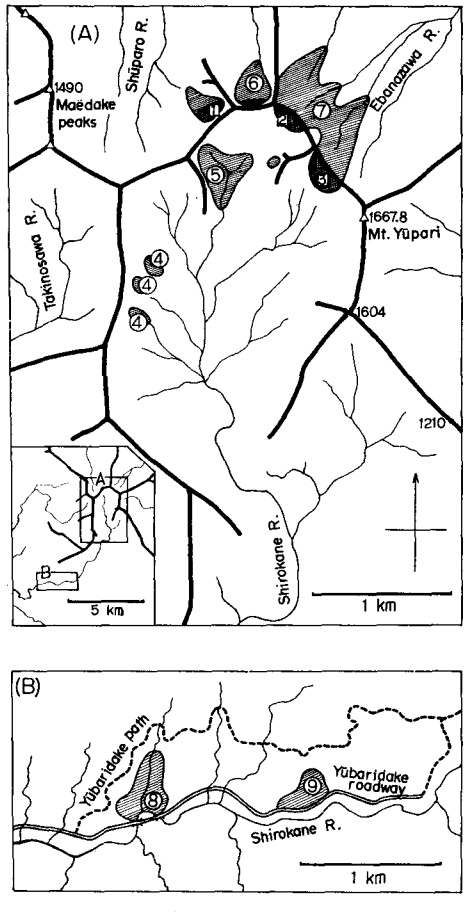


Fig. 7. Serpentine-pebble-fields or serpentine landslips in Mt. Yûpari.

Maëdake peaks, this thicket is partially prominent. The *Alnus—Betula* thicket more or less includes some low shrubby platns and *Sasa kurilensis*. Partially, it alters to the *Pinus pumila—Betula ermani—Sasa kurilensis* thicket. In the part bordered on serpentine landslips or serpentine-pebble-fields of disintegrated rocks, a creeping shrubby plant, i. e., *Rhamnus ishidae*, which bears a striking resemblance to the dwarf shrub of *Alnus crispa* subsp. *maximowiczii*, is occasionally found.

In this thicket, the following plants occur: *Rumex arifolius*, *Macropodium pterospermum*, *Rosa acicularis*, *Rubus pedatus*, *Gaultheria adenothrix*, *G. miqueliana*, *Menziesia pentandra*, *Rhodendron albrechti*, *Senecio kawakamii*, *Maianthemum dilatatum*, *Streptopus amplexifolius* var. *papillatus*, *Listera cordata*, *Platanthera ophrydioides*.

4. Relation between the plants and their habitats on the serpentine-pebble-fields or serpentine landslips.

The serpentine-pebble-fields and serpentine landslips are characteristic signs of alpine meadows of this mountain. These fields are scattered along the headwaters of the tributaries of the Shûparo River and the Ebanazawa River as shown in Fig. 7. Ultrabasicosaxicolous plants are prominent there. These places are topographically divided into two types. One is the rather horizontal part with many serpentine pebbles 2 to 10 cm in diameter ('level ground'), the other is the rather steep slope of disintegrated serpentine pebbles and clay along the water course ('slope').

Species of plants occurring in the serpentine areas, in 'level ground' as well as in 'slope' are of comparatively small number. They occur very sparsely in these areas. A list of plants occurring on serpentine-pebble-fields or serpentine landslips is given in Table 3.

As shown in Table 3, plants occurring in these parts are divided into three groups; viz., Plants occurring on both the 'level ground' and the 'slope', Plants occurring particularly on the 'level ground', and, Plants occurring particularly on the 'slope'.

i. *Plants occurring on both the 'level ground' and the 'slope'.*

The following plants are main examples of those which belong to this category: 1. *Pinus pumila*, 2. *Bistorta vivipara*, 3. *Arenaria katoana*, 4. *Minuartia arctica*, 5. *M. verna* var. *joponica*, 6. *Thlaspi japonicum*, 7. *Parnassia palustris* var. *multiseta*, 8. *Saxifraga laciniata*, 9. *Sieversia pentapetala*, 10. *Potentilla matsumurae* var. *yuparensis*, 11. *Tilingia ajanensis*, 12. *Empetrum nigrum* var. *japonicum*, 13. *Pinguicula vulgaris*, 14. *Erigeron thunbergii* subsp. *glabratus*, 15. *Festuca ovina* var. *supina*, 16. *Poa hayachin-*

TABLE 3. List of plants occurring on serpentine landslip or serpentine-pebble-field. Plants marked with triangles are found mainly along the border of serpentine landslip or serpentine-pebble-field. ○: present, —: absent.

Name of plant	Station number	1	2	3	4	5	6	7	8	9
	Altitude (10 m)	140	142	148	125	135	140	140	34	38
	Exposure	L	L	L	E	S	N	NNE	SSE	S
	Slope degrees	0	0	0	19°	16°	23°	26°	24°	13°
Picea glehni		—	—	—	—	—	—	—	○	○
Juniperus communis var. sibirica		—	—	—	—	—	—	—	○	—
△ Pinus pumila		—	○	○	—	○	○	—	○	—
Bistorta vivipara		○	—	○	○	○	—	—	—	—
Pleuropteropyrum ajanense		○	○	○	—	—	—	—	—	—
Arenaria katoana		○	—	○	○	○	○	○	—	—
△ Dianthus superbus var. speciosus		—	—	○	—	—	—	—	—	—
Minuartia arctica		○	○	○	—	○	—	—	—	—
M. verna var. japonica		○	○	○	—	○	○	○	—	—
Stellaria nipponica var. yezoensis		○	○	○	—	—	—	—	—	—
Berberis amurensis var. japonica		—	—	—	—	—	—	—	○	○
Aconitum yuparense		—	—	—	○	—	—	—	—	—
Ranunculus acris var. nipponicus form. yuparensis		—	—	—	—	○	○	○	—	—
Draba japonica		—	—	—	—	—	○	○	—	—
△ Thlaspi japonicum		—	—	○	—	—	—	○	—	—
Drosera rotundifolia		—	—	—	—	○	—	—	○	—
Parnassia palustris var. multiseta		—	—	○	○	○	○	—	○	○
Saxifraga laciniata		○	○	○	—	○	○	○	—	—
Aruncus dioicus		—	—	—	—	—	—	—	○	○
Sieversia pentapetala		—	—	○	○	○	○	○	—	—
Potentilla matsumurae var. yuparensis		○	○	○	—	○	○	○	—	—
Sanguisorba stipulata		—	—	—	○	○	—	—	—	—
△ S. tenuifolia var. alba		—	—	—	—	—	—	—	○	—
△ Geranium erianthum		—	—	—	○	—	—	—	—	—
Tithymalus sieboldianus var. montanus		—	—	—	○	—	—	○	—	—
△ Rhamnus ishidae		—	—	—	—	—	○	—	—	—
Hypericum erectum		—	—	—	○	—	—	—	○	○
H. kamtschaticum		—	—	—	○	—	—	—	—	—
Viola crassa		—	—	○	—	—	—	—	—	—
V. sacchalinensis var. alpina		—	—	—	—	—	○	○	○	○
V. yubariana		—	—	—	—	○	○	○	—	○
Angelica stenoloba		—	—	—	○	○	○	○	○	○
△ Tilingia ajanensis		—	—	○	—	—	—	○	—	—
Empetrum nigrum var. japonicum		○	○	○	○	—	—	—	—	—
Rhododendron dauricum		—	—	—	—	—	—	—	○	○
△ R. fauriae var. roseum		—	—	—	—	—	—	—	○	—
Vaccinium vitis-idaea var. minus		○	○	○	—	—	—	—	—	—
Primula yuparensis		—	—	—	○	○	○	○	—	—
Gentianella yuparensis		—	—	—	○	○	○	○	○	○
Thymus quinquecostatus var. ibukiensis		—	—	—	○	—	○	—	—	—
Lagotis glauca subsp. takedana		○	○	○	—	—	—	—	—	—
Pedicularis chamissonis var. japonica		—	—	—	○	○	○	—	—	—
Veronica schmidtiana var. yezoalpina		—	—	—	○	○	○	○	—	○
Pinguicula vulgaris		○	—	○	—	○	○	○	—	—
Patrinia sibirica		○	○	○	—	—	—	—	—	—
Crepis gymnopus		—	—	—	○	○	—	—	○	○
Erigeron thunbergii subsp. glabratus		○	○	○	○	○	○	○	—	—
E. t. subsp. g. form. haruoi		—	—	○	—	—	—	—	—	—
Saussurea chionophylla		○	○	○	—	—	—	—	—	—
△ S. riederi var. yezoensis		—	—	—	○	—	○	—	—	—
S. r. v. y. form. yuparensis		—	—	—	—	—	—	—	○	—
Taraxacum yuparense		—	—	—	○	○	—	○	○	—
Festuca ovina var. supina		○	○	○	○	—	—	—	—	—
△ F. rubra		—	—	—	○	—	—	—	○	○
Hierochloe pluriflora		—	—	—	○	○	○	—	—	—
△ Poa hayachinensis		○	—	○	—	—	—	○	—	—
Carex capillaris		—	○	○	—	—	—	—	—	—
C. melanocarpa		—	○	○	—	—	—	—	—	—
△ Scirpus maximowiczii		○	—	○	—	○	—	—	—	—
Allium maximowiczii form. shibutsuense		○	○	○	○	○	○	○	—	—
Tofieldia coccinea var. fusca		○	○	○	—	—	—	—	—	—
△ T. okuboi		○	—	○	—	○	—	○	—	—
Microstylis monophyllos		—	—	—	—	○	—	—	—	—
Orchis aristata		—	—	○	○	○	○	○	—	—

ensis, 17. *Scirpus maximowiczii*, 18. *Allium maximowiczii* form. *shibutsuense*, 19. *Tofieldia okuboi*, 20. *Orchis aristata*.

Among the above listed plants, 1, 2, 7, 9, 11, 12, 13, 14, 15, 17, 19 and 20 are wide spread ones which occur on almost every kind of soil in the arctic and boreal alpine area, 3 and 5 are recognized as serpentine characteristics, and 4, 6 and 8 are found mostly in the serpentine area in this mountain. 10 is treated as a variety of *Potentilla matsumurae* WOLF in showing a trend of splitting trichotomously into narrow and acute lacinulae. This occurs not only in these parts but on the rocky cliffs such as Tsurigane-iwa, Maëdake peaks etc.

14 is one of the popular alpine herbs in northern Japan, Saghalien, S. Kuriles, N. Korea, Manchuria, Siberia etc. A form having narrow leaves which resembles var. *angustifolia* described from Mt. Apoi, prov. Hidaka, is sometimes met with. This form is referable to form. *haruoi* TOYOKUNI which is distinguished from var. *angustifolia* by its higher and more densely haired stems and more densely haired leaves.

16 was at first described from Mt. Hayachine by G. KOIDZUMI in 1917, and has been reported from the Hidaka Mountain Range, the Yûbari Mountain Range (Mt. Yûpari and Mt. Ashibetsu) and Mts. Taisetsu, on the ultrabasic rock areas as well as non-ultrabasic rock areas. In Mt. Yûpari, though it occurs not always in serpentine area, its abundant occurrence is recognized along the margin and in the center of these serpentine regions.

18 is remarkably variable in this mountain. In the herbaceous meadow along the margin of the central bog, it is larger than the form in these serpentine areas. In these fields, it shows remarkably smaller form regarding the size of inflorescence having thinly fewer flowers which consist of shorter tepals, and the form is referable to *Allium schoenoprasum* var. *shibutsuense* KITAMURA. But, no demarcation line is set between the larger form and var. *shibutsuense*-form. HARA & MIZUSHIMA (1954) treated the plant of Mt. Shibutsu as identical of REGEL's *Allium maximowiczii* though recognized the difference between the plant of Mt. Shibutsu and the typical form. TOYOKUNI ranked the form to a forma of *A. maximowiczii*. Sizes of critical floral parts of plants in this mountain range from rather larger scales than the KITAMURA's to the equal one to his; so, after due to consideration on the occurrence of almost only KITAMURA's form in Mt. Shibutsu and Mt. Tanigawa, the author adopts the name *Allium maximowiczii* form. *shibutsuense* proposed by TOYOKUNI (TOYOKUNI, 1957).

ii. *Plants occurring particularly on the 'level ground'*.

The following plants are main examples belonging to this category:

1. *Pleuropteropyrum ajanense*, 2. *Dianthus superbus* var. *speciosus*, 3. *Stellaria nipponica* var. *yezoensis*, 4. *Viola crassa*, 5. *Vaccinium vitis-idaea* var. *minus*, 6. *Lagotis glauca* subsp. *takedana*, 7. *Patrinia sibirica*, 8. *Saussurea chionophylla*, 9. *Carex capillaris*, 10. *C. melanocarpa*, 11. *Tofieldia coccinea* var. *fusca*.

Among the above mentioned plants, 1, 2, 3, 4, 5, 7 and 11 are found in other topographical and geological situations, even though 1, 4, 7, 9 and 10 occur on this type of ground in this mountain. 4 occurs only in the limited part of 'Fukitôshi' (Fig. 7 and Fig. 8–10).

TABLE 4. Cover degree and frequency of the plants appearing in the belt transect (1×12 m, 12 Q in direction from west to east) on the serpentine-pebble-field (station no. 2, altitude—1430 m, exposure—level).

Name of plant	Quadrat number												Average Cover Degree	Frequency (%)
	1	2	3	4	5	6	7	8	9	10	11	12		
Saussurea chionophylla	2	+	1′	1	+	1′	2	1	+	1	1′	1	0.59	100.0
Lagotis glauca subsp. takedana	+	1′	1′	1	1′	−	+	1	1	+	1′	+	0.33	91.7
Allium maximowiczii form. shibutsuense	+	+	−	−	+	−	+	+	−	+	+	−	0.02	58.3
Potentilla matsumurae var. yuparensis	+	−	−	+	+	−	1	+	+	−	−	−	0.10	50.0
Pleuropteropyrum ajanense	+	+	+	−	+	+	−	+	−	−	−	−	0.02	50.0
Carex melanocarpa	−	−	+	+	+	+	−	−	+	−	+	−	0.02	50.0
Saxifraga laciniata	+	+	+	−	−	+	−	−	−	−	−	−	0.01	33.3
Minuartia verna var. japonica	−	1	+	−	−	−	+	−	+	−	−	−	0.09	33.3
Empetrum nigrum var. japonicum	−	−	+	−	2	1′	−	−	−	−	−	1	0.37	33.3
Carex capillaris	−	−	−	−	+	+	−	−	−	+	+	−	0.01	33.3
Patrinia sibirica	−	−	−	−	−	−	+	−	−	−	−	+	0.007	16.7
Erigeron thunbergii subsp. glabratus	−	−	−	−	−	−	−	−	−	−	−	+	0.003	8.3
Vaccinium vitis-idaea var. minus	−	−	−	−	−	−	−	−	−	−	−	+	0.003	8.3
Minuartia arctica	−	−	−	−	−	−	−	−	−	+	−	−	0.003	8.3
Stellaria nipponica var. yezoensis	+	−	−	−	−	−	−	−	−	−	−	−	0.003	8.3
Tofieldia coccinea var. fusca	−	−	−	−	−	+	−	−	−	−	−	−	0.003	8.3
Festuca ovina var. supina	−	−	−	−	−	+	−	−	−	−	−	−	0.003	8.3
Pinus pumila	−	−	−	−	−	−	+	−	−	−	−	−	0.003	8.3

Note: In the 7th Quadrat, a few of *Saussurea chionophylla* form. *albiflora* were found.

Cover degree and frequency of the plants occurring in the belt-transect set on the serpentine-pebble-field (station no. 2 in Fig. 7) are shown in Table 4.

In fine, the plant community on the level ground is the *Saussurea chionophylla—Lagotis glauca* subsp. *takedana* community. These two plants are typical ultrabasicosaxophytes.

iii. *Plants occurring particularly on the 'slope'.*

The followings are main examples occurring particularly on the 'slope'. 1. *Picea glehni* (dwarf form), 2. *Juniperus communis* var. *sibirica*, 3. *Berberis amurensis* var. *japonica*, 4. *Aconitum yuparense*, 5. *Ranunculus acris* var. *nipponicus* form. *yuparensis*, 6. *Draba japonica*, 7. *Drosera rotundifolia*, 8. *Aruncus dioicus*, 9. *Sanguisorba stipulata*, 10. *S. tenuifolia* var. *alba*, 11. *Geranium erianthum*, 12. *Tithymalus sieboldianus* var. *montanus*, 13. *Hypericum erectum*, 14. *H. kamtschaticum*, 15. *Viola sacchalinensis* var. *alpina*, 16. *V. yubariana*, 17. *Angelica stenoloba*, 18. *Rhododendron dauricum*, 19. *R. fauriae* var. *roseum*, 20. *Primula yuparensis*, 21. *Gentianella yuparensis*, 22. *Thymus quinquecostatus* var. *ibukiensis*, 23. *Pedicularis chamissonis* var. *japonica*, 24. *Veronica schmidtiana* var. *yezoalpina*, 25. *Crepis gymnopus*, 26. *Saussurea riederi* var. *yezoensis* (incl. form. *yuparensis*), 27. *Taraxacum yuparense*, 28. *Festuca rubra*, 29. *Hierochloe pluriflora*, 30. *Microstylis monophyllos* etc.

Among the above mentioned plants, 1, 2, 3, 8, 10, 18 and 19 are recorded from the slopes of lower altitudes (near Ishiwata-yama, cf. Fig. 7). 7, 9, 11, 13, 14, 22, 23, 24, 26, 28 and 30 are not ultrabasic rock characteristics, and found under various geological and topographical conditions. The 'slope' is formed along the water course, water supply of this area is suggested being richer than the 'level ground'. This is one of reasons for the occurrence of these rather mesophytic plants.

4 is found here and there on this mountain, in this barren exposed slope as well as herb-layers from mountain to alpine area.

5, 6, 12, 16, 17, 20, 25, 27 and 29 are more or less restricted in the ultrabasic rock district.

The most prominent plants among them are *Viola yubariana* and *Gentianella yuparensis.*

§ 2. Discussion and conclusion.

1. Forest of Mt. Yûpari district.

According to the earliest description of the forest zone in this district by NISHIDA (1919), the forest was rather simply recognized to belong to the needle-leaved forest zone, though the presence of the mixed forest was recognized in the lower elevation (lower than 300 m in alt.). On the other hand, KUSAKA set the demarcation line between the mixed forest and the needle-leaved forest at an altitude of 600 m through his investigations on the vertical distribution of trees.

From the author's observations, it is certain that the forest dominated

by *Cercidiphyllum japonicum*, *Acer mono* var. *mayri*, *Quercus mongolica* var. *grosseserrata* etc. approaches near up to 600 m in altitude, along the riversides of the Shirokane River as well as of the Panke-moyûparo River. While, along the Penke-moyuparo River (theTakinosawa River), such forest diminishes at an altitude of about 500 m. On the other hand, the forest of mountainside higher than the altitude of about 400 m, is recognizable as the *Abies—Picea—Quercus* forest with *Tilia*, *Acer* etc.

Cephalotaxus harringtonia var. *nana*, one of the characteristic shrubs often represents the *Sasa—Cephalotaxus* thicket in the western area of this district, is hardly found in the forest floor higher than 500 m in altitude. On the other hand, the altitude which corresponds to 55 in warmth index is roughly reckoned as 450 m.

The forest in the area lower than 450–500 m in alt. (at 205 compartment, Yûbaridake working unit, Ôyûbari Forestry Office, along the Penke-moyûparo R.) as well as lower than 500–600 m in alt. (at 236 compartment, Yûbaridake working unit, Ôyûbari Forestry Office, along the Shirokane R.), includes the following ligneous plants which were pointed out as those of the characteristics of the 'Pan Mixed Forest Zone' by TAKEWAKI (1958): *Cephalotaxus harringtonia* var. *nana*, *Juglans ailanthifolia*, *Carpinus cordata*, *Viscum album* var. *coloratum*, *Cercidiphyllum japonicum*, *Magnolia kobus* var. *borealis*, *M. obovata*, *Schizophragma hydrangeoides*, *Maackia amurensis*, *Picrasma quassioides* var. *glabrescens*, *Daphniphyllum macropodum* subsp. *humile*, *Staphylea bumalda*, *Alangium platanifolium* var. *macrophyllum*, *Acanthopanax sciadophylloides*, *Eubotryoides grayana*, *Stylax obassia*, *Weigela hortensis* etc.

By the above mentioned observations, the forests in the area lower than 500 m in altitude or so, belong apparently to the forests of the Pan Mixed Forest Zone proposed by TATEWAKI. And those in the area from 500 m to 600 m in altitude are in the transitional zone between the mixed forest and the needle-leaved forest.

Between 600 m and 900 m in alt., the forest is recognized as the *Abies—Picea—Betula* forest, and at an altitude of about 900 m, *Betula ermani* becomes rather dominant.

According to NISHIDA (1919), the needle-leaved forest developed up to 1,200 m in alt., however, the altitude must be amended to 950 m or so.

Thus, it is certain that the needle-leaved forest dominated by *Abies sachalinensis* var. *mayriana* and *Picea jezoensis* in this mountain develops 600 m to 900 m in alt.

In the area higher than 900 m in alt., the mountainsides exhibit rather

steep slopes, extensive forest of *Betula ermani* spreads up to 1,200 m, and between 1,200 m and 1,300 m, the forest is recognized to be the *Alnus crispa* subsp. *maximowiczii—Betula ermani* forest. It is unanimous to set the *Betula ermani* zone between the altitudes of 900 m and 1,300 m.

The forest in the alpine area is no doubt the *Pinus pumila* thicket, but, owing to the special edaphic conditions, viz., vast spreading serpentine fields and many rocky cliffs, the vegetation in the alpine area of this mountain is not monotonous. On the exposed serpentine barren fields, 'serpentine-pebble-fields' and 'serpentine landslips', characteristic herbages consisting of many ultrabasicosaxicolous plants develop; on the flat serpentine plateau, the comparatively broad bog develops and on the rocky cliffs and ridges, there develop the mat of shrublets and tufts of herbs.

To say briefly, the forest of Mt. Yûpari district belongs to that of TATEWAKI's 'Pan Mixed Forest Zone'. On the other hand, from the view point of vertical distribution, four main divisions are recognizable in this district; viz., A. The area lower than 600 m in altitude, B. The area covered with the *Abies sachalinensis* var. *mayriana—Picea jezoensis—Betula ermani* forest (between 600 m and 900 m in alt.), C. The area covered with the *Betula ermani* forest (between 900 m and 1,300 m in alt.) and D. The alpine area (higher than 1,300 m in altitude).

A (The area lower than 600 m in alt.) is again divided into two; i. e., the mixed forest zone represented by the *Cercidiphyllum japonicum—Acer mono* var. *mayri—Quercus mongolica* var. *grosseserrata* forest (lower than 500 m in alt.) and the transitional area between the mixed forest and the needle-leaved forest (between 500 m and 600 m in alt.). C (The area covered with the *Betula ermani* forest) is again divided into two; i. e., the area covered with the *Betula ermani* forest accompanied with needle-leaved trees (between 900 m and 1,200 m in alt.) and the area covered with the *Alnus crispa* subsp. *maximowiczii—Betula ermani* forest (between 1,200 m and 1,300 m in alt.). D (The alpine area) is again divided into four; i. e., the *Pinus pnmila* thicket, the rocky cliff vegetation consisting mainly of the mat of shrublets and shows rather xeric stand, vegetation on the flat or gently sloping ground consisting of three components (the alpine meadow, the swamps and bog and the heath), and, vegetation on rather steep slopes along the water course consisting of two main communities (the *Trollius riederianus* var. *japonicus—Saussurea riederi* var. *yezoensis* community and very sparse vegetation on the serpentine landslips).

Among the habitats in the alpine area of this mountain, those which have special characteristics either on vegetational or on floristic are serpentine-

pebble-fields and serpentine landslips.

2. Relation between the plants and their habitats on the serpentine-pebble-fields or serpentine landslips.

As is shown in Table 3, in this mountain, there occur 61 spp., 1 var. and 2 forms on serpentine-pebble-fields and serpentine landslips. Among them, ligneous plants are the following 10 species: viz., *Picea glehni*, *Juniperus communis* var. *sibirica*, *Pinus pumila*, *Berberis amurensis* var. *japonica*, *Sieversia pentapetala*, *Empetrum nigrum* var. *japonicum*, *Rhododendron dauricum*, *R. fauriae* var. *roseum*, *Vaccinium vitis-idaea* var. *minus* and *Thymus quinquecostatus* var. *ibukiensis*. *Thymus quinquecostatus* var. *ibukiensis* is recognized as a fruticulus. The ratio of the number of ligneous plants to the total is about 15%. Among the total taxa of 64 plants, 8 plants occur only in the low altitude; i. e., in the landslips of Ishiwata-yama and its neighborings (station no. 8. & 9 in Fig. 7). Those are: *Picea glehni*, *Juniperus communis* var. *sibirica*, *Berberis amurensis* var. *japonica*, *Aruncus dioicus*, *Sanguisorba tenuifolia* var. *alba*, *Hypericum erectum*, *Rhododendron dauricum* and *R. fauriae* var. *roseum*.

On the serpentine-pebble-fields and serpentine landslips in the alpine area of this mountain, there occur 53 spp., 1 var. and 2 forms, among which ligneous plants are five species (ca. 9.4%). In the alpine area, the ratio of the number of ligneous plants to the total plants is about 20% (23 spp. and 3 forms are those belonging to *Ericaceae*). At present, these serpentine areas keep strongly worse conditions for ligneous plants to grow on them, especially for Ericaceous plants. As shown in Table 5, one of the major constituents of serpentine is magnesium (Mg), this is probably one of the reasons for preventing the trespass of Ericaceous plants into these areas.

The plant community on the 'level ground' is recognized as the *Saussurea chionophylla—Lagotis glauca* subsp. *takedana* community. On the other hand, the plant community on the 'slope' owing to unstable surface of the ground, is not worth treating it as a valid community. Among the plants occurring on the 'slope', *Gentianella yuparensis* and *Viola yubariana* are usually frequently appearing. The former species is an annual herb, so, the vegetation on the 'slope' is in its pioneer stage.

The *Saussurea chionophylla—Lagotis glauca* subsp. *takedana* community also seems to be on its succession. As shown in Table 4, in the 5th, 6th and 12th quadrates, *Empetrum* has already trespassed, showing comparatively high cover degrees. According to RUNE (1953), the climax community on stable and exposed serpentine ground in the north of Sweden is considered

the *Empetrum—Vaccinium* community (RUNE, 1953). The similar tendency is supposed on the 'level ground' in this mountain. However, the alpine area of this mountain belongs to the *Pinus pumila* zone. On the station no. 3, *Pinus pumila* is gradually creeping toward the community, some part of the community is buried under the *Pinus pumila* thicket. In fine, through the stage of the *Empetrum* community, the community on the 'level ground' is to be substituted by the *Pinus pumila* thicket.

As shown in Table 4, about 60 species are found on the serpentine-pebble-fields and serpentine landslips in this mountain. These plants are classified in regard to their affinities to serpentine as follows[6]:

a. Typical ultrabasicosaxophytes (TU)
b. Preferential ultrabasicosaxophytes (PU)
c. Ultrabasicosaxicolous relics (UR)
d. Ultrabasicosaxicolous ubiquists (UU)
e. Ultrabasic rock indifferent plants and Ultrabasic rock accidental plants (IA)

The names of plants belonging to respective categories are as follows:

a. Typical ultrabasicosaxophytes (TU); *Viola sacchalinensis* var. *alpina*[7], *V. yubariana* (endemic), *Primula yuparensis* (endemic), *Veronica schmidtiana* var. *yezoalpina*, *Lagotis glauca* subsp. *takedana* (endemic subsp.), *Adenophora pereskiaefolia* var. *yamadae*[8], *Erigeron thunbergii* subsp. *glabratus* form. *haruoi* (endemic form), *Saussurea riederi* var. *yezoensis* form. *yuparensis* (endemic form.), *Taraxacum yuparense*, *Deschampsia caespitosa* subsp. *levis* (endemic subsp.), *Hierochloe pluriflora*, *Allium maximowiczii* form. *shibutsuese*.
b. Preferential ultrabasicosaxophytes (PU); *Tithymalus sieboldianus* var. *montanus*, *Angelica stenoloba*.
c. Ultrabasicosaxicolous relics (UR); *Arenaria katoana*, *Draba japonica*, *Crepis gymnopus*, *Saussurea chionophylla*.
d. Ultrabasicosaxicolous ubiquists (UU); *Aconitum yuparense*, *Ranunculus*

6) As to the nomenclature, the author has mostly followed the system of TOYOKUNI (1955 and 1968).

7) This variety was recognized as an example of TU, a serpentinomorphosed variety. But, as the occurrence of this variety was reported from Mt. Kirigishi, which is constructed of limestone, in 1969 and 1970, the treatment must be amended.

8) This variety corresponds to *Adenophora pereskiaefolia* var. *uryuensis* recorded from Mt. Shiratori and its neighbouring mountains downwards to Kamuikotan district. The occurrence of the present variety was for the first time presented at Gama-iwa, after that the variety has been found at Maëdake peaks. Maëdake peaks are built of complex metamorphosed rocks except serpentine, so, it is uncertain whether this is recognizable as one of TU or not.

TABLE 5. Chemical composition of serpentine and its allies

Locality	M.t Yûpari			Mt. Apoi
	Kanayama	Shirokane River		Horoman
Rock	Serpentine		Diabase	Peridotite
Anal. by	Sanbonsugi	Tsuru	Komatsu	Itô & Yamamoto
Collector	Suzuki	Nosaka	Suzuki	Igi
SiO_2 (%)	37.29	39.39	54.38	41.20
TiO_2 (%)	—	—	2.88	trace
Al_2O_3 (%)	8.38	1.45	8.90	1.31
Cr_2O_3 (%)	—	—	—	0.43
Fe_2O_3 (%)	7.23	7.23	2.17	0.86
FeO (%)	2.23	—	5.98	4.13
MnO (%)	—	—	0.17	0.38
MgO (%)	28.20	35.61	7.25	48.81
CaO (%)	0.43	0.52	10.36	1.96
Na_2O (%)	—	—	4.65	—
K_2O (%)	—	—	0.67	—
H_2O^+ (%)	12.37	12.37	1.98	0.26
H_2O^- (%)	3.32	3.32	0.74	0.18
P_2O_5 (%)	—	—	0.25	—
Total (%)	99.45	99.89	100.38	99.73

The data in this table are quoted from the followings respectively.
Serpentine.
Locality: Kanayama. J. SUZUKI in Journ. Fac. Sci. Hokkaidô Univ. ser. 4, **8**(4). 1953.
Shirokane River. S. NOSAKA in Journ. Geobot. **10**(4). 1962.
Diabase. J. SUZUKI in Journ. Fac. Sci. Hokkaidô Univ. ser. 4, **10**(2). 1959.
Peridotite. S. IGI in Chishitsugaku-zasshi **59**. 1953. (This peridotite contains 0.21% of S.).

acris var. *nipponicus* form. *yuparensis*, *Berberis amurensis* var. *japonica*, *Minuartia verna* var. *japonica*, *Thlaspi japonicum*, *Thymus quinquecostatus* var. *ibukiensis*.

e. Ultrabasic rock indifferent plants and ultrabasic rock accidental plants (IA); over 30 species belong to this category, almost all of them are listed in Table 3. They are as follows: *Picea glehni*, *Juniperus*

communis var. *sibirica*, *Bistorta vivipara*, *Pleuropteropyrum ajanense*, *Dianthus superbus* var. *speciosus*, *Minuartia arctica*, *Stellaria nipponica* var. *yezoensis*, *Drosera rotundifolia*, *Parnassia palustris* var. *multiseta*, *Saxifraga laciniata*, *Aruncus dioicus*, *Potentilla matsumurae* var. *yuparensis*, *Sieversia pentapetala*, *Sanguisorba stipulata*, *S. tenuifolia* var. *alba*, *Geranium erianthum*, *Rhamnus ishidae*[9], *Hypericum erectum*, *H. kamtschaticum*, *Viola crassa*, *Tilingia ajanensis*, *Empetrum nigrum* var. *japonicum*, *Phyllodoce aleutica*, *P. caerulea* (incl. form. *yesoensis* and form. *takedana*), *Rhododendron aureum*, *R. dauricum*, *R. fauriae* var. *roseum*, *Vaccinium ovalifolium* var. *coriaceum*, *V. uliginosum* var. *alpinum*, *V. vitis-idaea* var. *minus*, *Pedicularis chamissonis* var. *japonica*, *Pinguicula vulgaris*, *Patrinia sibirica*[10], *Erigeron thunbergii* subsp. *glabratus*, *Saussurea riederi* var. *yezoensis*, *Festuca ovina* var. *supina*, *F. rubra*, *Poa hayachinensis*, *Carex capillaris*[11], *C. flavocuspis*, *C. melanocarpa*[12], *Tofieldia coccinea* var. *fusca*, *T. okuboi*, *Microstylis monophyllos*, *Orchis aristata*, *Platanthera ophrydioides* etc.

The habitats of 117 plants in the alpine area of this mountain are shown in the following 24 figures (Figs. 8-1—8-24).

Fig. 8-1.

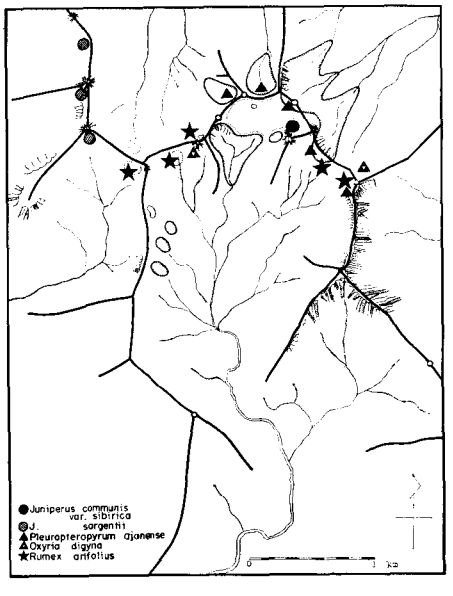


Fig. 8-2.

Fig. 8. Habitats of the plants occurring in the alpine area of Mt. Yûpari. (excl. those which occur very common in the district).

For the foot notes of 9), 10), 11) & 12) see page 106

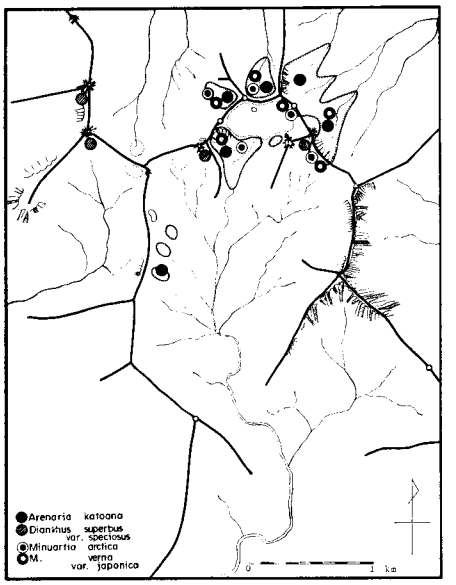


Fig. 8-3.

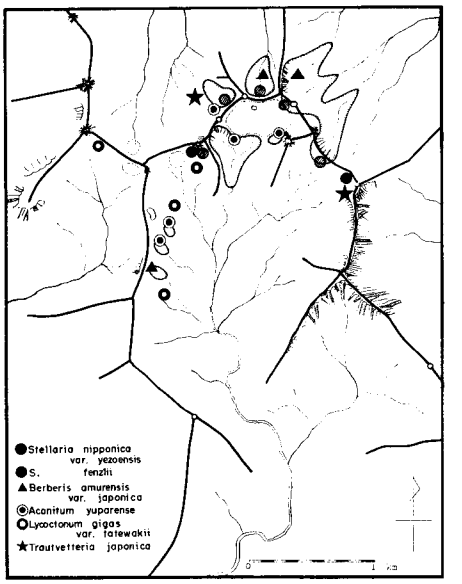


Fig. 8-4.

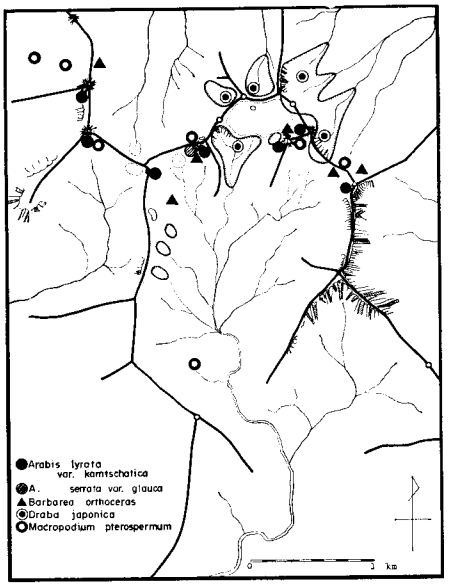


Fig. 8-5.

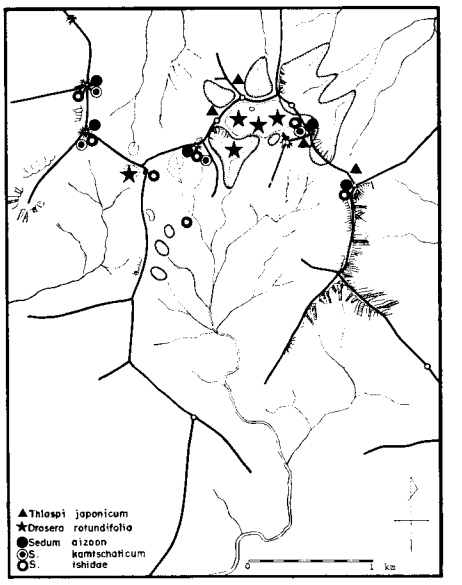


Fig. 8-6.

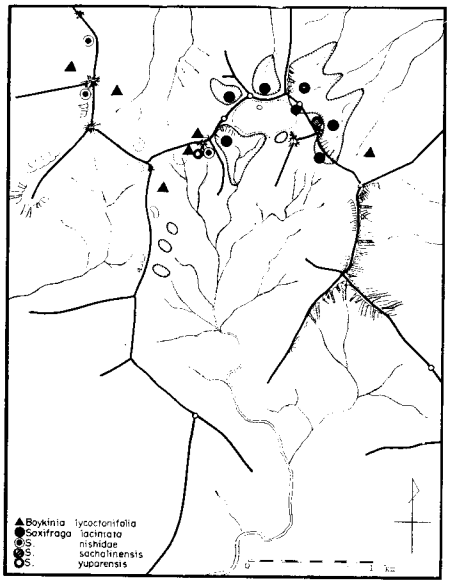


Fig. 8–7.

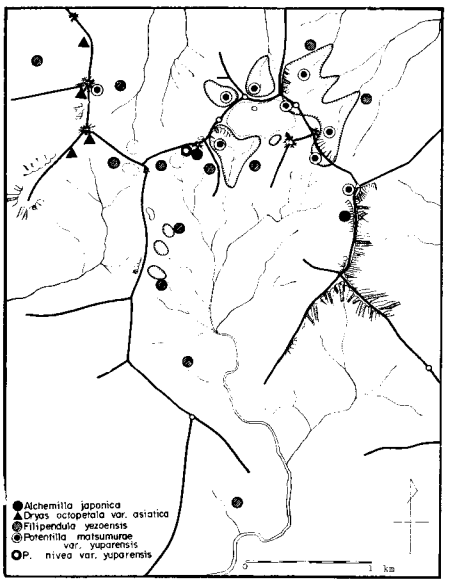


Fig. 8–8.

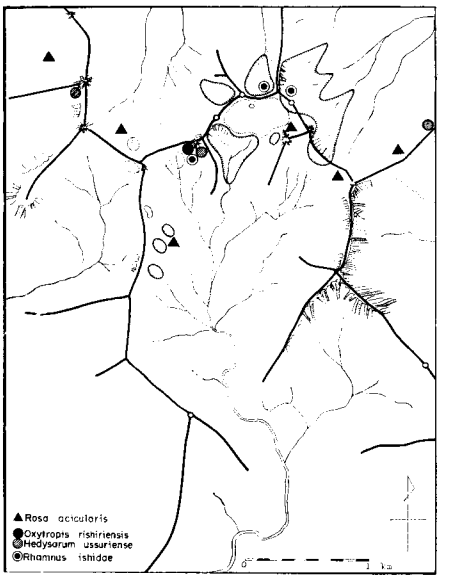


Fig. 8–9.

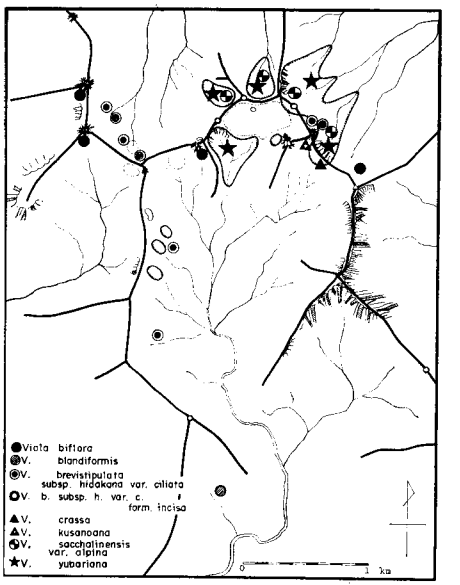


Fig. 8–10.

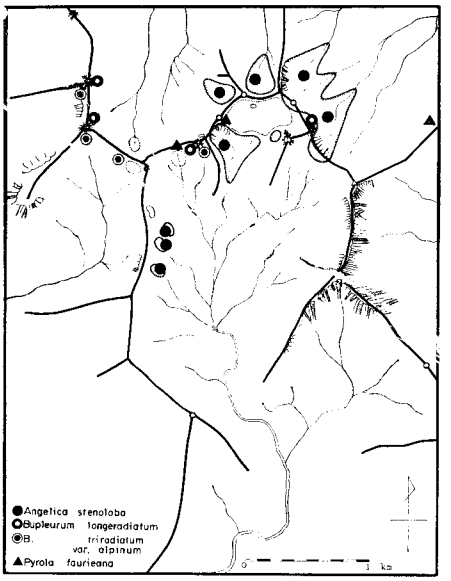


Fig. 8-11.

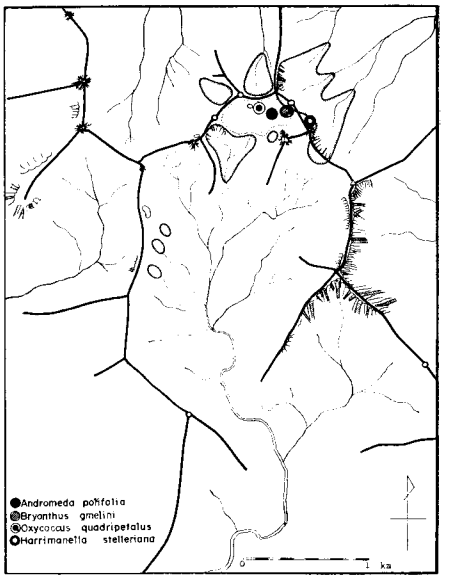


Fig. 8-12.

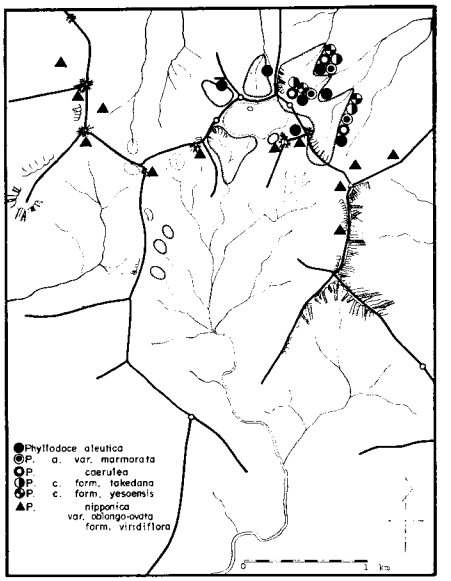


Fig. 8-13.

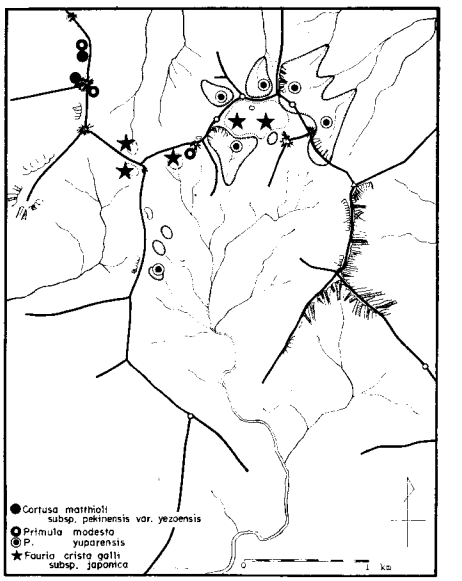
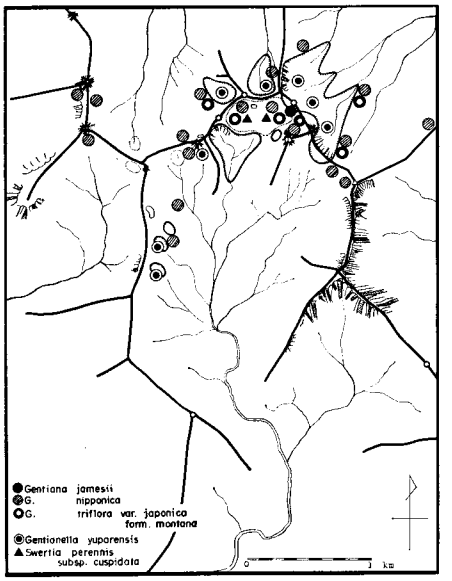


Fig. 8-14.



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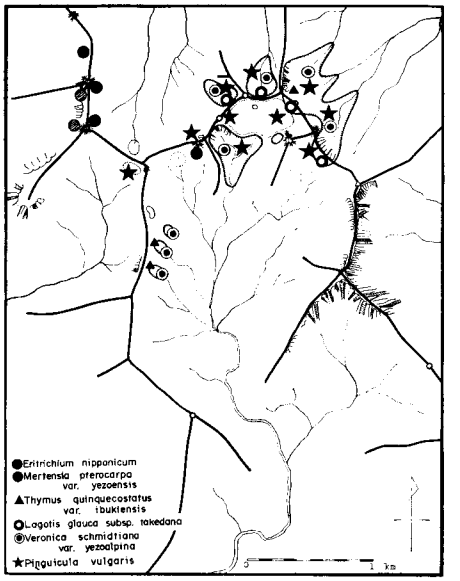

Fig. 8–16.

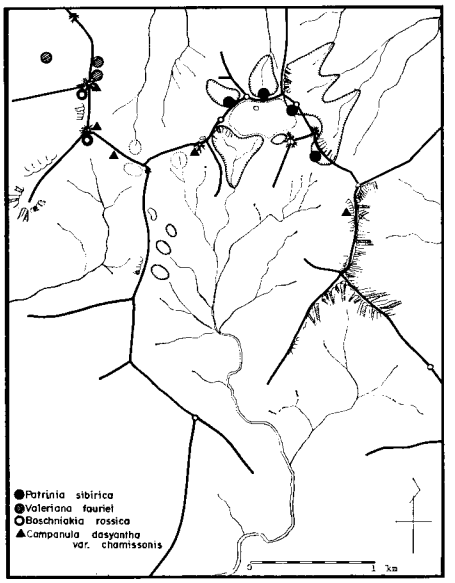

Fig. 8–17.

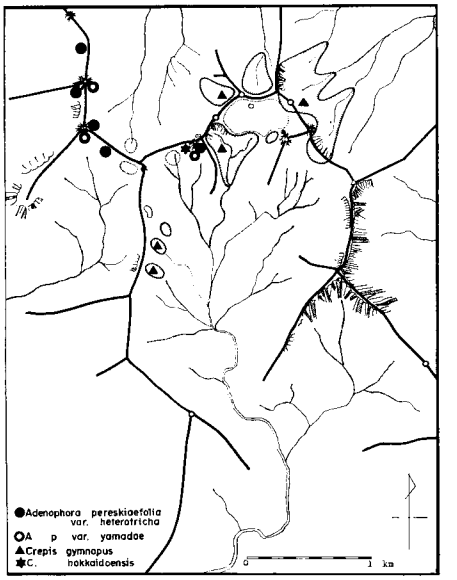

Fig. 8–18.

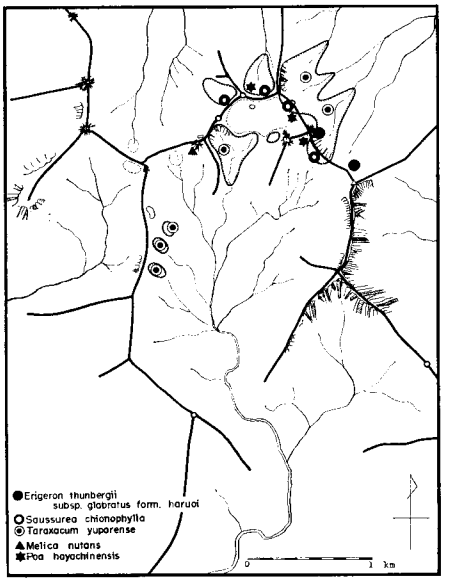

Fig. 8-19.

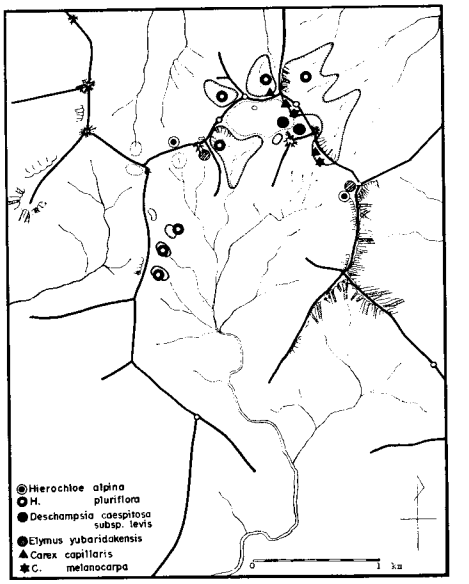

Fig. 8-20.

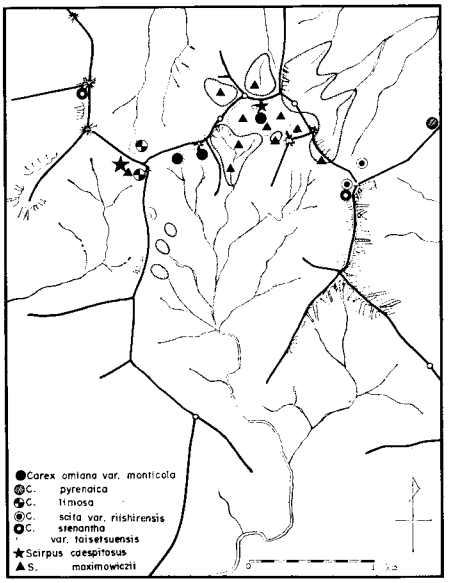

Fig. 8-21.

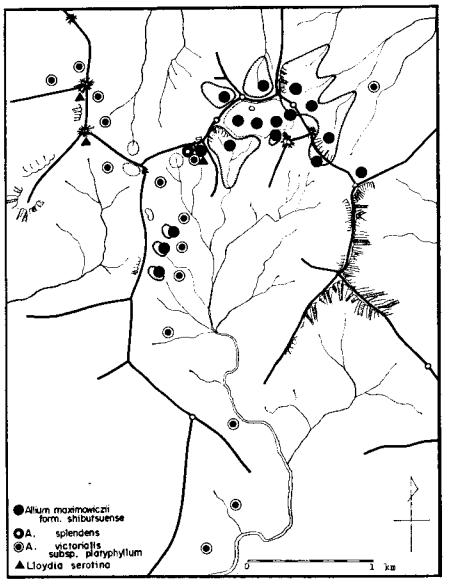

Fig. 8-22.

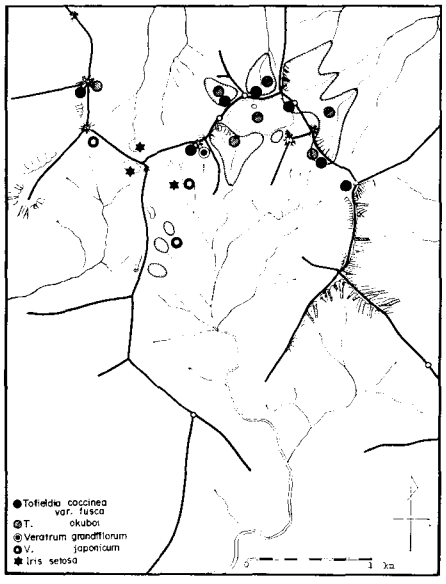

Fig. 8-23.

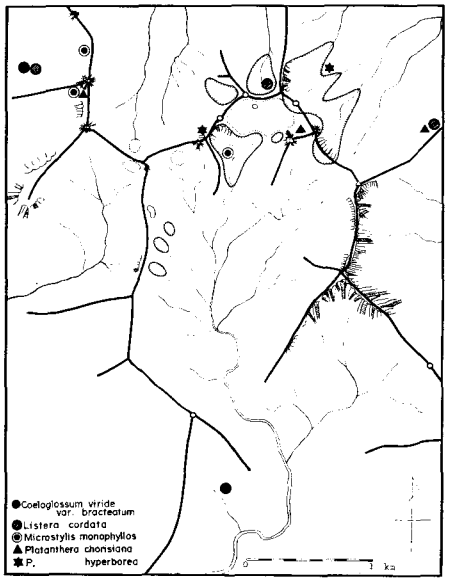

Fig. 8-24.

V. The Phanerogam flora

§ 1. Enumeration of plants

Arrangement of families is mostly in accordance with the system proposed by Masaji HONDA (1955 & 1957). Arrangement of genera and that of species are in alphabetical order.

Herbarium abbreviations used here are those adopted in 'Index Herbariorum (ed. 5) 1964' and in its revision in Taxon **13**(8): 298–299. 1964.

For convenience, the author uses the following indications for habitats; for the area covered with the mixed forest, 'lower mountain area', for the area covered with the *Abies—Picea—Betula* forest, 'mountain area', for the area covered with the *Betula ermani* forest, 'subalpine area', and for the area higher than 1,300 m in alt., 'alpine area'.

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9) This was believed as a good example of UR, but, this was collected from Mt. Kirigishi, a limestone mountain. It must be treated as a Yûpari-Hidaka montane-alpine element.

10), 11) and 12) These are found restrictedly in the serpentine-pebble-fields in this mountain, however, 10 is found in alpine frigorideserta in other mountains not built of ultrabasic rocks. 11 is an amphiarctic alpine sedge, in Japan, this is probably an epibiotic plant preserved in several alpine ultrabasic rock districts of Mt. Yûpari and Mt. Hayachine (prov. Rikuchû, N. Honshû).

(I) GYMNOSPERMAE

FAM. TAXACEAE

Taxus LINNAEUS

1. **T. cuspidata** SIEBOLD et ZUCCARINI in Abh. math.-phys. Akad. Wiss. München **4**(3): 232. 1846.
   NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.—HONDA, Nom. Pl. Jap. ed. em. 30. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Nom. Jap.: *Ichi-i.*
   Hab.: In the mixed forest of lower mountain area.
   Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Kamchatka, Okhotsk, Manchuria, Amur, China.
   Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT; June, 1896. ISHIKAWA–SAPT; June 16, 1962. NOSAKA–SAP.

FAM. CEPHALOTAXACEAE

Cephalotaxus SIEBOLD et ZUCCARINI

2. **C. harringtonia** (FORBES) K. KOCH var. **nana** (NAKAI) REHDER in Journ. Arnold Arb. **4**:107. 1923.
   HONDA, Nom. Pl. Jap. ed. em. 31. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Syn. *C. nana* NAKAI in Bot. Mag. Tokyo **33**: 193. 1919.
   C. drupacea (non SIEB. et ZUCC.) sensu MATSUMURA, Ind. Pl. Jap. **2**(1): 6. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.
   Nom. Jap.: *Hai-inu-gaya.*
   Hab.: In the undergrowth dominated by *Sasa* species in the mixed forest.
   Distrib.: Western Hokkaidô, Honshû, Shikoku, Korea.
   Specimens from Mt. Yûpari: July 16, 1962. NOSAKA–SAP.

FAM. PINACEAE

Abies MILL

3. **A. sachalinensis** (FR. SCHMIDT) MASTERS var. **mayriana** MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **7**: 131. 1919.
   NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.—HONDA, Nom. Pl. Jap. ed. em. 31. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Nom. Jap.: *Ao-todomatsu.*
   Hab.: In the area lower than 1,100 m in alt., abundant.

Distrib.: Hokkaidô, S. Saghalien.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; July 16, 1962. NOSAKA-SAP.

Picea A. DIETRICH

4. **P. glehni** (FR. SCHMIDT) MASTERS in Gard. Chron. ser. 2, **13**: 300. 1880.
   NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919—HONDA, Nom. Pl. Jap. ed. em. 32. 1857.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Syn. *Abies glehni* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 176. 1868.

Nom. Jap.: *Aka-ezomatsu.*

Hab.: In the area lower than 1,200 m in alt., abundant; sometimes occurs in the area 1,400 m in alt. (peat bog).

Distrib.: Hokkaidô, S. Saghalien, S. Kuriles, Maritime Prov.

Specimens from Mt. Yûpari: Aug. 3–5, 1913. NISHIDA & YANAGISAWA-SAPT.

5. **P. jezoensis** (SIEBOLD et ZUCCARINI) CARRIÈRE, Traité Conif. 225. 1855.
   HONDA, Nom. Pl. Jap. ed. em. 32. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Syn. *P. ajanensis* (non FISCHER) MASTERS in Gard. Chron. ser. 2, **13**: 115. 1880.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.

Nom. Jap.: *Ezo-matsu.*

Hab.: In the area lower than 1,100 m in alt., abundant.

Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka, Okhotsk, Manchuria, Maritime Prov.

Specimens from Mt. Yûpari: Aug. 3–5, 1913. NISHIDA & YANAGIZAWA-SAPT.

Pinus LINNAEUS

6. **P. pumila** (PALLAS) REGEL in Ind. Sem. Hort. Petrop. 23. 1858.
   NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.—HONDA, Nom. Pl. Jap. ed. em. 33. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
   Syn. *P. cembra* LINNAEUS var. *pumila* PALLAS, Fl. Ross. **1**: 17. 1784.
   P. pumila (PALL.) REGEL var. *yezoalpina* ISII et KUSAKA ex IWATA & KUSAKA, Conif. Jap. Illustr. ed. 2, 214–217. 1954.

Nom. Jap.: *Hai-matsu.*

Hab.: Widely spread in the alpine area (Fig. 8–1).

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, Manchuria,

Dahuria, Amur, E. Siberia, Kamchatka.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; July 5, 1959. NOSAKA-SAP.

FAM. CUPRESSACEAE

Juniperus LINNAEUS

7. **J. communis** LINNAEUS var. **sibirica** (BÜRGSDORF) RYDBERG in Contrib. U. S. Nat. **3**: 533. 1896.

Syn. *J. sibirica* BÜRGSDORF, Anleit. **2**: 124. 1787.

J. nipponica MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **12**: 230. 1868.—HONDA, Nom. Pl. Jap. ed. em. 34. 1957.—*J. communis* L. var. *nipponica* (MAXIM.) WILSON, Conif. & Tax. Jap. 81. 1916.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

J. nana (non WILSON) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.

Nom. Jap.: *Rishiri-byakushin.*

Hab.: In the serpentine landslip of lower part (near Ishiwata-yama) and in alpine area (Fig. 8-2).

Distrib.: Hokkaidô, Saghalien, Kuriles, N. Korea, Manchuria, Siberia.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 17, 1957. NOSAKA-SAP (hab. Ishiwata-yama).

8. **J. sargentii** (HENRY) TAKEDA ex KOIDZUMI in Bot. Mag. Tokyo **33**: 204. 1919.

NOSAKA in Journ. Geobot. **17**: 10. 1967.

Syn. *J. chinensis* L. var. *sargentii* HENRY in ELWES & HENRY, Tr. Gr. Brit. & Irel. **6**: 1432. 1912.—*Sabina chinensis* ANTOINE var. *sargentii* (HENRY) KUSAKA: HONDA, Nom. Pl. Jap. ed. em. 34. 1957.

Nom. Jap.: *Miyama-byakushin.*

Hab.: On rocky surface of the upper parts of Maëdake peaks. (Fig. 8-2).

Distrib.: Hokkaidô to Kyûshû, Isl. Yaku-shima, Saghalien, S. Kuriles, Korea.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

(II) ANGIOSPERMAE

CLASSIS DICOTYLEDONEAE

FAM. CHLORANTHACEAE

Chloranthus LINNAEUS

9. **C. japonicus** SIEBOLD in Nov. Act. Nat. Cur. **14**(2): 681. 1829. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—NOSAKA

in Journ. Geobot. **9**: 17. 1960.

Syn. *Tricercandra japonica* (SIEB.) NAKAI, Fl. Sylv. Korea. **18**: 14. 1930.—HONDA, Nom. Pl. Jap. ed. em. 36. 1957.

Nom. Jap.: *Hitori-shizuka.*

Hab.: Shady place in lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Korea, Manchuria, Amur.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; May, 1955. NOSAKA-SAP.

FAM. SALICACEAE

Populus LINNAEUS

10. P. maximowiczii HENRY in Gard. Chron. ser. 3, **53**: 198. 1913. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 36. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Nom. Jap.: *Doro-no-ki.*

Hab.: Along riverside in the lower part, relatively abundant (NISHIDA, 1919; KUSAKA, 1941; NOSAKA, 1960).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Korea, Manchuria, Ussuri, Amur, Kamchatka.

Salix LINNAEUS

11. S. hultenii FLODERUS var. **angustifolia** KIMURA in MIYABE & KUDO, Fl. Hokk. & Saghal. **4**: 415. 1934.
HONDA, Nom. Pl. Jap. ed. em. 37. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Syn. *S. caprea* (non L.) sensu KAWAKAMI in Bot. Mag. Tokyo **15**: 241. 1901.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Ezono-bakko-yanagi.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT.

12. S. reinii FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 459. 1875. HONDA, Nom. Pl. Jap. ed. em. 39. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Syn. *S. glabra* (non SCOPOLI) sensu FRANCHET et SAVATIER, Enum. Pl. Jap. **7**: 502. 1877.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Mine-yanagi.*

Hab.: Subalpine to alpine area, relatively common.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT.

13. **S. sachalinensis** FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 173. 1868.

HONDA, Nom. Pl. Jap. ed. em. 40. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Syn. *S. opaca* ANDERSSON ex SEEMEN, Salic. Jap. 51. 1903.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Onoë-yanagi.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô to Shikoku, Saghalien, Kuriles, Kamchatka, Amur, Ussuri.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; June, 1896. ISHIKAWA-SAPT.

14. **S. vulpina** ANDERSSON in Mem. Acad. Am. Arts Sci. n. ser. **6**: 452. 1859.

HONDA, Nom. Pl. Jap. ed. em. 40. 1957.

Nom. Jap.: *Kitsune-yanagi.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Honshû, Kuriles.

Specimens from Mt. Yûpari: June, 1971. YAMAGUCHI-SAP.

15. **S. yezoalpina** KOIDZUMI in Bot. Mag. Tokyo **30**: 332. 1916.

HONDA, Nom. Pl. Jap. ed. em. 41. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Syn. *S. cyclophylla* SEEMEN in Bot. Jahrb. **30**, Bibl. **67**: 41. 1901.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Maruba-yanagi.*

Hab.: Summit of Hondake peak and those of Maëdake peaks.

Distrib.: Endemic to Hokkaidô.

Specimens from Mt. Yûpari: Aug. 7-9, 1913. NISHIDA-SAPT; Aug., 1934. OHWI-SAPT; July 5, 1959. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

In the herbarium of Faculty of Science, Hokkaidô University (SAP), a noticeable sheet of specimen of an alpine willow from this mountain collected by Dr. C. KANDA is deposited. On the sheet, the following letters written by Dr. Arika KIMURA are found; "? *Salix yezoalpina* × *Salix reinii*".

FAM. JUGLANDACEAE

Juglans LINNAEUS

16. **J. ailanthifolia** CARRIÈRE in Rev. Hort. **1878**: 414, fig. 86. 1878. REHDER in Journ. Arnold Arb. **26**: 68–69. 1945.—HONDA, Nom. Pl. Jap. ed. em. 41. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
Syn. *J. sieboldiana* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 61. 1872
Nom. Jap.: *Oni-gurumi.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaido to Kyûshû.
Specimens from Mt. Yûpari: June, 1896. ISHIKAWA–SAPT.

FAM. BETULACEAE

Alnus GAERTNER

17. **A. crispa** PURSH subsp. **maximowiczii** (CALLIER) HULTÉN, Fl. Alask. & Yuk. **4**: 588. 1944.
HONDA, Nom. Pl. Jap. ed. em. 42. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
Syn. *A. maximowiczii* CALLIER apud SCHNEIDER, Handb. Laubholzk. **1**: 122, f. 66k & 67i. 1906.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.
Nom. Jap.: *Miyama-han-no-ki.*
Hab.: In subalpine to alpine area, very common.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Ussuri, Manchuria.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA–SAPT; July, 1930. KANDA–SAP; July 5, 1959. NOSAKA–SAP.

18. **A. hirsuta** TURCZANINOW in Bull. Soc. Nat. Mosc. **11**: 101. 1838. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—HONDA, Nom. Pl. Jap. ed. em. 42. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
Nom. Jap.: *Ke-yama-han-no-ki.*
Hab.: In the mixed forest, common.
Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, Manchuria, Ussuri, Amur, Siberia, Kamchatka.
Specimens from Mt. Yûpari: July 5, 1959. NOSAKA–SAP.
var. **sibirica** C. K. SCHNEIDER in SARGENT, Pl. Wilson. **2**: 498. 1916.
HONDA, Nom. Pl. Jap. ed. em. 42. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.
Nom. Jap.: *Yama-han-no-ki.*

Hab.: In the mixed forest (NOSAKA, 1960).

Distrib.: Central and Southwestern Hokkaidô, Honshû, Shikoku, Korea, Manchuria, Ussuri, Amur, Siberia.

Betula LINNAEUS

19. B. ermani CHAMISSO in Linnaea **6**: 537. 1831.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—HONDA, Nom. Pl. Jap. ed. em. 43. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Nom. Jap.: *Dake-kanba.*

Hab.: In subalpine to alpine area, very common, sometimes forms a pure stand.

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, Amur, Manchuria, E. Siberia to Kamchatka.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; July 28, 1957. NOSAKA-SAP.

20. B. maximowicziana REGEL in DE CANDOLLE, Prodr. **16**(2): 180. 1868.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—HONDA, Nom. Pl. Jap. ed. em. 43. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Nom. Jap.: *Udai-kanba.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

21. B. platyphylla SUKATCHEV var. **kamtschatica** (REGEL) HARA in Journ. Jap. Bot. **13**: 384. 1937.
HONDA, Nom. Pl. Jap. ed. em. 43. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Syn. *B. alba* L. subsp. *latifolia* var. *kamtschatica* REGEL, Bemerk. Gatt. Betula u. Alnus 13, t. 7, f. 16-20. 1865.
B. japonica (non THUNBERG) sensu SIEBOLD, Syn. Pl. Oecon. Jap. 25. 1830. nom. nud.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Ezo-no-shirakanba.*

Hab.: Sunny place of lower mountain area, often found in the early stage of the secondary forest (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Kamchatka.

Carpinus LINNAEUS

22. C. cordata BLUME in Ann. Mus. Bot. Lugd.-Bat. **1**: 309. 1850.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 44. 1957.—NOSAKA in Journ. Geobot. **9**: 17. 1960.

Nom. Jap.: *Sawashiba.*

Hab.: In the mixed forest of lower part, relatively common along the water course.

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, Ussuri, China.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT; July, 1896. ISHIKAWA–SAPT.

Corylus LINNAEUS

23. C. sieboldiana BLUME in Ann. Mus. Bot. Lugd.-Bat. **1**: 310. 1850. HONDA, Nom. Pl. Jap. ed. em. 44. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Tsuno-hashibami.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea.

Specimens from Mt. Yûpari: Aug., 1956. NOSAKA–SAP.

Ostrya SCOPOLI

24. O. japonica SARGENT in Gard. & For. **6**: 383, f. 58. 1893. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 44. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Asada.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Korea, C. China.

FAM. FAGACEAE

Quercus LINNAEUS

25. Q. mongolica FISCHER var. **grosseserrata** (BLUME) REHDER et WILSON in SARGENT, Pl. Wilson. **3**: 231. 1916.
HONDA, Nom. Pl. Jap. ed. em. 47. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Q. grosseserrata* BLUME in Ann. Mus. Bot. Lugd.-Bat. **1**: 306. 1850.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Mizu-nara.*

Hab.: In the mixed forest of lower part. This is one of the dominant broad-leaved trees.

Distrib.: Hokkaidô to Kyûshû,, Saghalien, Kuriles.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT; July,

1896. ISHIKAWA-SAPT; Aug. 19, 1958. NOSAKA-SAP.

FAM. ULMACEAE

Ulmus LINNAEUS

26. U. davidiana PLANCHON var. **japonica** (REHDER) NAKAI, Fl. Sylv. Korea. **19**: 26, t. 9. 1932.

HONDA, Nom. Pl. Jap. ed. em. 48. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *U. campestris* L. var. *japonia* REHDER in BAILEY, Cyclop. 4. 1882.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Haru-nire.*

Hab.: In the mixed forest, relatively common (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Manchuria, Amur, Ussuri, China.

27. U. laciniata (TRAUTV.) MAYR, Fremdl. Wald- u. Parkb. 523, f. 243. 1906.

HONDA, Nom. Pl. Jap. ed. em. 48. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *U. montana* var. *laciniata* TRAUTVETTER in MAXIMOWICZ, Prim. Fl. Amur. 246. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Ohyô.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, Kuriles, Korea, Manchuria, Ussuri, Amur, N. China, E. Siberia.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; July, 1896. ISHIKAWA-SAPT; July 16, 1962. NOSAKA-SAP.

FAM. MORACEAE

Morus LINNAEUS

28. M. bombycis KOIDZUMI in Bot. Mag. Tokyo **29**: 313. 1915.

HONDA, Nom. Pl. Jap. ed. em. 50. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *M. acidosa* (non SCHNEIDER) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Yama-guwa.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Korea.

Specimens from Mt. Yûpari: July, 1896. ISHIKAWA-SAPT.

FAM. URTICACEAE

Boehmeria JACQUIN

29. B. tricuspis MAKINO in Bot. Mag. Tokyo **26**: 387. 1912.
HONDA, Nom. Pl. Jap. ed. em. 53. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Akaso.*

Hab.: In the meadow of low land.

Distrib.: Hokkaidô to Kyûshû, N. China.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT; Aug. 19, 1958. NOSAKA–SAP.

This species was reported from Kanayama Village by NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Laportea GAUDICH

30. L. bulbifera (SIEBOLD et ZUCCARINI) WEDDELL, Monogr. Urtic. 139. 1856.
HONDA, Nom. Pl. Jap. ed. em. 53. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Urtica bulbifera* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(3): 214. 1846.

Nom. Jap.: *Mukago-irakusa.*

Hab.: Relatively shady meadow of lower part.

Distrib.: Hokkaidô to Kyûshû, China.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT; Aug. 19, 1958. NOSAKA–SAP.

Pilea LINDLEY

31. P. mongolica WEDDELL in DE CANDOLLE, Prodr, **16**(1): 135. 1869.
HONDA, Nom. Pl. Jap. ed. em. 54. 1957.

Nom. Jap.: *Ao-mizu.*

Hab.: Shady place of lower mountain area.

Distrib.: Hokkaidô, Honshû, Kyûshû, Manchuria, E. Siberia, China.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT.

Urtica LINNAEUS

32. U. platyphylla WEDDELL, Monogr. Urtic. 86. 1856.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—HONDA, Nom. Pl. Jap. ed. em. 54. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Ezo-irakusa.*

Hab.: Meadow of lower mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

FAM. LORANTHACEAE

Viscum LINNAEUS

33. **V. album** LINNAEUS var. **coloratum** OHWI in Bull. Nat. Sci. Mus. Tokyo **33**: 70. 1953; Fl. Jap. ed. 1, 449. 1953; Fl. Jap. ed. 2, 523. 1965.
HONDA, Nom. Pl. Jap. ed. em. 55. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.
Nom. Jap.: *Yadorigi.*
Hab.: On the branches of broad-leaved trees such as *Acer*, *Betula*, *Quercus* etc.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, Amur, Ussuri, China, Formosa.
Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

FAM. ARISTOLOCHIACEAE

Asiasarum F. MAEKAWA

34. **A. heterotropoides** (FR. SCHMIDT) F. MAEKAWA in NAKAI, Fl. Sylv. Korea. **21**: 19. 1936.
HONDA, Nom. Pl. Jap. ed. em. 56. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.
Syn. *Asarum heterotropoides* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 171. 1868. *Asarum sieboldii* (non MIQUEL) sensu KOIDZUMI, Pl. Sachal. Nakahara. 52. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.
Nom. Jap.: *Oku-ezo-saishin.*
Hab.: Relatively shady place in lower mountain area.
Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; Late in May, 1958. NOSAKA-SAP.

FAM. POLYGONACEAE

Antenoron RAFINESQUE

35. **A. filiforme** (THUNBERG) ROBERTY et VAUTIER in Boissiera **10**: 35. 1964.
HARA in Journ. Jap. Bot. **40**: 192. 1965.
Syn. *Polygonum filiforme* THUNBERG, Fl. Jap. 163. 1784.—*P. virginianum* L. var. *filiforme* (THUNB.) NAKAI in Bot. Mag. Tokyo **23**: 380. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—*Tovara filiformis* (THUNB.)

NAKAI in Rigakkai **24**(4): 8. 1926.—HONDA, Nom. Pl. Jap. ed. em. 64. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Mizuhiki.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., Korea, Manchuria, China, Formosa, Himalaya.

Bistorta HILL

39. B. major S. F. GRAY var. **ovata** (NAKAI) HARA in Journ. Jap. Bot. **13**: 382. 1937.

HONDA, Nom. Pl. Jap. ed. em. 58. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *B. vulgaris* HILL var. *ovata* NAKAI in Rigakkai **24**: 295. 1926.
'*Polygonum bistorta* L. var. *vulgaris* MEISN.': NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Ezo-ibuki-torano-o.*

Hab.: In alpine meadows, abundant in the peat bog.

Distrib.: Hokkaidô, Honshû.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; Aug., 1916. KOIZUMI–TI; July 28, 1957. NOSAKA–SAP.

37. B. vivipara (LINNAEUS) S. F. GRAY, Nat. Arr. Brit. Pl. **2**: 268. 1821.

HONDA, Nom. Pl. Jap. ed. em. 59. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum viviparum* LINNAEUS, Sp. Pl. ed. 1, 360. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Mukago-torano-o.*

Hab.: Common in alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Siberia, N. America, Korea, Manchuria, China, Mongol, Himalaya, Caucasus, Europe.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; July 28, 1957. NOSAKA–SAP.

NISHIDA reported the occurrence of *Polygonum hayachinense* MAKINO (*Bistorta hayachinensis* (MAKINO) H. GROSS) in Trans. Sapporo Nat. Hist. Soc. **7**: 149 (1919) after H. KOIDZUMI, however, no specimen of the plant from this mountain has been preserved. The author has taken special precautions to find the plant in the subalpine to alpine area of this mountain, but no plant of this species has been met with.

Chylocalyx HASSKARL

38. C. perfoliatus (LINNAEUS) HASSKARL in Flora **25** (2), Beibl. 20. 1842. HONDA, Nom. Pl. Jap. ed. em. 59. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum perfoliatum* LINNAEUS, Sp. Pl. ed. 2, 521. 1762.

Nom. Jap.: *Ishimikawa.*

Hab.: Common along roadside, relatively humid place (NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria, Amur, China, Indo-China, the East-Indies, Phillippines.

Oxyria HILL

39. O. digyna (LINNAEUS) HILL, Hort. Kew. 158. 1769.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.—HONDA, Nom. Pl. Jap. ed. em. 59. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Rumex digynus* LINNAEUS, Sp. Pl. ed. 1, 337. 1753.

Nom. Jap.: *Jin'yô-suiba.*

Hab.: Gama-iwa and Hondake peak (Fig. 8–2).

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Kamchatka, Siberia, Ayan, Korea, Himalaya, Caucasus, Asia Minor, Europe, N. America, Greenland.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA–SAP.

Persicaria HILL

40. P. makinoi NAKAI in Cat. Sem. Hort. Tokyo 24. 1920.
HONDA, Nom. Pl. Jap. ed. em. 61. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum viscoferum* MAKINO var. *robustum* MAKINO in Bot. Mag. Tokyo **17**: 116. 1903.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Ô-nebari-tade.*

Hab.: Meadows of lower part, relatively sunny place (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Korea.

41. P. thunbergii (SIEBOLD et ZUCCARINI) H. GROSS in Bot. Jahrb. **44**: 275. 1913.
HONDA, Nom. Pl. Jap. ed. em. 62. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum thunbergii* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4** (3): 208. 1846.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Mizo-soba.*

Hab.: Common along roadside and along drain (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, Kuriles, Kamchatka, Korea, Manchuria, China, Formosa.

42. P. yokusaiana (MAKINO) NAKAI in Rigakkai **24**(4): 13. 1926.

HONDA, Nom. Pl. Jap. ed. em. 62. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum yokusaianum* MAKINO in Bot. Mag. Tokyo **28**: 116. 1914. *pro parte.*

Nom. Jap.: *Hana-tade.*

Hab.: Relatively common in the meadows of rather sunny place (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Korea, Formosa.

Pleuropteropyrum H. GROSS

43. P. ajanense (REGEL et TILING) NAKAI, Rep. Veg. Daisets. Mts. 63. 1930.

HONDA, Nom. Pl. Jap. ed. em. 62. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum polymorphum* LEDEB. var. *ajanense* REGEL et TILING, Fl. Ajan. 116. 1858.—*Polyg. polymorphum* LEDEB. var. *ajanense* REGEL et TILING form. *glabrescens* TAKEDA in Bot. Mag. Tokyo **24**: 175. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Chishima-hime-iwatade.*

Hab.: In the serpentine-pebble-fields of alpine area (Fig. 8–2).

Distrib.: Hokkaidô, S. Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 8, 1913. YANAGISAWA–SAPT; Aug. 7, 1931. S. ITO–SAPT; July 28, 1957. NOSAKA–SAP; July, 1960. T. LEU–SAPT.

Polygonum LINNAEUS

44. P. aviculare LINNAEUS, Sp. Pl. ed. 1, 362. 1753.

HONDA, Nom. Pl. Jap. ed. em. 63. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Michi-yanagi.*

Hab.: In waste place and arable land, very common (NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Temperate and subfrigid zones of northern hemisphere.

Reynoutria HOUTTUYN

45. R. sachalinensis (FR. SCHMIDT) NAKAI, Rep. Veg. Dagelet Isl. 18. 1919.

HONDA, Nom. Pl. Jap. ed. em. 63. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *Polygonum sachalinense* FR. SCHMIDT in MAXIMOWICZ, Prim. Fl. Amur. 233. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Ô-itadori.*

Hab.: Sunny place in low land (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea.

Rumex LINNAEUS

46. R. arifolius ALLIONI in Mél. Philos. Math. Soc. Roy. Turin **5**: 94. 1774.

HONDA, Nom. Pl. Jap. ed. em. 63. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Syn. *R. montanus* DESFONTAINES apud MEISN. in DC., Prodr. **14**: 65. 1857.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Takane-suiba.*

Hab.: In alpine meadows, sometimes found in subalpine area (Fig. 8–2).

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Siberia, Europe.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; Aug. 5, 1959. NOSAKA-SAP.

47. R. obtusifolius LINNAEUS subsp. **agrestis** DANSER in Nederl. Kruidk. Arch. **1925**: 424. 1925.

HONDA, Nom. Pl. Jap. ed. em. 64. 1957.—NOSAKA in Journ. Geobot. **9**: 42. 1960.

Nom. Jap.: *Ezo-gishigishi.*

Hab.: In waste land of lower area, common.

Distrib.: Widely distributed in the Asiatic Continent, N. America, S. America, Africa.

Specimens from Mt. Yûpari: Aug. 19, 1957. NOSAKA-SAP.

FAM. ALSINACEAE

Arenaria LINNAEUS

48. A. katoana MAKINO in Bot. Mag. Tokyo **19**: 88. 1905.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 67. 1957.—TOYOKUNI in Hokuriku Journ. Bot. **6**: 64. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Katô-hakobe.*

Hab.: Strictly in the serpentine-pebble-field, mainly in the unstable slopes (Fig. 8–3).

Distrib.: Hokkaidô (alpine regions of Mt. Yûpari, Hidaka Mts.), N. & C. Honshû (Mt. Hayachine, Mt. Shibutsu, Mt. Tanigawa).

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 3–5, 1921. TAKEDA & TATEWAKI–SAPT; Aug. 7, 1931. S. ITO–SAPT (this is referable to var. *lanceolata*); July 28, 1957. NOSAKA–SAP.

Remarks: This species was described by MAKINO in 1905 as a species endemic to Mt. Hayachine, prov. Rikuchû, northern Honshû. Later, its occurrence had been reported by the followers from Mt. Yûpari, Mt. Shibutsu and Mt. Tanigawa (the latter two are located in prov. Kôzuke, central Honshû). Afterwards, through the investigations of the flora of the central and northern Hidaka Ranges made by TATEWAKI and his coworkers, it was found that this species also occurred on Mt. Tottabetsu, northern Hidakas (TATEWAKI & HOSHINO, 1934). On the other hand, TATEWAKI (1928) re-

TABLE 6. Ratios of the width to the length in *Arenaria katoana*. (Number of examined leaves).

Localites / Ratios of the width to the length of leaf	Mt. Hayachine prov. Rikuchû	Mt. Tottabetsu n. Hidaka	Mt. Yûpari prov. Ishikari	Mt. Apoi s. Hidaka
0.15–0.19	—	—	1	26
0.20–0.24	—	—	13	33
0.25–0.29	—	2	13	7
0.30–0.34	—	13	12	—
0.35–0.39	—	14	24	—
0.40–0.44	—	17	12	—
0.45–0.49	10	7	10	—
0.50–0.54	12	2	3	—
0.55–0.59	10	1	—	—
0.60–0.65	4	—	—	—
Average ratio	0.53	0.38	0.34	0.20

ported a narrow-leaved plant of this species from Mt. Apoi, prov. Hidaka[13].

Although the narrow-leaved variety of this plant, var. *lanceolata* TATEWAKI, was recognized as being endemic to Mt. Apoi, HARA (1934) reported that on Mt. Yûpari, an intermediate form between the type and var. *lanceolata* occurred (HARA, 1934). *Arenaria katoana* is, therefore, fairly variable in its leaf shape.

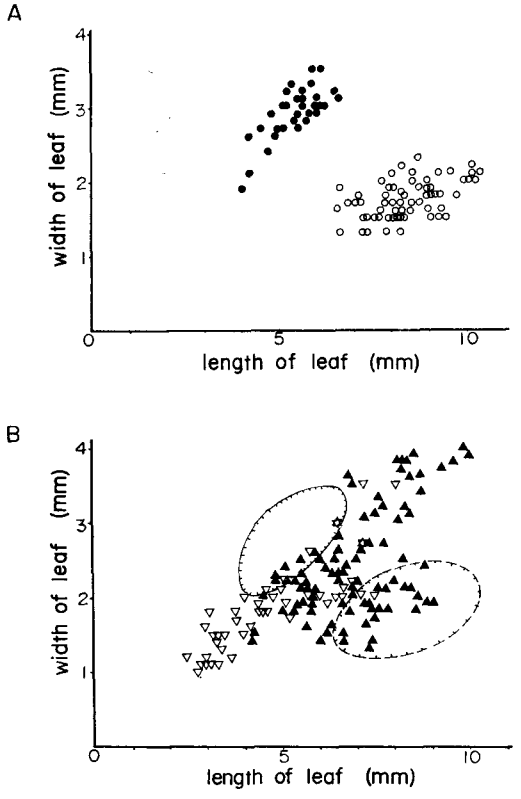

Fig. 9. Correlation between the width and the length of leaf in *Arenaria katoana*.

A ● : Type variety (var. *katoana*, Mt. Hayachine)
○ : Var. *lanceolata* (Mt. Apoi)
B ◯ : Type variety (var. *katoana*, Mt. Hayachine)
◌ : Var. *lanceolata* (Mt. Apoi)
▲ : Intermediate between the type and var. *lanceolata* (Mt. Yûpari)
▽ : Intermediate between the type and var. *lanceolata* (Mt. Tottabetsu)

13) *Arenaria katoana* MAKINO var. *lanceolata* TATEWAKI, Veg. Apoi 89 & 129. 1928. Syn.—*Arenaria tatewakii* NAKAI, Veg. Apoi 35 & 48. 1930.

Table 6 shows the ratios of the width to the length of leaf in *Arenaria katoana* collected from different four mountains.

The ratio of the width to the length of leaf ranges from 0.47 to 0.62 (average 0.53) as to the plants of Mt. Hayachine (the type variety). On the other hand, as to those from Mt. Apoi (var. *lanceolata*), the ratio ranges from 0.16 to 0.26 (average 0.20). Fig. 9–A shows the variation of leaf shape based on the correlations between the width to the length of leaf in *Arenaria katoana* collected from Mt. Hayachine and Mt. Apoi.

These data show that the demarcation between the type and var. *lanceolata* in *Arenaria katoana* is quite clear. On the other hand, as to the plants of Mt. Yûpari, the ratio of the width to the length of leaf ranges from 0.18 to 0.51 (average 0.34) and partly overlapped with that of var. *lanceolata* of Mt. Apoi. As to the plants of Mt. Tottabetsu, the range of the ratio is also intermediate between that of the type and that of var. *lanceolata*, rather overlapped with that of the type variety of Mt. Hayachine.

Fig. 9–B shows the variation of leaf shape based on the correlations between the width and the length of leaf in *Arenaria katoana* from Mt. Yûpari and Mt. Tottabetsu.

Though the plants of Mt. Yûpari and Mt. Tottabetsu are intermediate between the type variety and var. *lanceolata*, some of the plants of Mt. Tottabetsu are overlapped with those of Mt. Hayachine and have smaller leaves than those of Mt. Hayachine and Mt. Apoi. The variation of leaf shape in the plants of Mt. Yûpari is continuous from the form of the type variety to the form of var. *lanceolata*.

By the above findings, *Arenaria katoana* of Mt. Yûpari and Mt. Tottabetsu is the intermediate form between the type and var. *lanceolata*, and it is very difficult to set a clear demarcation between the type and var. *lanceolata* in the plants of Mt. Yûpari and Mt. Tottabetsu.

Dianthus LINNAEUS

49. D. superbus LINNAEUS var. **speciosus** REICHENBACH, Fl. Germ. Excurs. 808. 1832.

HONDA, Nom. Pl. Jap. ed. em. 68. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *D. superbus* L. var. *monticola* MAKINO in Bot. Mag. Tokyo **17**: 33. 1903.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Takane-nadeshiko.*

Hab.: Alpine area, on exposed rocky cliffs such as Tsurigane-iwa, Gama-iwa etc. (Fig. 8–3).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Korea, Manchuria,

Siberia, Europe.

Specimens from Mt. Yûpari: Aug. 19, 1954; Aug. 18, 1957; Aug. 5, 1959. NOSAKA-SAP.

Melandrium FRIES

50. M. firmum (SIEBOLD et ZUCCARINI) ROHRBACH, Monogr. Silene. 232. 1868.

HONDA, Nom. Pl. Jap. ed. em. 68. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *Silene firmum* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Akad. Wiss. München **4**(2): 166. 1845.

Silene aprica (non TURCZ.) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Fushiguro.*

Hab.: Sunny meadow of lower part (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô to Loochoo Isls., Korea, China, E. Siberia.

Minuartia LINNAEUS

51. M. arctica (FENZL) GRAEBNER in ASCHERSON et GRAEBNER, Synops. Mitt. Eur. Fl. **5**(1): 772. 1918, in nota.

Syn. *Alsine arctica* FENZL, Vers. Alsine.. Als. 18. 1833.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Minuartia arctica (FENZL) ASCHERS. et GRAEBN. var. *minor* NAKAI in Bot. Mag. Tokyo **43**: 452. 1929.—HONDA, Nom. Pl. Jap. ed. em. 69. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Yezo-takane-tsumekusa.*

Hab.: Alpine meadow (Fig. 8-3).

Distrib.: Alpine region in Hokkaidô, Subfrigid zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT; July 28, 1957. NOSAKA-SAP.

52. M. verna (LINNAEUS) HIERN var. **japonica** HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(2): 44. 1952.

HONDA, Nom. Pl. Jap. ed. em. 69. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *M. verna* var. *borealis* (non FENZL) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Hosoba-tsumekusa.*

Hab.: Nearly restricted in the serpentine-pebble-fields of alpine area (Fig. 8-3).

Distrib.: Alpine regions in Hokkaidô and N. & C. Honhû, mainly in the alpine frigorideserta on serpentine soil.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 19, 1954. NOSAKA–SAP.

Moehringia LINNAEUS

53. M. lateriflora (LINNAEUS) FENZL, Vers. Alsine. 18 & 38. 1833. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 69. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *Arenaria lateriflora* LINNAEUS, Sp. Pl. ed. 1, 423. 1753.

Nom. Jap.: *Ô-yama-fusuma.*

Hab.: Circumference of Gama-iwa.

Distrib.: Hokkaidô to Kyûshû, Temperate zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA–SAP.

Stellaria LINNAEUS

54. S. alsine GRIMM in Nov. Act. Leopold. **3**, app.: 313. 1767. HONDA, Nom. Pl. Jap. ed. em. 70. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *S. uliginosa* MURRAY, Prodr. Stirp. Goett. 55. 1770.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Nomi-no-fusuma.*

Hab.: Relatively common in waste place and in arable land.

Distrib.: Hokkaidô to Kyûshû, Korea, China, Temperate zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT.

55. S. fenzlii REGEL in Bull. Soc. Nat. Moscou **35**(1): 264 & 280. 1862. HONDA, Nom. Pl. Jap. ed. em. 70. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *S. yezoensis* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét **31**: 15. 1886.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 149. 1919.

Nom. Jap.: *Shiraoi-hakobe.*

Hab.: Mainly in the undergrowth of the *Abies-Picea-Betula* forest, sometimes in the sparse herbaceous community of subalpine area (Fig. 8–4).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Amur, Kamchatka.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; July 28, 1957. NOSAKA–SAP.

56. S. nipponica OHWI var. **yezoensis** HARA in Bot. Mag. Tokyo **43**: 905. 1934.
HONDA, Nom. Pl. Jap. ed. em. 70. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.
Nom. Jap.: *Ô-iwa-tsumekusa.*
Hab.: In alpine meadow or on rocky outcrops (Fig. 8–4).
Distrib.: Alpine region in Hokkaidô (Yûpari & Hidaka Mts.).
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA–SAP.

FAM. CERCIDIPHYLLACEAE

Cercidiphyllum SIEBOLD et ZUCCARINI

57. C. japonicum SIEBOLD et ZUCCARINI apud HOFFMANN et SCHULTES, Nom. Ind. Pl. Jap. et Chin. 131. 1864.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 72. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.
Nom. Jap.: *Katsura.*
Hab.: In the mixed forest of lower part, one of the dominant broad-leaved trees of the mixed forest.
Distrib.: Hokkaidô to Kyûshû.
Specimens from Mt. Yûpari: Aug. 13, 1893. TOKUBUCHI–SAPT; July, 1958. NOSAKA–SAP.

FAM. BERBERIDACEAE

Berberis LINNAEUS

58. B. amurensis RUPRECHT var. **japonica** (REGEL) REHDER in Gard. & For. **3**: 249. 1890; Man. Cult. Tr. & Shr. 249. 1927.
HONDA, Nom. Pl. Jap. ed. em. 85. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.
Syn. *B. vulgaris* var. *japonica* REGEL in Acta Hort. Petrop. **2**: 415. 1873.
B. vulgaris (non LINNAEUS) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.
Nom. Jap.: *Hiroha-no-hebinoborazu.*
Hab.: Serpentine-pebble-fields both alpine and lower mountain areas (Fig. 8–4).
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, Amur.
Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA–SAP.

Caulophyllum MICHAUX

59. C. robustum MAXIMOWICZ, Prim. Fl. Amur. 33. 1859.

HONDA, Nom. Pl. Jap. ed. em. 85. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *C. thalictroides* (non MICHAUX) ITO in Journ. Linn. Soc. **22**: 428. 1887.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Nom. Jap.: *Ruiyô-botan.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria, Ussuri and Amur.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT.

Diphylleia MICHAUX

60. D. grayi FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 109. 1868. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 84. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Sankayô.*

Hab.: Rather shady place in the undergrowth of the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 28, 1957. NOSAKA-SAP.

FAM. RANUNCULACEAE

Aconitum LINNAEUS

61. A. corymbiferum NAKAI in Bot. Mag. Tokyo **31**: 25. 1917; in Bull. Nat. Sci. Mus. Tokyo **32**: 21. 1953.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 79. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Usuba-torikabuto.*

Hab.: Subalpine area.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug., 1916. KOIDZUMI-TI; Aug. 6, 1921. TAKEDA & TATEWAKI-SAPT.

62. A. luciduscullum NAKAI in Bot. Mag. Tokyo **31**: 26. 1917; in Bull. Nat. Sci. Mus. Tokyo **32**: 29. 1953.
HONDA, Nom. Pl. Jap. ed. em. 80. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Teriha-bushi.*

Hab.: Mountain area.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

63. A. yesoense NAKAI in Bot. Mag. Tokyo **22**: 136. 1908; in Bull. Nat. Sci. Mus. Tokyo **32**: 30. 1953.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 81. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Ezo-torikabuto.*

Hab.: Low land meadow and mountain area, common.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 18, 1921. TATEWAKI-SAPT.

64. A. yuparense TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 232. 1915. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 81. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Ezo-hosoba-torikabuto.*

Hab.: Mainly occurs in the serpentine-pebble-fields of subalpine area, sometimes occurs either in alpine meadow or in mountain area (Fig. 8-4).

Distrib.: Alpine region in Hokkaidô: Yûpari Mts. (Mt. Yûpari, Mt. Kirigishi, Mt. Furano-nishi-dake etc.), Hidaka Mts. (Mt. Tottobetsu, Mt. Porojiri etc.).

Specimens from Mt. Yûpari: Aug. 7-9, 1913. NISHIDA-SAPT; Aug. 23, 1928. ISHIDA-SAPT; Aug. 18, 1956. NOSAKA-SAP.

Actaea LINNAEUS

65. A. erythrocarpa FISCHER in FISCHER et MEYER, Ind. Sem. Hort. Petrop. **1**: 20. 1835.
HONDA, Nom. Pl. Jap. ed. em. 82. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *A. spicata* L. var. *nigra* (non WILLD.) sensu NISHDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Akami-no-ruiyôshôma.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Korea, Manchuria.

Specimens from Mt. Yûpari: Aug. 15, 1893. TOKUBUCHI-SAPT; Aug. 19, 1958. NOSAKA-SAP.

Adonis LINNAEUS

66. A. amurensis REGEL et RADDE in REGEL, Pl. Radd. **1**: 35-36. 1861.

HONDA, Nom. Pl. Jap. ed. em. 72. 1957.—NOSAKA in Journ. Geobot. **9**: 1960.

Nom. Jap.: *Fukujusô.*

Hab.: In the *Sasa* thicket or meadows of low land and lower mountain area.

Distrib.: Hokkaidô, Honsnû, Korea, Manchuria, E. Siberia.

Specimens from Mt. Yûpari: May, 1956. NOSAKA-SAP.

Anemone LINNAEUS

67. A. debilis FISCHER apud TURCZANINOW in Bull. Soc. Nat. Mosc. **27** (4): 274. 1854.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 72. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Hime-ichige.*

Hab.: Lower mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Manchuria, E. Siberia.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; June, 1956. NOSAKA-SAP.

68. A. flaccida FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 103. 1868. HONDA, Nom. Pl. Jap. ed. em. 72. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Nirinsô.*

Hab.: Relatively swampy place of lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Amur, N. China.

Specimens from Mt. Yûpari: June, 1956. NOSAKA-SAP.

69. A. narcissiflora LINNAEUS, Sp. Pl. ed. 1, 542. 1753, ut *narcissifolia.* HONDA, Nom. Pl. Jap. ed. em. 73. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *A. narcissiflora* L. var. *villosissima* DC., Prodr. **1**: 22. 1824.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Hakusan-ichige.*

Hab.: In the swampy meadow of alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Siberia, Himalaya, N. America, Europe.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July, 1930. KANDA-SAP; July 28, 1957. NOSAKA-SAP.

70. **A. yezoensis** KOIDZUMI in Bot. Mag. Tokyo **31**: 138. 1917.
HONDA, Nom. Pl. Jap. ed. em. 73. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *A. amurensis* (non KOMAROV) sensu MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **5**: 146. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Ezo-ichige.*

Hab.: In the undergrowth of subalpine forest, sometimes in alpine meadow.

Distrib.: Hokkaidô, Saghalien.

Specimens from Mt. Yûpari: July 31, 1915. YANAGISAWA-SAPT; July 16, 1958. NOSAKA-SAP.

Aquilegia LINNAEUS

71. **A. flabellata** SIEBOLD et ZUCCARINI var. **pumila** (KUDO) KUDO in Rep. Exp. For. Kyûshû Imp. Univ. **1**: 65. 1931.
HONDA, Nom. Pl. Jap. ed. em. 82. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *A. flabellata* SIEB. et ZUCC. form. *pumila* KUDO in Rep. Veg. N. Saghal. 129. 1924.

A. flabellata (non SIEB. et ZUCC.) sensu FR. SCHMIDT in Reis. Amurl. u. Ins. Sachal. 106. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

A. japonica NAKAI et HARA ex HARA in Bot. Mag. Tokyo **49**: 7-9. 1935.

Nom. Jap.: *Miyama-odamaki.*

Hab.: Alpine area, mainly on rocky outcrops.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, N. Korea.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT, July 28, 1957. NOSAKA-SAP.

Caltha LINNAEUS

72. **C. palustris** LINNAEUS var. **barthei** HANCE in Ann. Sci. Nat. ser. 5, **5**: 205. 1866.
HONDA, Nom. Pl. Jap. ed. em. 82. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *C. palustris* L., Sp. Pl. ed. 1, 558. 1753, *pro parte.*—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Ezo-ryûkinka.*

Hab.: Swampy place from low land up to alpine area.

Distrib.: Hokkaidô, Saghalien, Kuriles.

Specimens from Mt. Yûpari: Aug. 13, 1893. TOKUBUCHI-SAPT; Aug.

7–9, 1913. NISHIDA-SAPT; July, 1930. KANDA-SAP; July 28, 1957. NOSAKA-SAP.

Clematis LINNAEUS

73. C. ochotensis POIRET, Encycl. Suppl. **2**: 298. 1811.
HONDA, Nom. Pl. Jap. ed. em. 74. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *C. alpina* (non MILLER) HUTH in Bull. Herb. Boiss. **5**: 1065. 1897, *pro parte*.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Miyama-hanshôzuru.*

Hab.: In the mixed and the needle-leaved forests of mountain and subalpine areas.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, E. Siberia, Kamchatka.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; July, 1930. KANDA-SAP; Aug. 19, 1954 & July 27, 1958. NOSAKA-SAP.

Coptis SALISBURY

74. C. trifolia (LINNAEUS) SALISBURY in Trans. Linn. Soc. **8**: 305. 1807. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 83. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *Helleborus trifolius* LINNAEUS, Sp. Pl. ed. 1, 784. 1753.

Nom. Jap.: *Mitsuba-ôren.*

Hab.: In the undergrowth of the *Abies-Picea-Betula* forest, sometimes in alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû, Subfrigid zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 10, 1912. YANAGISAWA-SAPT; Aug. 4, 1921. TATEWAKI-SAPT; July 28, 1957 & July 5, 1959. NOSAKA-SAP.

Glaucidium SIEBOLD et ZUCCARINI

75. G. palmatum SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(2): 184. 1845.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 85. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Nom. Jap.: *Shirane-aoi.*

Hab.: Swampy or relatively shady place from low land to subalpine area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; July, 1930. AKIYAMA-SAP; Aug. 8, 1957 & July 5, 1959. NOSAKA-SAP.

Lycoctonum FOURRIER

76. L. gigas (LÉV. et VAN.) NAKAI var. **tatewakii** (MIYABE) NAKAI in Bull. Nat. Sci. Mus. Tokyo **32**: 16. 1953.

HONDA, Nom. Pl. Jap. ed. em. 84. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *Aconitum tatewakii* MIYABE in Trans. Sapporo Nat. Hist. Soc. **14**: 71. 1935.—*A. gigas* LÉV. et VAN. var. *tatewakii* (MIYABE) TOYOKUNI in Hokuriku Journ. Bot. **5**: 82. 1956. in nota.

A. umbrosum (non KOMAROV) sensu NAKAI in Bot. Mag. Tokyo **30**: 223. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Nom. Jap.: *Ezo-reijinsô.*

Hab.: Subalpine area. (Fig. 8-4).

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; Aug. 8, 1912. YANAGISAWA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT; Aug. 18, 1955. NOSAKA-SAP.

Ranunculus LINNAEUS

77. R. acris LINNAEUS var. **nipponicus** HARA in Journ. Jap. Bot. **13**: 777. 1937.

form. **nipponicus.**

HONDA, Nom. Pl. Jap. ed. em. 76. 1957.—NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *R. acer* L. var. *steveni* (non REGEL) sensu MAKINO in Bot. Mag. Tokyo **13**: 321. 1899.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Miyama-kinpôge.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT.

form. **yuparensis** (MIYABE) TOYOKUNI in Hokuriku Journ. Bot. **5**: 82. 1956.

NOSAKA in Journ. Geobot. **9**: 43. 1960.

Syn. *R. yuparensis* MIYABE in sched. Herb. SAPT ex TOYOKUNI in Journ. Jap. Bot. **28**: 27-28. 1953, cum var. *glabrescens* TOYOKUNI.—HONDA, Nom. Pl. Jap. ed. em. 77. 1957.

R. subcorymbosus (non KOMAROV) sensu MIYABE et TATEWAKI in Trans.

Sapporo Nat. Hist. Soc. **14**: 74. 1935.

Nom. Jap.: *Ko-miyama-kinpôge.*

Hab.: In the serpentine-pebble-fields and the serpentine landslips of alpine area.

Distrib.: Alpine region in Hokkaidô: Mt. Yûpari, Mt. Ashibetsu, Mt. Yôtei etc.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA-SAPT; July 20, 1952. TOYOKUNI-SAPT; July 28, 1957. NOSAKA-SAP.

78. R. repens LINNAEUS var. **major** NAKAI in Bot. Mag. Tokyo **42**: 23. 1928.

HONDA, Nom. Pl. Jap. ed. em. 77. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *R. repens* LINNAEUS, Sp. Pl. ed. 1, 554. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Hai-kinpôge.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Manchuria, Kamchatka.

Thalictrum LINNAEUS

79. T. aquilegifolium LINNAEUS, Sp. Pl. ed. 1, 547. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 77. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Karamatsusô.*

Hab.: Meadows of lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, Temperate to subfrigid zone of Eurasia.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 27, 1957. NOSAKA-SAP.

80. T. foetidum LINNAEUS var. **glabrescens** TAKEDA apud TATEWAKI, Veg. Apoi 84. 1928.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 78. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *T. yesoense* NAKAI in Bot. Mag. Tokyo **42**: 6. 1928.

Nom. Jap.: *Chabo-karamatsu.*

Hab.: Alpine area, mainly on moist rocky cliffs.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

81. T. thunbergii DE CANDOLLE, Syst. Nat. **1**: 183. 1818.
NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *T. minus* LINNAEUS var. *elatum* (non LECOYER) sensu MIYABE & var. *nanum* (non LECOY.) sensu MIYABE in Mem. Boston Soc. Nat. Hist. **4**: 214. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.
T. minus LINNAEUS, Sp. Pl. ed. 1, 546. 1755.—HONDA, Nom. Pl. Jap. ed. em. 78. 1957.

Nom. Jap.: *Aki-karamatsu.*

Hab.: Relatively common in meadows or undergrowth of the mixed forest.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Manchuria, E. Siberia, China.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

Trautvetteria FISCHER et MEYER

82. T. japonica SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Akad. Wiss. München **4**(2): 184. 1845.
HONDA, Nom. Pl. Jap. ed. em. 78. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *T. palmata* (non FISCH. et MEY.) MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 4. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Momiji-karamatsu.*

Hab.: Mainly occurs on moist rocky meadows in alpine area (Fig. 8-4).

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; July, 1930. AKIYAMA-SAP.

Trollius LINNAEUS

83. T. riederianus FISCHER et MEYER var. **japonicus** (MIQUEL) OHWI in Bull. Nat. Sci. Mus. Tokyo **33**: 72. 1953; Fl. Jap. ed. 1, 540. 1953; Fl. Jap. ed. 2, 636. 1965.
HONDA, Nom. Pl. Jap. ed. em. 84. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *T. japonicus* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 6. 1867.
T. patulus SALISBURY var. *sibiricus* (non REGEL et TILING) HUTH in Bull. Herb. Boiss. **5**: 1084. 1897.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Shinano-kinbai.*

Hab.: Rather swampy meadow of alpine area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; Aug. 8,

1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July, 1930. AKIYAMA-SAP; July 28, 1957. NOSAKA-SAP.

FAM. MAGNOLIACEAE

Magnolia LINNAEUS

84. M. kobus DE CANDOLLE var. **borealis** SARGENT, Tr. & Shr. **2**: 57. 1908.

HONDA, Nom. Pl. Jap. ed. em. 87. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *M. kobus* DC., Syst. Nat. **1**: 456. 1818, *pro parte*.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.

Nom. Jap.: *Kita-kobushi.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, N. & C. Honshû (Japan Sea-side district).

Specimens from Mt. Yûpari: July, 1896. ISHIKAWA-SAPT; June 28, 1959. NOSAKA-SAP.

85. M. obovata THUNBERG in Trans. Linn. Soc. **2**: 336. 1794.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 148. 1919.—HONDA, Nom. Pl. Jap. ed. em. 87. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Hô-no-ki.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô to Kyûshû, China.

Specimens from Mt. Yûpari: July, 1958. NOSAKA-SAP.

Schisandra MICHELI

86. S. chinensis (TURCZANINOW) BAILLON, Hist. Pl. **1**: 148. 1868.

KUSAKA in Goryôrin **152**: 55. 1942.—HONDA, Nom. Pl. Jap. ed. em. 88. 1957.

Syn. *Kadsura chinensis* TURCZANINOW in Bull. Soc. Nat. Mosc. **7**: 149. 1837.

Nom. Jap.: *Chôsen-gomishi.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, Honshû, Saghalien, Manchuria, Amur, Korea, China.

Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI-SAP.

FAM. PAPAVERACEAE

Chelidonium LINNAEUS

87. C. majus LINNAEUS subsp. **asiaticum** HARA in Journ. Jap. Bot. **23**: 43. 1949.

Syn. *C. majus* LINNAEUS var. *asiaticum* (HARA) OHWI, Fl. Jap. ed. 1, 561. 1953; Fl. Jap. ed. 2, 659. 1965.—HONDA, Nom. Pl. Jap. ed. em. 90. 1957.—NOSAKA

in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Kusa-no-ô.*

Hab.: In the sunny meadow of low land.

Distrib.: Hokkaidô to Kyûshû, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: May 17, 1958. NOSAKA-SAP.

Corydalis DE CANDOLLE

88. C. ambigua CHAMISSO et SCHLECHTENDAL in Linnaea **1**: 558. 1826.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Syn. *C. ambigua* CHAM. et SCHLTDL. var. *glabra* TAKEDA in Bot. Mag. Tokyo **24**: 7. 1910.—HONDA, Nom. Pl. Jap. ed. em. 91. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Ezo-engosaku.*

Hab.: Meadow of lower mountain area, common.

Distrib.: Hokkaidô, N. Honshû, Okhotsk Sea district.

Specimens from Mt. Yûpari: May 17, 1958. NOSAKA-SAP.

89. C. speciosa MAXIMOWICZ ex REGEL in Gartenfl. 250. 1858.

HONDA, Nom. Pl. Jap. ed. em. 92. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Ezo-kikeman.*

Hab.: In the sunny meadow or on the exposed slopes of lower parts.

Distrib.: Hokkaidô, N. Honshû (Mt. Hayachine), Saghalien, Manchuria, E. Siberia, N. China.

Specimens from Mt. Yûpari: May 17, 1958. NOSAKA-SAP.

FAM. BRASSICACEAE

Arabis LINNAEUS

90. A. lyrata LINNAEUS var. **kamtschatica** FISCHER ex DE CANDOLLE, Syst. **2**: 23. 1821.

HONDA, Nom. Pl. Jap. ed. em. 92. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *A. lyrata* (non LINNAEUS) sensu MIYABE in Mem. Boston Soc. Nat. Hist. **4**: 217. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Nom. Jap.: *Miyama-hatazao.*

Hab.: Subalpine area up to alpine rocky cliff (Fig. 8-5).

Distrib.: Hokaidô, N. & C. Honshû, North-eastern Asia, N. America.

Specimens from Mt. Yûpari: Aug. 4, 1921. TATEWAKI-SAPT; Aug. 19, 1957. NOSAKA-SAP.

91. A. serrata FRANCHET et SAVATIER var. **glauca** (BOISS.) OHWI in Acta Phytotax. Geobot. **7**: 33. 1938; Fl. Jap. ed. 1, 580. 1953; Fl.

Jap. ed. 2, 679. 1965.
HONDA, Nom. Pl. Jap. ed. em. 93. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.
Syn. *A. glauca* BOISSIEU in Bull. Herb. Boiss. **7**: 786. 1899.
Nom. Jap.: *Ezo-iwa-hatazao.*
Hab.: Alpine area. (Fig. 8–5).
Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles.
Specimens from Yûpari: Aug. 19, 1957. NOSAKA-SAP.

Barbarea R. BROWN

92. B. orthoceras LEDEBOUR in Ind. Sem. Hort. Dorp. 1824, non vidi; Fl. Alt. **3**: 12. 1831, in adnota.
HONDA, Nom. Pl. Jap. ed. em. 93. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.
Syn. *B. vulgaris* R. BR. var. *stricta* REGEL, Pl. Radd. **1**(1): 155. 1861.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919. (hab. Mt. Ashibetsu).
Nom. Jap.: *Miyama-garashi.*
Hab.: Relatively humid place in subalpine to alpine area (Fig. 8–5).
Distrib.: Hokkaidô, N. & C. Honshû, E. Siberia, Kamchatka, Korea, Manchuria, N. America.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Cardamine LINNAEUS

93. C. nipponica FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 281. 1876.
HONDA, Nom. Pl. Jap. ed. em. 94. 1957.
Nom. Jap.: *Miyama-tanetsuke-bana.*
Hab.: Alpine area; at Gama-iwa and Maëdake peaks.
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: July 31, 1969. NOSAKA-SAP.

94. C. scutata THUNBERG subsp. **regeliana** (MIQUEL) HARA in Journ. Fac. Sci. Univ. Tokyo sect 3, **6**(2): 59. 1952.
HONDA, Nom. Pl. Jap. ed. em. 94. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.
Syn. *C. regeliana* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 73. 1855.
C. flexuosa WITHERING, Bot. Arr. Brit. ed. 3, 578. 1796.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.
Nom. Jap.: *Ôba-tanetsuke-bana.*
Hab.: Lower mountain to mountain area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria, E. Siberia, Kamchatka.
Specimens from Mt. Yûpari: July 30, 1958. NOSAKA-SAP.

Draba LINNAEUS

95. D. japonica MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **22**: 228. 1876.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 94. 1957.—TOYOKUNI in Hokuriku Journ. Bot. **6**: 65. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *D. yezoensis* NAKAI in Bot. Mag. Tokyo **46**: 56. 1932.—*D. japonica* MAX. var. *yezoensis* (NAKAI) TATEWAKI in Journ. Sapporo Soc. Agr. & For. **26**: 264. 1934.

Nom. Jap.: *Nanbu-inu-nazuna.*

Hab.: In the serpentine-pebble-fields of alpine area (Fig. 8–5).

Distrib.: Hokkaidô (Mt. Yûpari, Hidaka Mts.) and N. Honshû (Mt. Hayachine).

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 31. 1951. TAKAHASHI–SAPT; July 28, 1957 & July 24, 1960. NOSAKA–SAP.

Macropodium R. BROWN

96. M. pterospermum FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 113. 1868.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 95. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Hakusen-nazuna.*

Hab.: Relatively shady or moist meadow in subalpine to alpine area, sometimes in the undergrowth of the *Alnus-Betula* thicket (Fig. 8–5).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.

Specimens from Mt. Yûpari: Aug. 7, 1912. YANAGISAWA–SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 28, 1957. NOSAKA–SAP.

Rorippa SCOPOLI

97. R. islandica (OEDER) BORBÁS ex SCHINZ et THELLUNG in Vierteljarsschr. Nat. Ges. Zürich **53**: 538. 1908.

HONDA, Nom. Pl. Jap. ed. em. 95. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *Sisymbrium islandicum* OEDER, Fl. Dan. t. 409. 1768.

Nom. Jap.: *Sukashita-gobô.*

Hab.: Surroundings of the cultivated land (NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Widely distributed in the northern hemisphere.

Thlaspi LINNAEUS

98. T. japonicum H. BOISSIEU in Bull. Herb. Boiss. **7**: 797. 1899. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 95. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Takane-gunbai.*

Hab.: Alpine meadow (Fig. 8–6).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 19, 1954 & Aug. 31, 1958. NOSAKA–SAP.

FAM. DROSERACEAE

Drosera LINNAEUS

99. D. rotundifolia LINNAEUS, Sp. Pl. ed. 1, 281. 1753. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 96. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Môsengoke.*

Hab.: In the serpentine-pebble-fields both in lower mountain and in alpine areas, and in the central peat bog (Fig. 8–6).

Distrib.: Hokkaidô to Kyûshû, Widely distributed in temperate to subfrigid zones of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 19, 1954 & Aug. 31, 1958. NOSAKA–SAP.

FAM. CRASSULACEAE

Sedum LINNAEUS

100. S. aizoon LINNAEUS, Sp. Pl. ed. 1, 430. 1753. HONDA, Nom. Pl. Jap. ed. em. 97. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Hosoba-no-kirinsô.*

Hab.: On rocky outcrops in subalpine to alpine area (Fig. 8–6).

Distrib.: Hokkaidô, Honshû, Siberia.

Specimens from Mt. Yûpari: July 28. 1957. NOSAKA–SAP.

101. S. ishidae MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **8**: 3–4. 1921.

Syn. *Rhodiola ishidae* (MIYABE et KUDO) HARA in Journ. Jap. Bot. **13**: 930. 1936.—HONDA, Nom. Pl. Jap. ed. em. 97. 1957.

Sedum rhodiola DC. var. *elongatum* (non MAXIMOWICZ) sensu NISHIDA in

Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.
'*Rhodiola rosea* var. *oblonga*' sensu NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Ao-iwa-benkei.*

Hab.: On rocky cliffs in alpine area, e.g., Gama-iwa, Tsurigane-iwa, Maëdake peaks etc. (Fig. 8–6).

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9. 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSA-KA-SAP.

102. S. kamtschaticum FISCHER in Ind. Sem. Hort. Petrop. **7**: 51. 1841. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 97. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Kirinsô.*

Hab.: On rocky cliffs in mountain up to alpine areas (Fig. 8–6).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Kamchatka, Amur.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

103. S. pluricaule KUDO in Journ. Fac. Agr. Hokkaidô Imp. Univ. **12** (1): 40. 1923.

subsp. **ezawae** NOSAKA in Journ. Jap. Bot. **46**: 167. 1971.

Stem suberect or slightly ascending at base, 2–4 cm high. Radical leaves rosulately and densely arranged. Cauline leaves thick, opposite, sessile, obovate or spatulate-obovate, rarely oblanceolate, 5–10 mm long, 2.5–4.7 mm broad, often purplish and purple-punctate, quite entire at margin. Cyme loose-flowered, 3–7, subrotundate, up to 2.5 cm in diameter. Flowers bisexual, pedicels up to 4 mm long, thin. Sepals lanceolate, oblong-lanceolate or linear-lanceolate, 2–3.2 mm long, 0.5–0.8 mm broad, acute at apex. Petals dilute rose-purple, epunctate, oblong-ovate, ovate-oblong or ovate, (3–) 3.5–4.2 mm long, 1.2–2.3 mm broad, uninerved, acuminately acute at apex. Stamens 10, of which 5 alternate with petals, the rest 5 slightly shorter than the former, opposite to petals and adnate to the base of petals, anthers dark-purple, cordate-orbicular, filaments plane-filiform, often dilute purplish. Hypogynous scales deltoid-trapezoid, about 0.6 mm long, about 0.8 mm broad. Pistils 5, oblong-fusiform, about 3 mm long, about 0.6 mm thick.

Nom. Jap. *Yûpari-misebaya* (EZAWA & NOSAKA, 1971).

Hab. In rock crevices of Rôsoku-iwa, with *Saxifraga cherlerioides* var. *rebunshirensis*, *Primula modesta*, *Thymus quinquecostatus* var. *ibukiensis* etc.

Distrib. Subsp. Endemic to Hokkaidô (Mt. Yûpari, and the N. Hidaka

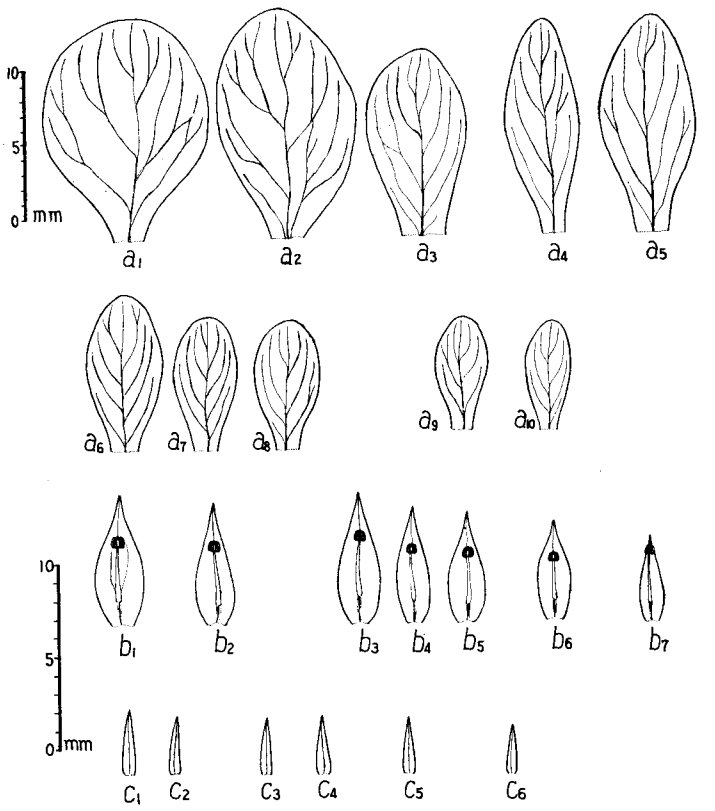

Fig. 10. Variations of leaves, petals and sepals in *Sedum pluricaule*.

a: Leaves.
- a_1 — a_3: subsp. *pluricaule* (var. *pluricaule*), S. Saghalien.
- a_4 & a_5: subsp. *pluricaule* var. *yezoense*, Mt. Goken, prov. Ishikari, Hokkaidô.
- a_6 — a_8: subsp. *ezawae* (var. *ezawae*), Mt. Yûpari, prov. Ishikari, Hokkaidô.
- a_9 & a_{10}: subsp. *ezawae* var. *hidakanum*, upper Saruru, prov. Hidaka, Hokkaidô.

b: Petals.
- b_1 & b_2: subsp. *pluricaule* (var. *pluricaule*), S. Saghalien.
- b_3 — b_5: subsp. *pluricaule* var. *yezoense*, Mt. Goken, prov. Ishikari, Hokkaidô.
- b_6 : subsp. *ezwae* (var. *ezawae*), Mt. Yûpari, prov. Ishikari, Hokkaidô.
- b_7 : subsp. *ezawae* var. *hidakanum*, upper Saruru, prov. Hidaka, Hokkaidô.

c: Sepals.
- c_1 & c_2: subsp. *pluricaule* (var. *pluricaule*), S. Saghalien.
- c_3 & c_4: subsp. *pluricaule* var. *yezoense*, Mt. Goken, prov. Ishikari, Hokkaidô.
- c_5 : subsp. *ezawae* (var. *ezawae*), Mt. Yûpari, prov. Ishikari, Hokkaidô.
- c_6 : subsp. *ezawae* var. *hidakanum*, upper Saruru, prov. Hidaka, Hokkaidô.

Mts.).

Specimens from Mt. Yûpari: Aug. 9, 1970. EZAWA-TNS (holotypus).

Remarks: This subspecies has characteristics intermediate between *S. pluricaule* subsp. *pluricaule* and *S. hidakanum*; it differs from the former in having less caespitose stems, smaller leaves, loosely flowered cymes, less acuminate smaller petals and shorter filaments, while it is distinguishable from the latter in having less caespitose stems, somewhat broader cauline leaves, larger and broader petals and much shorter stamens which are conspicuously shorter than petals and are about equal in length to sepals (Fig. 10-b). In 1934, MIYABE & TATEWAKI published *Sedum yezoense*, and stated its affinity to *S. takasui* and *S. pluricaule* (MIYABE & TATEWAKI, 1934). But later, OHWI (1953) united it with *S. pluricaule*, while TATEWAKI & KAWANO (1958) reraised it as a variety of *S. pluricaule*. This treatment was followed by OHWI's later works (OHWI, 1965).

As shown in Fig. 10 there are two types of leaf shape, the *pluricaule*-type and the *yezoense*-type. The author agrees with the opinion of TATEWAKI & KAWANO.

On the other hand, KAWANO (1957) published *S. hidakanum* TATEWAKI

TABLE 7. Correlation between the width and the length of leaf in *Sedum pluricaule*.

	Taxa	subsp. *pluricaule*		subsp. *ezawae*	
		var. *pluricaule*	var. *yezoense*	var. *ezawae*	var. *hidakanum*
	Locality	Saghalien	Hokkaidô	Mt. Yûpari	N. Hidakas
Ratios of the width th the length of leaf	0.75–0.79	2	—	—	—
	0.70–0.74	8	—	—	—
	0.65–0.69	22	—	—	—
	0.60–0.64	24	—	2	—
	0.55–0.59	24	4	6	—
	0.50–0.54	17	18	18	—
	0.45–0.49	2	32	14	4
	0.40–0.44	1	36	6	16
	0.35–0.39	—	8	—	—
	0.30–0.34	—	4	—	—
	Average Ratio	0.61	0.42	0·51	0.42

basing it on TATEWAKI's manuscript of *Sedum* specimens collected by N. NISHIMURA along the upper Saruru, prov. Hidaka on July 10, 1951 and July 11, 1952. The present plant also comes near to *S. pluricaule*, but is distinguished from the latter, especially var. *yezoense*, in having the dwarf habit, the size of petals and the length of stems.

Both *S. hidakanum* and the present subspecies have dwarf habit represented by shorter stems and smaller leaves than *S. pluricaule* subsp. *pluricaule*.

Fig. 16–2 shows the localities of *S. pluricaule* in Hokkaidô. Localities of *S. pluricaule* var. *yezoense* and those of subsp. *ezawae* and of *S. hidakanum* seem to be separable. Dwarf form is localized in the Yûbari and the Hidaka Mountain Ranges.

On the other hand, as shown in Table 7, as to the plants occurring in the Hidaka and the Yûbari Mountain Ranges, the leaf shape is separable into two types basing on the ratios of the width to the length of leaf as well in the plants of subsp. *pluricaule*.

Basing on the characteristics explained above, the author intends to regard the so-called *S. hidakanum* as a variety of *S. pluricaule* subsp. *ezawae* for the time being.

In the light of above findings, the *Sedum pluricaule*-complex is separated into the following subspecies and varieties.

Sedum pluricaule KUDO
- subsp. *pluricaule*
  - var. *pluricaule*
  - var. *yezoense* (MIYABE et TATEWAKI) TATEWAKI et KAWANO
- subsp. *ezawae* NOSAKA
  - var. *ezawae* (*Yûpari-misebaya*)
  - var. *hidakanum* (TATEWAKI ex KAWANO) NOSAKA, stat. et comb. nov. syn.—
    Sedum hidakanum TATEWAKI ex KAWANO in Acta Phytotax. Geobot. **17** (1): 1. 1957.—*Sedum pluricaule* KUDO subsp. *hidakanum* (TATEWAKI ex KAWANO) NOSAKA in Journ. Jap. Bot. **46**: 171. 1971. stat. et comb. nud.

104. S. verticillatum LINNAEUS, Sp. pl. ed. 1, 430. 1753.
HONDA, Nom. Pl. Jap. ed. em. 98. 1957.

Nom. Jap.: *Mitsuba-benkeisô.*

Hab.: In relatively moist and shady meadow of subalpine area, near Maëdake peaks and Gama-iwa.

Distrib.: Hokkaidô to Kyûshû, Korea, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; July 13, 1969. NOSAKA-SAP.

FAM. SAXIFRAGACEAE

Astilbe BUCHANAN-HAMILTON

105. A. thunbergii (SIEBOLD et ZUCCARINI) MIQUEL var. **congesta** H. BOISSIEU in Bull. Herb. Boiss. **5**: 683. 1897.
HONDA, Nom. Pl. Jap. ed. em. 103. 1957.
Nom. Jap.: *Toriashi-shôma.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.
Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT.

Boykinia NUTTALL

106. B. lycoctonifolia (MAXIMOWICZ) ENGLER in ENGLER & PRANTL, Nat. Pfl.-fam. **3** (2a): 52. 1890.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 103. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.
Syn. *Saxifraga lycoctonifolia* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **31**: 41. 1886.
Nom. Jap.: *Arashigusa.*
Hab.: In shady and relatively moist place of subalpine to alpine area (Fig. 8-7).
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA & HAMANA-SAPT; July 28, 1957 & Aug. 5, 1959. NOSAKA-SAP.

Chrysosplenium LINNAEUS

107. C. flagelliferum FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 134. 1868.
HONDA, Nom. Pl. Jap. ed. em. 103. 1957.—NOSAKA in Journ. Geobot. **17**: 10. 1969.
Nom. Jap.: *Tsuru-nekonomesô.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Saghalien, Kuriles, Korea, Manchuria, China, Amur, Ussuri.
Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT.

108. C. kamtschaticum FISCHER ex SERINGE in DC., Prodr. **4**: 48. 1830.

HONDA, Nom. Pl. Jap. ed. em. 104. 1957.—NOSAKA in Journ. Geobot. **17**: 10. 1969.

Nom. Jap.: *Chishima-nekonomesô.*

Hab.: Mountain area.

Distrib.: Hokkaidô, C. Honshû, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT.

109. C. ramosum MAXIMOWICZ in Prim. Fl. Amur. 121. 1859.

Syn. *Chrysosplenium ramosum* MAXIM. var. *atrodiscum* (SUTO) HARA, Nov. Fl. Jap. Saxifr. 94-97. 1939.—HONDA, Nom. Pl. Jap. ed. em. 104. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Maruba-nekonomesô.*

Hab.: In shady and moist place of lower part.

Distrib.: Hokkaidô, Honshû, S. Saghalien, Korea, Ussuri, Amur.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; July 30, 1958. NOSAKA-SAP.

Hydrangea LINNAEUS

110. H. macrophylla (THUNBERG) SERINGE subsp. **serrata** (THUNBERG) MAKINO in Journ. Jap. Bot. **6**(7): 11. 1929.

HONDA, Nom. Pl. Jap. ed. em. 99. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *Viburnum serratum* THUNBERG, Fl. Jap. 124. 1784.

Hydrangea opuloides K. KOCH var. *angustata* (non SCHNEIDER) MATSUMURA, Ind. Pl. Jap. ed. 2, **2**: 179. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Yama-ajisai.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kûyshû, Korea.

Specimens from Mt. Yûpari: July 30, 1958. NOSAKA-SAP.

111. H. paniculata SIEBOLD in Act. Phys. Med. Acad. Caes. Leop. Carol. **14**(2): 691. 1829.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 99. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Nom. Jap.: *Nori-utsugi.*

Hab.: Mountain area, rather common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, China.

Specimens from Mt. Yûpari: July 30, 1958. NOSAKA-SAP.

112. H. petiolaris SIEBOLD et ZUCCARINI, Fl. Jap. **1**: 108, t. 54. 1835.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *Calyptoranthe petiolaris* (SIEB. et ZUCC.) NAKAI in Bull. Nat. Sci. Mus. Tokyo **31**: 52. 1952.—HONDA, Nom. Pl. Jap. ed. em. 98. 1957.

Nom. Jap.: *Tsuru-ajisai.*

Hab.: In the mixed forest.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, S. Korea.

Specimens from Mt. Yûpari: Aug. 17, 1957. NOSAKA-SAP.

Parnassia LINNAEUS

113. P. palustris LINNAEUS var. **multiseta** LEDEBOUR, Fl. Ross. **1**: 263. 1842.

HONDA, Nom. Pl. Jap. ed. em. 101. 1957.—NOSAKA in Journ. Geobot. **9**: 44. 1960.

Syn. *P. palustris* L., Sp. Pl. ed. 1, 273. 1753, *pro parte*.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Nom. Jap.: *Umebachisô.*

Hab.: In the sunny and swampy meodow of subalpine to alpine areas, sometimes occurs in the serpentine-pebble-fields in the lower altitude (near Ishiwata-yama).

Distrib.: Hokkaidô to Kyûshû, Widely distributed in the temperate to subfrigid zones of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSAKA-SAP.

Ribes LINNAEUS

114. R. triste PALLAS in Nov. Act. Acad. St.-Pét. **10**: 378. 1797.

KUSAKA in Goryôrin **152**: 55. 1942.-HONDA, Nom. Pl. Jap. ed. em. 107. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Tokachi-suguri.*

Hab.: Mountain area (KUSAKA, 1942).

Distrib.: Hokkaidô, Saghalien, S. Kuriles, E. Siberia.

The occurrence of this species in this mountain was reported by Masao KUSAKA in Goryôrin **152**: 55. 1942.

Saxifraga LINNAEUS

115. S. cherlerioides D. DON var. **rebunshirensis** (ENGLER et IRMSCHER) HARA in Journ. Jap. Bot. **13**: 174. 1937; Nov. Fl. Jap. Saxifr. 59–61. 1939.

NOSAKA in Journ. Geobot. **17**: 10. 1969.

Syn. *S. bronchialis* L. var. *genuina* TRAUTV. form. *rebunshirensis* ENGLER et

IRMSCHER in Pfl.-reich **69** (4-117-2): 461. 1919—*S. bronchialis* L. subsp. *funstonii* (SMALL) HULTÉN var. *rebunshirensis* (ENGLER et IRMSCHER) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6** (2): 65–66. 1952.—HONDA, Nom. Pl. Jap. ed. em. 105, 1957, ut *S. bronchialis* var. *rebunshirensis*.

Nom. Jap.: *Shikotansô*.

Hab.: On rocky cliffs of alpine area and at Rôsoku-iwa.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles.

Specimens from Mt. Yûpari: July 12–14, 1934. OHWI-KYO; Aug., 1960. NOSAKA-SAP; Aug. 9, 1970. EZAWA-SAP (hab. Rôsoku-iwa).

116. S. fortunei J. D. HOOKER var. **incisolobata** (ENGLER et IRMSCHER) NAKAI in Journ. Jap. Bot. **14**: 228 & 230. 1938.
HONDA, Nom. Pl. Jap. ed. em. 105. 1957.

Syn. *S. fortunei* J. D. HOOKER in CURTIS, Bot. Mag. ser. 3, 19, t. 5377. 1863. —NOSAKA in Journ. Geobot. **9**: 45. 1960.
S. cortusaefolia (non SIEB. et ZUCC.) sensu MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 37. 1872.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.

Nom. Jap.: *Daimonjisô*.

Hab.: On relatively moist rocky outcrops, from lower mountain up to alpine area.

Distrib.: Hokkaidô to Kyûshû, S. Saghalien, S. Kuriles, Korea, Ussuri, Manchuria, China.

Specimens from Mt. Yûpari: Aug., 1893. TOKUBUCHI-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 18, 1957. NOSAKA-SAP.

117. S. fusca MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 38. 1872.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 106. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Ezo-kurokumosô*.

Hab.: In relatively moist and shady place of mountain to subalpine area.

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug.7, 1912. YANAGISAWA & HAMANA-SAPT; July, 1930. KANDA-SAP; Aug. 18, 1957. NOSAKA-SAP.

118. S. japonica BOISSIEU in Bull. Herb. Boiss. **5**: 687. 1897.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 106. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Fuki-yukinoshita*.

Hab.: In shady and moist place, along streams.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; July 29, 1958. NOSAKA-SAP.

119. S. laciniata NAKAI et TAKEDA ex NAKAI in Bot. Mag. Tokyo **28**: 305. 1914.
TAKEDA in Not. Roy. Bot. Gard. Edinb. **8** (34): 235. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 106. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Nom. Jap.: *Kumoma-yukinoshita.*
Hab.: Serpentine-pebble-fields in alpine area (Fig. 8–7).
Distrib.: Hokkaidô (Mt. Yûpari, Taisetsu Mts.), Saghalien, N. Korea.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July, 1960. T. LEU-SAPT; July 28, 1957. NOSAKA-SAP.

120. S. nishidae MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **6**: 170. 1917.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 106. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Nom. Jap.: *Ezo-no-kumomagusa.*
Hab.: Gama-iwa and Maëdake peaks (Fig. 8–7).
Distrib.: An endemic species.
Specimens from Mt. Yûpari: Aug. 7, 1916. NISHIDA-SAPT; Aug. 3, 1921. TAKEDA & TATEWAKI-SAPT; Aug. 18, 1957. NOSAKA-SAP.

121. S. sachalinensis FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 133. 1868.
HONDA, Nom. Pl. Jap. ed. em. 106. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Syn. *S. leflexa* (non HOOKER) sensu MIYABE in Mem. Boston Soc. Nat. Hist. **4**: 233. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.
Nom. Jap.: *Yamahanasô.*
Hab.: On rocky cliffs of lower part and Tsurigane-iwa (Fig. 8–7).
Distrib.: Hokkaidô, Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: Aug. 7, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 18, 1957. NOSAKA-SAP.

122. Saxifraga (§. **Trachyphyllum**) **yuparensis** NOSAKA, sp. nov. Fig. 11.
Rhizoma repens, gracile, saepe intense ramosum; caulis terrester brevis,

dense foliatus, foliis alternatis, 6–10 mm longis, 1.5–3 mm latis, spathulato-oblanceolatis aut spathulatis, apice plerumque triangularibus et tricuspidatis, cuspibus (sive dentibus) medianis ovato-triangularibus, apice mucrone ca. 0.5 mm longo instructis, margine hyalino-ciliatis, cuspibus lateralibus medianis conformibus sed quam eae paulo minoribus.

Caulis florifer erectus, (2–) 3–6 (–8) cm altus, breviter glanduloso-pilosus, in apicibus (1–) 2–3 (–5)-florus, laxe foliatus, foliis alternatis, integris et in apice caulium versus gradatim minoribus.

Flores albi; pediceli (6–) 10–18 (–20) mm longi, glanduloso-pilosi; calyx viridis et 5-lobatus, tubo breviter hypocraterimorpho et glabro, sepalis oblongis sive elliptico-ovatis, ca. 3 mm longis, apice obtusis; petala ovato-elliptica vel oblonga, (6–) 6.5–8 (–8.5) mm longa, (2.5–) 2.8–3.2– (3.5) mm lata, trinervia, apice obtusa aut rotundata, in parte media luteo-punctata sed in parte superiore vix rubro-punctata, basi subito angustata et unguiculata, ungue gracile 0.5–1 mm longa; stamina 10, 4–5 mm longa, antheris luteolis; carpella 2, in partibus supra medium connata, apicibus angustatis et stylis formantibus, 1.8–2.0 mm longis, maturitate primum erectis sed postea divergentibus. Semina ovoidea.

Nom. Jap. *Yûpari-kumomagusa.*

Hab. In Gama-iwa montis Yûpari, prov. Ishikari, Hokkaidô (Fig. 8–7).

Holotypus: SAP No. 031075.

This tiny saxifrage bears a close resemblance to *Saxifraga cherlerioides* D. DON and *S. bronchialis* subsp. *funstonii* (SMALL) HULTÉN, but differs from the two by its tricuspidate leaves. Detailed discussion will be given in the author's another paper.

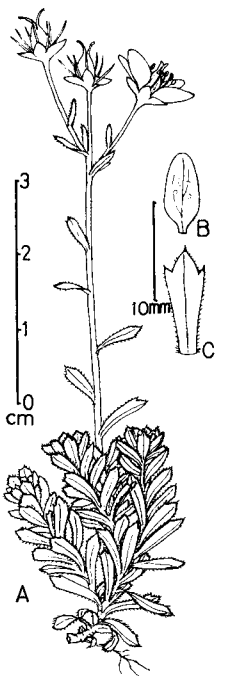

Fig. 11.
Saxifraga yuparensis
A. Habit B. Petal
C. Leaf

Schizophragma SIEBOLD et ZUCCARINI

123. S. hydrangeoides SIEBOLD et ZUCCARINI, Fl. Jap. **1**: 60, t. 26. 1837.
HONDA, Nom. Pl. Jap. ed. em. 100. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Iwagarami.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô to Kyûshû, Korea.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA–SAP.

Tiarella LINNAEUS

124. T. polyphylla D. DON, Prodr. Fl. Nepal. 210. 1825.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 147. 1919.—HONDA, Nom. Pl. Jap. ed. em. 107. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Zudayakushu.*

Hab.: In the undergrowth of the mixed forest from low land to subalpine area.

Distrib.: Hokkaidô to Kyûshû, Formosa, Korea, China, Himalaya.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 27, 1957. NOSAKA-SAP.

FAM. ROSACEAE

Acomastylis GREENE

125. A. calthifolia (SMITH) F. BOLLE var. **nipponica** (F. BOLLE) HARA in Journ. Jap. Bot. **17**: 21. 1941.
HONDA, Nom. Pl. Jap. ed. em. 111. 1957.

Syn. *A. nipponica* F. BOLLE in FEDDE, Rep. Sp. Nov. Beihefte **72**: 82. 1933.—*Geum clathaefolium* SMITH var. *nipponicum* (F. BOLLE) OHWI, Fl. Jap. ed. 1, 636. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 75. 1953; Fl. Jap. ed. 2, 743. 1965.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
G. calthifolium SMITH var. *dilatatum* TORR. et GRAY, Fl. N. Amer. **1**: 425. 1840.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Miyama-daikonsô.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. &C. Honshû, shikoku, Kuriles.

Specimens from Mt. Yûpari: Aug. 18, 1957. NOSAKA-SAP.

Agrimonia LINNAEUS

126. A. pilosa LEDEBOUR, Ind. Sem. Hort. Dorpat. Suppl. 1. 1823.
NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *A. pilosa* LEDEB. var. *japonica* NAKAI, Rep. Veg. Daisetsu Mts. 20. 1930.—HONDA, Nom. Pl. Jap. ed. em. 111. 1957.

Nom. Jap.: *Kin-mizuhiki.*

Hab.: Meadows of lower part.

Distrib.: Hokkaidô to Lochoo Isls., Formosa, Korea, China, Manchuria, Siberia, Himalaya.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

Alchemilla LINNAEUS

127. A. japonica NAKAI et HARA in Journ. Jap. Bot. **13**: 177–178. 1937.
HONDA, Nom. Pl Jap. ed. em. 111. 1957.—NOSAKA in Journ. Geobot.

9: 45. 1960.

Syn. *A. vulgaris* (non LINNAEUS) sensu MAKINO in Bot. Mag. Tokyo **16**: 172. 1902.

Nom. Jap.: *Hagoromogusa.*

Hab.: Alpine area: Gama-iwa, Hondake ridge etc. (Fig.8–8).

Distrib.: Endemic to Japan. Hokkaidô (Mt. Yûpari, Mt. Kirigishi-S. WATANABE, 1969) and alpine area in central Honshû.

Specimens from Mt. Yûpari: Aug., 1934. OHWI-SAPT; July 29, 1958. NOSAKA-SAP.

Aruncus KOSTELETZKY

128. A. dioicus (WALTER) FERNALD in Rhodora **41**: 423. 1939.
HONDA, Nom. Pl. Jap. ed. em. 109. 1957.—NOSAKA in Journ. Geobot. **9**: 45 1960.

Syn. *Actaea dioica* WALTER, Fl. Carol. 152. 1788.
Aruncus sylvester KOSTEL. var. *americana* MAXIMOWICZ in Act. Hort. Petrop. **6**: 170. 1879.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Yamabuki-shôma.*

Hab.: Meadows or in the undergrowth of the mixed forest.

Distrib.: Hokkaidô to Kyûshû, Temperate or subfrigid zone of northern hemisphere.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Dryas LINNAEUS

129. D. octopetala LINNAEUS var. **asiatica** (NAKAI) NAKAI, Fl. Mt. Paiktu-san 65. 1918.
HONDA, Nom. Pl. Jap. ed. em. 111. 1957.—NOSAKA in Journ. Geobot. **17**: 10. 1969.

Syn. *D. octopetala* L. form. *asiatica* NAKAI in Bot. Mag. Tokyo **30**: 233. 1916.

Nom. Jap.: *Chônosukesô.*

Hab.: Alpine area of Maëdake peaks (Fig. 8–8).

Distrib.: Hokkaidô, Central Honshû, Saghalien, N. Korea, Amur, Ussuri, S. Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 3, 1921. TAKEDA & TATEWAKI-SAPT; Aug. 2, 1967. NOSAKA-SAP.

The occurrence of this plant in the mountain was properly reported by Dr. Misao TATEWAKI for the first time in Bull. Soc. Pl. Ecol. **3**(4): 252. 1954.

Filipendula LINNAEUS

130. F. camtschatica (PALLAS) MAXIMOWICZ in Act. Hort. Petrop. **6**:

248. 1879, ut *kamtschatica.*
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 111. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Syn. *Ulmaria camtschatica* PALLAS in Stralsund. Mag. **2**: 177. 1768.

Nom. Jap.: *Oni-shimotsuke.*
Hab.: Lower mountain to mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Amur.
Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 28, 1957. NOSAKA-SAP.

131. F. yezoensis HARA in Journ. Jap. Bot. **10**: 235. 1934.
Syn. *F. multijuga* MAXIMOWICZ var. *yezoensis* HARA in Journ. Jap. Bot. **10**: 235. 1934.—HONDA, Nom. Pl. Jap. ed. em. 112. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
F. ciliata MIYABE et KUDO ex NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919, nom. nud.

Nom. Jap.: *Ezo-no-shimotsukesô.*
Hab.: Along streams of mountain area.
Distrib.: Hokkaidô.
Specimens from Mt. Yûpari: Aug. 7, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 28, 1957. NOSAKA-SAP.

Fragaria LINNAEUS

132. F. iinumae MAKINO in Bot. Mag. Tokyo **21**: 156. 1907.
HONDA, Nom. Pl. Jap. ed. em. 112. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Syn. ? *F. nipponica* (non MAKINO) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Nôgô-ichigo.*
Hab.: Subalpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.
Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 23, 1928. ISHIDA-SAPT; July 28, 1957. NOSAKA-SAP.

Potentilla LINNAEUS

133. P. dickinsii FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 337. 1876.
HONDA, Nom. Pl. Jap. ed. em. 113. 1957.

Nom. Jap.: *Iwa-kinbai.*
Hab.: Rôsoku-iwa (EZAWA, 1970).

Distrib.: Hokkaidô to Kyûshû, Korea, S. Kuriles.
Specimens from Mt. Yûpari: Aug. 9, 1970. EZAWA-SAP.

134. P. fragarioides LINNAEUS var. **sprengeliana** (LEHMANN) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **19**: 166. 1873.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 113. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Syn. *P. sprengeliana* LEHMANN, Monogr. Potent., 49, t. 3. 1820.
Nom. Jap.: *Kijimushiro.*
Hab.: Meadow of lower part.
Distrib.: Hokkaidô to Kyûshû, Widely distributed in E. Asia.
Specimens from Mt. Yûpari: Late in May, 1958. NOSAKA-SAP.

135. P. fruticosa LINNAEUS, Sp. Pl. ed. 1, 495. 1753.
HONDA, Nom. Pl. Jap. ed. em. 113. 1957.
Nom. Jap.: *Kinrobai.*
Hab.: Subalpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Widely distributed in frigid or alpine zone of northern hemisphere.
Specimens from Mt. Yûpari: July, 1930. KANDA-SAP.

136. P. matsumurae WOLF var. **yuparensis** KUDO ex MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **13**: 380. 1934, *pro syn.*
HONDA, Nom. Pl. Jap. ed. em. 113. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.
Syn. *P. apoiensis* NAKAI var. *yuparensis* MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **13**: 380. 1934.
P. matsumurae WOLF sensu KOIDZUMI in Journ. Coll. Sci. Imp. Univ. Tokyo **34**(2); 188. 1913.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.
Nom. Jap.: *Yûpari-kinbai.*
Hab.: Serpentine-pebble-fields and serpentine landslips of alpine area (Fig. 8-8).
Distrib.: Hokkaidô.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 2, 1921. TAKEDA & TATEWAKI-SAPT; July 27, 1957. NOSAKA-SAP.

137. P. nivea LINNAEUS var. **yuparensis** MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **16**: 2. 1939.
HONDA, Nom. Pl. Jap. ed. em. 113. 1957.—NOSAKA in Journ. Geobot.

9: 45. 1960.

Syn. *P. nivea* (non L.) sensu MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **6**: 171. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Ezo-urajiro-kinbai.*

Hab.: Gama-iwa (Fig. 8–8).

Distrib.: Hokkaidô (Mt. Yûpari at Gama-iwa; Mt. Jôzankei-tengu, prov. Ishikari).

Specimens from Mt. Yûpari: Aug. 7, 1916. NISHIDA–SAPT; Aug. 3, 1921. TAKEDA & TATEWAKI–SAPT (typus); July 28 & Aug. 18, 1957. NOSAKA–SAP.

The present variety is distinguished from the mother species by having larger and glabrescent leaflets with more coarse teeth.

Prunus LINNAEUS

138. P. maximowiczii RUPRECHT in Bull. Phys.-Math. Acad. St.-Pét. **15**: 131. 1857.

KUSAKA in Goryôrin **152**: 55. 1942.—HONDA, Nom. Pl. Jap. ed. em. 120. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Miyama-zakura.*

Hab.: In the mixed forest of lower part (KUSAKA, 1942; NOSAKA, 1960).

Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, Korea, Manchuria, Ussuri.

139. P. nipponica MATSUMURA var. **kurilensis** (MIYABE) WILSON, Cherr. Jap. 24. 1916.

HONDA, Nom. Pl. Jap. ed. em. 121. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *P. ceraseidos* MAX. var. *kurilensis* MIYABE in Mem. Boston Soc. Nat. Hist. **4**: 226. 1890.—*P. kurilensis* (MIYABE) MIYABE ex TAKEDA in Bot. Mag. Tokyo **24**: 11. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Chishima-zakura.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N, Honshû, Saghalien, Kuriles.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA–SAP.

140. P. sargentii REHDER in Mitt. Deut. Dendr. Gess. 159. 1908.

HONDA, Nom. Pl. Jap. ed. em. 121. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *P. serrulata* LINDLEY var. *sachalinensis* MAKINO in Bot. Mag. Tokyo **23**: 75. 1909.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Ezo-yama-zakura.*

Hab.: In the mixed forest of lower part, relatively common (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Korea.

141. P. ssiori FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 124. 1868. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 122. 1957.—NOSAKA, in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Shiuri-zakura.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Manchuria, Ussuri.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT.

Rosa LINNAEUS

142. R. acicularis LINDLEY, Ros. Monogr. 44, t. 8. 1920. HONDA, Nom. Pl. Jap. ed. em. 114. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *R. acicularis* LINDLEY var. *nipponensis* (non KOEHNE) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Ô-takane-bara.*

Hab.: Subalpine to alpine area. (Fig. 8–9).

Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles, Korea, Manchuria, China, Ussuri, Amur, Kamchatka, Siberia, N. Europe.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7, 1931. S. ITO-SAPT; July, 1930. AKIYAMA-SAP; July 28, 1957. NOSAKA-SAP.

Rubus LINNAEUS

143. R. idaeus LINNAEUS var. **aculeatissimus.** C. A. MEYER ex REGEL et TILING, Fl. Ajan. 87. 1858.

form. **aculeatissimus.**

HONDA, Nom. Pl. Jap. ed. em. 116. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Ezo-ichigo.*

Hab.: Mountain area, relatively common.

Distrib.: Hokkaidô, Temperate and subfrigid zones in E. Asia.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

form. **concolor** (KOMAROV) OHWI, Fl. Jap. ed. 1, 644. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 75. 1953; Fl. Jap. ed. 2, 752. 1965.

HONDA, Nom. Pl. Jap. ed. em. 116. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *R. melanolasius* FOCKE var. *concolor* KOMAROV, Fl. Mansh. **2**: 486. 1903.

Nom. Jap.: *Kanayama-ichigo.*

Hab.: Mountain area, accompanied with the former form.

Distrib.: Hokkaidô, Temperate and subfrigid zones in E. Asia.

Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

144. R. mesogaeus FOCKE in Bot. Jahrb. **29**: 399. 1900.

HONDA, Nom. Pl. Jap. ed. em. 116. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Syn. *R. kinasii* LÉVEILLÉ et VANIOT in Bull. Soc. Agr. Sarth. **60**: 65. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Kuro-ichigo.*

Hab.: In the mixed forest of lower part (NISHIDA, 1919; NOSAKA, 1960).

Distrib.: Hokkaidô, Honshû, Shikoku, Kuriles, China.

145. R. parvifolius LINNAEUS, Sp. Pl. ed. 1, 1197. 1753.

KUSAKA in Goryôrin **152**: 56. 1942.—HONDA, Nom. Pl. Jap. ed. em. 117 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Nawashiro-ichigo.*

Hab.: Lower mountain area (KUSAKA, 1942).

Distrib.: Hokkaidô to Kyûshû, Formosa, Korea, China.

146. R. pedatus SMITH, Pl. Icon. Ined. **3**, t. 63. 1789.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 117. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Kogane-ichigo.*

Hab.: Alpine area, sometimes in the undergrowth of the *Pinus pumila* thicket.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Siberia, N. America.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

147. R. phoenicolasius MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **17**: 160. 1872.

KUSAKA in Goryôrin **152**: 56. 1942.—HONDA, Nom. Pl. Jap. ed. em. 117. 1957.—NOSAKA in Journ. Geobot. **9**: 45. 1960.

Nom. Jap.: *Ebigara-ichigo.*

Hab.: Sunny place of lower mountain area (KUSAKA, 1942; NOSAKA, 1960).

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.

148. R. pseudo-japonicus KOIDZUMI in Bot. Mag. Tokyo **25**: 74. 1911; in Journ. Coll. Sci. Imp. Univ. Tokyo **34**(2): 110. 1913.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 118. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Nom. Jap.: *Togenashi-goyô-ichigo.*
Hab.: Mountain to subalpine area, common.
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: Aug. 19, 1954 & July 5, 1959. NOSAKA-SAP.

149. R. wrightii A. GRAY, Bot. Jap. 387. 1859.
KUSAKA in Goryôrin **152**: 56. 1942.—HONDA, Nom. Pl. Jap. ed. em. 118. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Nom. Jap.: *Kuma-ichigo.*
Hab.: Mountain area (KUSAKA, 1942; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, China.

Sanguisorba LINNAEUS

150. S. grandiflora (MAXIMOWICZ) MAKINO in Bot. Mag. Tokyo **21**: 141. 1907.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 118. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Syn. *S. tenuifolia* FISCHER var. *grandiflora* MAXIMOWICZ, Prim. Fl. Amur. 94. 1859.
Nom. Jap.: *Chishima-waremokô.*
Hab.: Surroundings of serpentine-pebble-fields in alpine area.
Distrib.: Hokkaidô, Kuriles.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT.

151. S. stipulata RAFINESQUE, Herb. Rafin. 47. 1833.
FERNALD in Rhodora **48**: 12. 1946.—HONDA, Nom. Pl. Jap. ed. em. 119. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Syn. *S. sitchensis* C. A. MEYER, Fl. Ochot. 35. 1856.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.
Nom. Jap.: *Takane-tô-uchisô.*
Hab.: Alpine meadow.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Okho-

tsk, Aleutian, Alaska, Western N. America.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954 & July 26, 1958. NOSAKA-SAP.

152. S. tenuifolia FISCHER var. **alba** TRAUTVETTER et MEYER, Fl. Ochot. 35. 1856.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 119. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Nagabo-no-shiro-waremokô.*

Hab.: In the serpentine-pebble-fields of lower part (near Ishiwata-yama) and of alpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Manchuria, E. Siberia, Kamchatka.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSAKA-SAP.

Sieversia WILLDENOW

153. S. pentapetala (LINNAEUS) GREENE in Pittonia **4**: 49. 1899.

HONDA, Nom. Pl. Jap. ed. em. 119. 1957.

Syn. *Dryas pentapetala* LINNAEUS, Sp. Pl. ed. 1, 501. 1753.—*Geum pentapetalum* (L.) MAKINO in Bot. Mag. Tokyo **24**: 32. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—NOSAKA in Journ. Geobot. **9**: 45. 1960. *Geum pentapetalum* (L.) MAKINO var. *serrata* KOIDZUMI in sched. Herb. Imp. Univ. Tokyo (1916)—*Sieversia pentapetala* (L.) GREENE var. *serrata* (KOIDZUMI) NAKAI in Journ. Jap. Bot. **14**: 742. 1938.

Nom. Jap.: *Chinguruma.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, E. Siberia, Kuriles, Kamchatka, Aleutian.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–8, 1913. NISHIDA-SAPT; Aug., 1916. KOIDZUMI-TI (var. *serrata*-typus); Aug. 19, 1954 & July 28, 1957. NOSAKA-SAP.

Sorbaria A. BRAUN

154. S. sorbifolia (LINNAEUS) A. BRAUN var. **stellipila** MAXIMOWICZ in Acta Hort. Petrop. **6**: 223. 1879.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 109. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Hozaki-nanakamado.*
Hab.: Sunny place along the road of lower part.
Distrib.: Hokkaidô, N. & C. Honshû, Northeastern area of Asia.
Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

Sorbus LINNAEUS

155. S. alnifolia (SIEBOLD et ZUCCARINI) C. KOCH in Ann. Mus. Bot. Lugd.-Bat. **1**: 249. 1864.
HONDA, Nom. Pl. Jap. ed. em. 125. 1957.
Syn. *Crataegus alnifolia* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(2): 130. 1845.—*Micromeles alnifolia* (SIEB. et ZUCC.) KOEHNE in Gatt. Pomac. Wiss. Beil. Progr. Falk-Bealg. Berl. Ostern, 20. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.
Nom. Jap.: *Azukinashi.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China, Ussuri.
Specimens from Mt. Yûpari: July 6, 1960. NOSAKA-SAP.

156. S. commixta HEDLUND, Monogr. Sorbus 38. 1901.
HONDA, Nom. Pl. Jap. ed. em. 125. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Syn. *S. japonica* KOEHNE, Mitt. Deut. Dendrol. Ges. 57. 1906.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.
Nom. Jap.: *Nanakamado.*
Hab.: Commonly found in the mixed forest from lower mountain to subalpine area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Korea.
Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 29, 1958. NOSAKA-SAP.

157. S. matsumurana KOEHNE in Gartenfl. **50**: 407. 1901.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 126. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.
Nom. Jap.: *Urajiro-nanakamado.*
Hab.: Alpine area, accompanied with *Betula ermani, Alnus crispa* subsp. *maximowiczii, Sorbus sambucifolia* var. *pseudogracilis* etc.
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: July, 1896. ISHIKAWA-SAPT; Aug., 1958 & July 5, 1959. NOSAKA-SAP.

158. S. sambucifolia ROEMER var. **pseudogracilis** C. K. SCHNEIDER in

Bull. Herb. Boiss. ser. 2, **6**: 311 & 668. 1906.
NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *S. pseudogracilis* (C. K. SCHN.) KOEHNE in FEDDE, Rep. Sp. Nov. **10**: 504. 1912.—HONDA, Nom. Pl. Jap. ed. em. 126. 1957.
S. sambucifocia (non ROEMER) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Miyama-nanakamado.*
Hab.: Alpine area, accompanied with *Betula ermani, Alnus crispa* subsp. *maximowiczii, Sorbus matsumurana* etc.
Distrib.: Hokkaidô.
Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

Spiraea LINNAEUS

159. S. betulifolia PALLAS, Fl. Ross. **1**: 33, t. 16. 1784.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 109. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Maruba-shimotsuke.*
Hab.: Subalpine to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, E. Siberia.
Specimens from Mt. Yûpari: Aug. 7, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 9, 1954. NOSAKA-SAP.

subsp. **aemiliana** (C. K. SCHNEIDER) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(2): 77. 1952.
HONDA, Nom. Pl. Jap. ed. em. 109. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *S. aemiliana* C. K. SCHNEIDER in Bull. Herb. Boiss. ser. 2, **5**: 347. 1905.—*S. betulifolia* var. *aemiliana* (C. K. SCHN.) KOIDZUMI in Bot. Mag. Tokyo **23**: 166. 1909; in Journ. Coll. Sci. Imp. Univ. Tokyo **34**(2): 21. 1913.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.

Nom. Jap.: *Ezono-maruba-shimotsuke.*
Hab.: Alpine area.
Distrib.: Hokkaidô, Kuriles, Saghalien, E. Siberia, Kamchatka.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; July 31, 1963. AKIYAMA & NOSAKA-SAP.

var. **glabra** (HARA) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(2): 77. 1952.
HONDA, Nom. Pl. Jap. ed. em. 109. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *S. betulifolia* PALLAS var. *glabra* HARA in Bot. Mag. Tokyo **49**: 117. 1935.

in nota.

Nom. Jap.: *Akan-maruba-shimotsuke.*

Hab.: Alpine area.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

160. S. media SCHMIDT var. **sericea** (TURCZ.) REGEL ex MAXIMOWICZ in Act. Hort. Petrop. **6**: 189. 1879.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 110. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *S. sericea* TURCZANINOW in Bull. Soc. Nat. Mosc. **16**: 591. 1842.

Nom. Jap.: *Ezo-shimotsuke.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, Saghalien, Kuriles, Korea, Manchuria, Ussuri.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

161. S. miyabei KOIDZUMI in Bot. Mag. Tokyo **23**: 166. 1909; in Journ. Coll. Sci. Imp. Univ. Tokyo **34** (2): 22. 1913.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 110. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Ezo-shirobana-shimotsuke.*

Hab.: Lower mountain to mountain area.

Distrib.: Central and western Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

162. S. salicifolia LINNAEUS, Sp. Pl. ed. 1, 489. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 146. 1919.—HONDA, Nom. Pl. Jap. ed. em. 110. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Hozaki-shimotsuke.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Widely distributed in the subfrigid zone of Eurasia.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

Waldsteinia WILLDENOW

163. W. ternata (STEPHAN) FRITSCH in Verhandl. K. K. Zool.-Bot. Ges. Wien 69. 1889.

HONDA, Nom. Pl. Jap. ed. em. 119. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *Dalibarda ternata* STEPHAN in Mém. Soc. Nat. Mosc. **1**: 129. 1806.

Nom. Jap.: *Ko-kinbai.*

Hab.: On exposed rocky cliffs of mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Korea, Siberia.

Specimens from Mt. Yûpari: June, 1956. NOSAKA-SAP.

FAM. FABACEAE

Desmodium DESVAUX

164. D. racemosum DE CANDOLLE, Prodr. **2**: 337. 1825.
HONDA, Nom. Pl. Jap. ed. em. 128. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *D. caudatum* DC. var. *japonicum* NAKAI, Veg. Quelpaert. 55. 1914.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Nusubito-hagi.*

Hab.: Meadow of lower part and lower mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Loochoo Isls., Korea, Formosa, Manchuria, China, India.

Hedysarum LINNAEUS

165. H. ussuriense SCHISCHKIN et KOMAROV in Not. Syst. Herb. Bot. USSR **6**: 11. 1926.
HONDA, Nom. Pl. Jap. ed. em. 128. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *H. esculentum* (non LEDEBOUR) FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 99. 1874.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Iwa-ôgi.*

Hab.: Alpine area, on rocky outcrops; at Gama-iwa, at Maëdake peaks, along the Kanayama path etc. (Fig. 8–9).

Distrib.: Hokkaidô, Central Honshû, N. Korea, Ussuri.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1957. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

Lespedeza MICHAUX

166. L. cuneata (DU MONTE de COURSET) G. DON, Hist. **2**: 307. 1832. HONDA, Nom. Pl. Jap. ed. em. 129. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Syn. *Amphyllus cuneata* DU MONTE de COURSET, Bot. Cult. **6**: 100. 1811.
L. juncea PERSOON var. *sericea* MAXIMOWICZ sic MATSUMURA, Ind. Pl. Jap. **2**(2): 268. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145.

1919.

Nom. Jap.: *Medo-hagi.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Loochoo Isls., Korea, Manchuria, Formosa, China, India, Australia.

Specimens from Mt. Yûpari: July 6, 1958. NOSAKA-SAP.

Lotus LINNAEUS

167. L. corniculatus LINNAEUS var. **japonicus** REGEL, Ind. Sem. Hort. Petrop. 23. 1864.
HONDA, Nom. Pl. Jap. ed. em. 130. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Miyakogusa.*

Hab.: Sunny meadow of lower part, waste or arable place.

Distrib.: Hokkaidô to Loochoo Isls., Korea.

Specimens from Mt. Yûpari: July 6, 1958. NOSAKA-SAP.

Maackia RUPRECHT et MAXIMOWICZ

168. M. amurensis RUPRECHT et MAXIMOWICZ var. **buergeri** C. K. SCHNEIDER, Illust. Handb. Laubholzk. **2**: 16. 1907, excl. syn. nonnul. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 131. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Inu-enju.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, Honshû, Korea, S. Kuriles.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

Oxytropis DE CANDOLLE

169. O. rishiriensis MATSUMURA in Bot. Mag. Tokyo **15**: 116. 1901. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 131. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Rishiri-genge.*

Hab.: Gama-iwa (Fig. 8–9).

Distrib.: Hokkaidô (Mt. Yûpari, Mt. Rishiri, Mt. Nipesotsu).

Specimens from Mt. Yûpari: Aug. 19, 1954 (fr.) & July 6, 1958 (fl.). NOSAKA-SAP.

Vicia LINNAEUS

170. V. cracca LINNAEUS, Sp. Pl. ed. 1, 735. 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA,

Nom. Pl. Jap. ed. em. 132. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1960.

Nom. Jap.: *Kusa-fuji.*

Hab.: Along the road of lower part, relatively common.

Distrib.: Hokkaidô, Honshû, Kyûshû, Temperate and subfrigid zones of northern hemisphere.

Specimens from Mt. Yûpari: June, 1955. NOSAKA-SAP.

FAM. GERANIACEAE

Geranium LINNAEUS

171. G. erianthum DE CANDOLLE, Prodr. **1**: 641. 1824.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 134. 1957.—NOSAKA in Journ. Geobot. **9**: 88. 1961.

Nom. Jap.: *Chishima-fûro.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, E. & N. Siberia, N. America.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT, Aug. 19, 1954 & July 28, 1957. NOSAKA-SAP.

172. G. eriostemon FISCHER var. **reinii** (FRANCHET et SAVATIER) MAXIMOWICZ form. **onoei** (FRANCHET et SAVATIER) HARA in Journ. Jap. Bot. **22**: 166 & 171. 1948; Enum. Sperm. Jap. **3**: 2. 1954.
HONDA, Nom. Pl. Jap. ed. em. 134. 1957.

Syn. *G. onoei* FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 303. 1877.

Nom. Jap.: *Takane-gunnai-fûro.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 13, 1969. NOSAKA-SAP.

173. G. nepalense SWEET var. **thunbergii** (SIEBOLD et ZUCCARINI) KUDO, Med. Pl. Hokkaidô t. 55. 1922.
HONDA, Nom. Pl. Jap. ed. em. 134. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Syn. *G. thunbergii* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(2): 136. 1845.

Nom. Jap.: *Fûrosô.*

Hab.: Lower part, mainly in the surroundings of human habitation,

very common (NOSAKA, 1961).

Distrib.: Hokkaidô to Loochoo Isls., S. Kuriles, Korea, Formosa.

FAM. OXALIDACEAE

Oxalis LINNAEUS

174. O. acetosella LINNAEUS, Sp. Pl. ed. 1, 433. 1753.
HONDA, Nom. Pl. Jap. ed. em. 135. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Ko-miyama-katabami.*

Hab.: Shady place of mountain to subalpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Widely distributed in the northern hemisphere.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

FAM. RUTACEAE

Phellodendron RUPRECHT

175. P. amurense RUPRECHT var. **sachalinense** FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 120. 1868.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 137. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Hiroha-no-kihada.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô to Kyûshû, S. Saghalien, S. Kuriles, Korea.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

Skimmia THUNBERG

176. S. japonica THUNBERG var. **intermedia** KOMATSU from. **repens** (NAKAI) HARA in Sci. Res. Ozegahara 446. 1954; Enum. Sperm. Jap. **3**: 32. 1954.
HONDA, Nom. Pl. Jap. ed. em. 137. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Syn. *S. repens* NAKAI in Bot. Mag. Tokyo **41**: 505. 1927.
S. japonica (non THUNB.) sensu FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 121. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Tsuru-shikimi.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

FAM. SIMAROUBACEAE

Picrasma BLUME

177. P. quassioides (D. DON) BENNETT var. **glabrescens** PAMPANINI in Nouv. Giorn. Bot. Ital. ser. 2, **18**: 171. 1911.
HONDA, Nom. Pl. Jap. ed. em. 137. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *P. quassioides* (non BENNETT) sensu MATSUMURA, Ind. Pl. Jap. **2**(2): 296. 1912.—KUSAKA in Goryôrin **152**: 56. 1942.

Nom. Jap.: *Nigaki.*
Hab.: In the mixed forest of lower part (KUSAKA, 1942; NOSAKA, 1961).
Distrib.: Hokkaidô to Loochoo Isls., Formosa, India, Korea, S. Manchuria, China.

FAM. EUPHORBIACEAE

Daphniphyllum BLUME

178. D. macropodum MIQUEL subsp. **humile** (MAXIM.) HURUSAWA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(6): 217. 1954.
HONDA, Nom. Pl. Jap. ed. em. 141. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *D. humile* MAXIMOWICZ ex FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 488. 1876.—KUSAKA in Goryôrin **152**: 56. 1942.

Nom. Jap.: *Ezo-yuzuriha.*
Hab.: In the undergrowth of the mixed forest, mainly of lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.
Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

Tithymalus HILL

179. T. sieboldianus (MORR. et DECNE.) HARA var. **montanus** (TATEWAKI) HARA, Enum. Sperm. Jap. **3**: 56. 1954.
HONDA, Nom. Pl. Jap. ed. em. 140. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *Euphorbia sieboldiana* MORREN et DECAISNE var. *montana* TATEWAKI in Res. Bull. Exper. For. Coll. Agr. Hokkaido Imp. Univ. **7**: 193. 1932.—*Tithymalus sieboldianus* form. *montanus* (TATEWAKI) TOYOKUNI in Journ. Geobot. **7**: 38. 1958.
Euphorbia sieboldiana (non MORREN et DECAISNE) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Hime-natsu-tôdai.*
Hab.: In the serpentine-pebble-fields of subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Shikoku, S. Kuriles (Isl. Shikotan).
Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

FAM. BUXACEAE

Pachysandra MICHAUX

180. P. terminalis SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(2): 142. 1845.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.—HONDA, Nom. Pl. Jap. ed. em. 142. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Nom. Jap.: *Fukkisô.*
Hab.: Mountain to alpine area, sometimes found in lower mountain area. Very common. (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô, Honshû, Shikoku, China.

FAM. CALLITRICHACEAE

Callitriche LINNAEUS

181. C. verna LINNAEUS, Pl. Suec. ed. 2, 2. 1775.
HONDA, Nom. Pl. Jap. ed. em. 142. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *C. stagnalis* SCOPOLI apud FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 369. 1877.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.
Nom. Jap.: *Mizu-hakobe.*
Hab.: Swampy place in low land (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô to Loochoo Isls., Widely distributed in the northern hemisphere.

FAM. ANACARDIACEAE

Rhus LINNAEUS

182. R. ambigua LAVALLÉE, Arb. Segrez. 54. 1877.
HONDA, Nom. Pl. Jap. ed. em. 143. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *R. orientalis* SCHNEIDER, Illust. Handb. Laubh. **2**: 151. 1907.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.
Nom. Jap.: *Tsuta-urushi.*
Hab.: Common in lower mountain to mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Formosa, Central China.

183. R. trichocarpa MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 84. 1865.

KUSAKA in Goryôrin **152**: 56. 1942.—HONDA, Nom. Pl. Jap. ed. em. 143. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Yama-urushi.*

Hab.: Lower mountain area (KUSAKA, 1942; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, S. Kuriles, Korea, China.

FAM. ACERACEAE

Acer LINNAEUS

184. A. aidzuense (FRANCHET) NAKAI in Bot. Mag. Tokyo **40**: 146. 1926. HONDA, Nom. Pl. Jap. ed. em. 143. 1957.

Syn. *A. tataricum* var. *aidzuense* FRANCHET in Bull. Soc. Bot. France **26**: 84. 1879.

A. ginnala MAXIMOWICZ ex REHDER in SARGENT, Tr. & Shr. **1**: 179. 1950.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Karakogi-kaëde.*

Hab.: Rather swampy place of lower part (NISHIDA, 1919).

Distrib.: Hokkaidô to Kyûshû.

185. A. cissifolium (SIEBOLD et ZUCCARINI) K. KOCH in MIQUEL, Ann. Mus. Bot. Lugd,-Bat. **1**: 252. 1864.
HONDA, Nom. Pl. Jap. ed. em. 143. 1957.

Syn. *Negundo cissifolium* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(2): 159. 1845.

Nom. Jap.: *Mitsude-kaëde.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû.

Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI-SAP.

186. A. japonicum THUNBERG, Fl. Jap. 161. 1784.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 144. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Hauchiwa-kaëde.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

187. A. miyabei MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **32**: 485. 1888.
HONDA, Nom. Pl. Jap. ed. em. 144. 1957.

Nom. Jap.: *Kurobi-itaya.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI-SAP.

The occurrence of this tree was recorded by S. NISHIDA from the foot of Mt. Ashibetsu in 1919. The author was careless to misquote NISHIDA's list. In 1965, the occurrence of this tree in this mountain was proved by OGATA (OGATA, 1965), and in 1969, YAMAGUCHI collected this plant in the western foot of this mountain.

188. A. mono MAXIMOWICZ var. **mayrii** (SCHWERIN) SUGIMOTO in Nippon Journ. Bot. **2**: 69. 1928.

OGATA in Bull. Tokyo Univ. For. **60**: 10. 1965.

Syn. *A. mayrii* SCHWERIN in Mitt. Deut. Dendr. Ges. **10**: 58. 1901.—HONDA, Nom. Pl. Jap. ed. em. 144. 1957.—*A. mono* MAXIM. var. *mayrii* (MAXIM.) KOIDZUMI ex NAKAI, Rep. Veg. Mt. Apoi 59. 1930. comb. nud.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Beni-itaya.*

Hab.: In the mixed forest of lower parts, one of the dominant trees of the mixed forest.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July, 1958. NOSAKA-SAP.

189. A. palmatum THUNBERG subsp. **matsumurae** KOIZUMI, Rev. Acer. Jap. 49, t. 28, f. 1-2. 1911.

HONDA, Nom. Pl. Jap. ed. em. 145. 1957.

Syn. *A. palmatum* THUNB. var. *matsumurae* (KOIDZUMI) MAKINO, Illust. Fl. Nippon 351. 1940.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

A. palmatum (non THUNB.) sensu SHIRASAWA, Icon. For. Tr. Jap. **1**, t. 68. 1900.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Yama-momiji.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô to Kyûshû.

Specimens from Mt. Yûpari: July, 1958. NOSAKA-SAP.

190. A. tschonoskii MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **31**: 24. 1886.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 145. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Mine-kaëde.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

191. A. ukurunduense TRAUTVETTER et MEYER, Fl. Ochot. 24. 1856. HONDA, Nom. Pl. Jap. ed. em. 145. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Syn. *A. spicatum* LAM. var. *ukurunduense* (TRAUTV. et MEY.) MAXIMOWICZ in Bull. Phys.-Math. Acad. St.-Pét. **15**: 125. 1856.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Ogarabana.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Shikoku, Saghalien, Kuriles, Korea, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 26, 1958 & July 5, 1959. NOSAKA-SAP.

form. **pilosum** NAKAI in sched. ex HARA, Enum. Sperm. Jap. **3**: 117. 1954.

HONDA, Nom. Pl. Jap. ed. em. 145. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Syn. *A. ukurunduense* var. *pilosum* NAKAI in Bot. Mag. Tokyo **28**: 308. 1914.

Nom. Jap.: *Usuge-ogarabana.*

Hab.: Subalpine area.

Distrib.: Hokkaidô, C. Honshû, Saghalien, Korea.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

FAM. STAPHYLEACEAE

Staphylea LINNAEUS

192. S. bumalda DE CANDOLLE, Prodr. **2**: 2. 1825.

HONDA, Nom. Pl. Jap. ed. em. 146. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Mitsuba-utsugi.*

Hab.: In the mixed forest of lower part (NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.

FAM. BALSAMINACEAE

Impatiens LINNAEUS

193. I. noli-tangere LINNAEUS, Sp. Pl. ed. 1, 938. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 147. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Ki-tsurifune.*

Hab.: Meadows of low land, relatively common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Eurasia, N. America.

194. I. textori MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 76. 1865. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 147. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Tsurifunesô.*

Hab.: Meadows of low land, rather rare (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria.

FAM. AQUIFOLIACEAE

Ilex LINNAEUS

195. I. crenata THUNBERG var. **paludosa** (NAKAI) HARA in Sci. Res. Ozegahara 446. 1954.
HONDA, Nom. Pl. Jap. ed. em. 147. 1957.

Syn. *I. radicans* var. *paludosa* NAKAI in Journ. Jap. Bot. **20**: 189. 1944.
I. crenata (non THUNB.) sensu FR. SCHMIDT, Reis. Amurl. u. Ina. Sachsl. 132. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Hai-inu-tsuge.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Honshû, S. Kuriles, S. Saghalien.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP.

196. I. rugosa FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 122, t. 3, f. 1–7. 1868.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 148. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Nom. Jap.: *Tsuru-tsuge.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP.

197. I. sugeroki MAXIMOWICZ subsp. **brevipedunculata** (MAXIMOWICZ) MAKINO in Bot. Mag. Tokyo **27**: 78. 1913.
HONDA, Nom. Pl. Jap. ed. em. 149. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.

Syn. *I. sugeroki* MAXIMOWICZ form. *brevipedunculata* MAXIMOWICZ in Mém. Acad. Sci. St.-Pét. ser. 7, **29**(3): 36. 1881.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Akami-no-inu-tsuge.*
Hab.: Mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, S. Kuriles.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

FAM. CELASTRACEAE

Celastrus LINNAEUS

198. C. strigillosus NAKAI in Bot. Mag. Tokyo **40**: 492. 1926.
KUSAKA in Goryôrin **152**: 56. 1942.—HONDA, Nom. Pl. Jap. ed. em. 149. 1957.—NOSAKA in Journ. Geobot. **9**: 89. 1961.
Nom. Jap.: *Oni-tsuru-umemodoki.*
Hab.: Mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea.
Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI-SAP.

Euonymus LINNAEUS

199. E. alatus SIEBOLD form. **subtriflorus** (BLUME) OHWI, Fl. Jap. ed. 1, 738. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 79. 1953.
NOSAKA in Journ. Geobot. **9**: 89. 1961.
Syn. *E. subtriflorus* BLUME, Bijdr. Fl. Ned. Ind. **15**: 1147. 1826.
E. alatus SIEB. var. *striatus* (THUNB.) MAKINO in Bot. Mag. Tokyo **21**: 138. 1907.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.
E. alatus SIEB. form. *ciliato-dentatus* HIYAMA in Journ. Jap. Bot. **31**: 46. 1956.—HONDA, Nom. Pl. Jap. ed. em. 149. 1957.
Nom. Jap.: *Ko-mayumi.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Manchuria, China.
Specimens from Mt. Yûpari: July 16, 1962. NOSAKA-SAP.

200. E. macropterus RUPRECHT in Bull. Phys.-Math. Acad. St.-Pét. **15**: 359. 1857.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 150. 1957.—NOSAKA in Journ Geobot. **9**: 89–90. 1961.
Nom. Jap.: *Hiroha-no-tsuribana.*
Hab.: Lower mountain to mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Saghalien, S. Kuriles, Korea, Manchuria, Ussuri, Amur.

201. E. oxyphyllus MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 86. 1865.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA,

Nom. Pl. Jap. ed. em. 150. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Tsuribana.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles, Korea, C. China.

Specimens from Mt. Yûpari: July. 1930. AKIYAMA–SAP.

202. E. sachalinensis (FR. SCHMIDT) MAXIMOWICZ var. **tricarpus** (KOIDZUMI) KUDO in Rep. Exp. For. Kyûshû Univ. **1**: 76. 1931. HONDA, Nom. Pl. Jap. ed. em. 150. 1957.

Syn. *E. tricarpus* KOIDZUMI in MATSUMURA, Icon. Pl. Koisik. **3**: 77. t. 184. 1916.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

E. sachalinensis (non MAXIMOWICZ) sensu MIYABE et MIYAKE, Fl. Saghal. 92. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Murasaki-tsuribana.*

Hab.: Mountain to subalpine area.

Distrib.: Hokkaidô, Honshû, Saghalien.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA–SAP.

203. E. sieboldianus BLUME, Bijdr. Fl. Ned. Ind. **17**: 1147. 1826. HONDA, Nom. Pl. Jap. ed. em. 150. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. '*Euonymus hamiltoniana* WALL': MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 199. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Mayumi.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria, China.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI–SAPT.

FAM. RHAMNACEAE

Rhamus LINNAEUS

204. R. ishidae MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **9**: 65. 1923.

HONDA, Nom. Pl. Jap. ed. em. 152. 1957.—TOYOKUNI in Journ. Geobot. **7**: 37. 1958.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Miyama-han-modoki.*

Hab.: In the serpentine-pebble-fields of alpine area and circumference of Gama-iwa (Fig. 8–9).

Distrib.: Alpine zone of Hokkaidô (Mt. Yûpari, Mt. Kirigishi, Mt. Apoi, Mt. Horoman, Mt. Tottabetsu, Mt. Chiroro etc.).

Specimens from Mt. Yûpari: Aug. 5, 1921. ISHIDA & TATEWAKI–SAPT (typus); Aug. 7, 1931. S. ITO–SAPT; July 5, 1959. NOSAKA–SAP.

FAM. VITACEAE

Vitis LINNAEUS

205. V. coignetiae PULLIAT ex PLANCHON in Vigne Amér. **7**: 186. 1883. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 153. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Yama-budô.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, Honshû, Shikoku, S. Kuriles, Saghalien.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

FAM. TILIACEAE

Tilia LINNAEUS

206. T. japonica (MIQUEL) SIMONKAI in Math. Természett. Közlem. **22**: 326. 1888.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 154. 1957.-NOSAKA—in Journ. Geobot. **9**: 90. 1961.

Syn. *T. cordata* var. *japonica* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 18. 1867.

Nom. Jap.: *Shinanoki.*

Hab.: In the mixed forest of lower part, very common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, China.

207. T. maximowicziana SHIRASAWA in Bull. Coll. Agr. Imp. Univ. Tokyo **4**: 158, t. 18. 1900.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 154. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Ôba-bodaiju.*

Hab.: In the mixed forest of lower part.

Distrib.: Hokkaidô, N. &. C. Honshû.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

FAM. ACTINIDIACEAE

Actinidia LINDLEY

208. A. arguta (SIEBOLD et ZUCCARINI) PLANCHON ex MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 15. 1867.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 157. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. *Trochostigma arguta* SIEBOLD et ZUCCARINI in Act. Acad. Monac. Phys.-Math. **3**: 727. 1843.

Nom. Jap.: *Sarunashi.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Saghalien, S. Kuriles, Korea, Manchuria, Ussuri.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

209. A. kolomikta (MAXIMOWICZ et RUPRECHT) MAXIMOWICZ, Prim. Fl. Amur. 63. 1859.

HONDA, Nom. Pl. Jap. ed. em. 157. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. *Prunus* ? *kolomikta* MAXIMOWICZ et RUPRECHT in Bull. Phys.-Math. Acad. Sci. St.-Pét. **15**: 129. 1856.

Nom. Jap.: *Miyama-matatabi.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, Manchuria, Ussuri, Amur.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP.

210. A. polygama (SIEBOLD et ZUCCARINI) PLANCHON ex MAXIMOWICZ, Prim. Fl. Amur. 64. 1859. in nota.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 157. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. *Trochostigma polygama* SIEBOLD et ZUCCARINI in Act. Acad. Monac. Phys.-Math. **3**: 728. 1843.

Nom. Jap.: *Matatabi.*

Hab.: Lower mountain to mountain area, relatively common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Isl. Yaku-shima, S. Saghalien, S. Kuriles, Korea, Manchuria, Ussuri.

FAM. HYPERICACEAE

Hypericum LINNAEUS

211. H. ascyron LINNAEUS, Sp. Pl. ed. 1, 783. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 157. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Tomoesô.*

Hab: Sunny meadow of low land (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, Temperate zone in E. Asia.

212. H. erectum THUNBERG, Fl. Jap. 296. 1784.

HONDA, Nom. Pl. Jap. ed. em. 158. 1957.—NOSAKA in Journ. Geobot, **9**: 90. 1961.

Syn. *H. erectum* THUNBERG form. *fauriei* MIYABE et MIYAKE, Fl. Saghal. 78–79. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.

Nom. Jap.: *Otogirisô.*

Hab.: Mountain to subalpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

213. H. kamtschticum LEDEBOUR in Denkschr. Bot. Ges. Regensb. **3**: 131. 1841, *pro parte.*

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 144. 1919.—HONDA, Nom. Pl. Jap. ed. em. 158. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Hai-otogiri.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

var. **hidakense** Y. KIMURA in Bot. Mag. Tokyo **52**: 405. 1938; Nov. Fl. Jap. Hyperic. 172. 1951.

HONDA, Nom. Pl. Jap. ed. em. 158. 1957.—Kô. ITO in Journ. Geobot. **16**: 102. 1968.

Nom. Jap.: *Hidaka-otogiri.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô (the Hidaka Mountain Range, Mt. Yûpari, Mt. Muine etc.).

Specimens from Mt. Yûpari: Aug. 23, 1923. ISHIDA-SAPT.

In the alpine meadow of Mt. Yûpari, various forms of *H. kamtschaticum* are met with. Intermediate forms between var. *kamtschaticum* and var. *hidakense* are also found. In this mountain, it seems very difficult to set a clear demarcation line between these two varieties. Sometimes a special form of this species is met with. That is, a form having stamens united into four bundles.

FAM. THYMELAEACEAE

Daphne LINNAEUS

214. D. kamtschatica MAXIMOWICZ var. **jezoensis** (MAXIMOWICZ) OHWI, Fl. Jap. ed. 1, 802. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 80. 1953; Fl. Jap. ed. 2, 929. 1965.

Syn. *D. jezoensis* MAXIMOWICZ ex REGEL in Gartenfl. **15**: 34, t. 496. 1866.—

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 169. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Naniwazu.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Late in May, 1956. NOSAKA-SAP.

215. D. miyabeana MAKINO in Bot. Mag. Tokyo **28**: 35. 1914.
HONDA, Nom. Pl. Jap. ed. em. 169. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Karasu-shikimi.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI-SAP.

FAM. VIOLACEAE

Viola LINNAEUS

216. V. biflora LINNAEUS, Sp. Pl. ed. 1, 936. 1753.
HONDA, Nom. Pl. Jap. ed. em. 161. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Kibana-no-koma-no-tsume.*

Hab.: Alpine area (Fig. 8–10).

Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Isl. Yaku-shima, Saghalien, Kuriles, N. Korea, Formosa, Subfrigid zones in Eurasia and N. America.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 5, 1959. NOSAKA-SAP.

217. V. blandiformis NAKAI in Bull. Soc. Bot. France **72**: 192. 1925.
HONDA, Nom. Pl. Jap. ed. em. 161. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Usuba-sumire.*

Hab.: Shady place in mountain to subalpine area (Fig. 8–10).

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 19, 1958 & Aug. 5, 1959. NOSAKA-SAP.

218. V. brevistipulata (FR. et SAV.) W. BECKER subsp. **hidakana** (NAKAI) S. WATANABE in Acta Phytotax. Geobot. **19**: 27–28. 1961.
var. **ciliata** (NAKAI) S. WATANABE in Acta Phytotax. Geobot. **19**: 28. 1961.

Syn. *V. hidakana* NAKAI var. *ciliata* NAKAI apud TATEWAKI in Journ. Sapporo

Soc. Agr. & For. **26**: 41. 1943.

V. brevistipulata (FR. et SAV.) W. BECKER in Beih. Bot. Centralbl. Abt. 2, **34**: 265. 1916. *pro parte.*—HONDA, Nom. Pl. Jap. ed. em. 161. 1957. *p.p.*—NOSAKA in Journ. Geobot. **9**: 90. 1961.

V. glabella (non NUTT.) sensu MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **23**: 336. 1877, *pro parte.*—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Ke-ezo-kisumire.*

Hab.: Relatively moist place in subalpine to alpine area(Fig. 8–10).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

form. **incisa** S. WATANABE in Acta Phytotax. Geobot. **19**: 28. 1961.

Syn. *V. brevistipulata* form. *laciniata* (BOISS.) F. MAEKAWA in HARA, Enum. Sperm. Jap. **3**: 198. 1954. *pro parte.*—HONDA, Nom. Pl. Jap. ed. em. 161. 1957. *pro parte.*

Nom. Jap.: *Fugire-kisumire.*

Hab.: Relatively moist place in alpine area (Fig. 8–10).

Distrib.: Hokkaidô.

Specimens from M. Yûpari: July 13, 1969. NOSAKA-SAP.

219. V. crassa MAKINO in Bot. Mag. Tokyo **19**: 87. 1905. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 162. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Takane-sumire.*

Hab.: Alpine area, limited in the serpentine-pebble-field called 'Fukitôshi' (Fig. 8–10).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Korea, Tibet.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

220. V. kusanoana MAKINO in Bot. Mag. Tokyo **26**: 173. 1912. HONDA, Nom. Pl. Jap. ed. em. 164. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Ô-tachitsubo-sumire.*

Hab.: Mountain area, sometimes found in alpine area, especially near Tsurigane-iwa (Fig. 8–10).

Distrib.: Hokkaidô, N. & C. Honshû, Kyûshû, Isl. Ullŭng-do.

Specimens from Mt. Yûpari: July 28, 1957 (near Tsurigane-iwa) & July 5, 1959. NOSAKA-SAP.

The plant collected near Tsurigane-iwa closely resembles to *V. kusanoana* var. *brevicalcarata* HARA.

221. V. sacchalinensis H. BOISSIEU var. **alpina** HARA in Bot. Mag. Tokyo **50**: 303. 1936.

HONDA, Nom. Pl. Jap. ed. em. 167. 1957.—TOYOKUNI in Journ. Geobot. **7**: 38. 1958.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. *V. harae* MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **16**: 182. 1940.

V. sylvestris (non KITAIB.) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Apoi-tachitsubo-sumire.*

Hab.: Serpentine-pebble-fields (Fig. 8–10).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSAKA-SAP.

222. V. selkirkii PURSH ex GOLDIE in Edinb. Philos. Journ. **6**: 324. 1882.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 167. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Miyama-sumire.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Eurasia, N. America.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

form. **variegata** (NAKAI) F. MAEKAWA in HARA, Enum. Sperm. Jap. **3**: 217. 1954.

HONDA, Nom. Pl. Jap. ed. em. 167. 1957.

Syn. *V. selkirkii* PURSH var. *variegata* NAKAI in Bot. Mag. Tokyo **31**: 37. 1922.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Fuiri-miyama-sumire.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, N. Korea.

Specimens from Yûpari: July 27, 1957. NOSAKA-SAP.

223. V. verecunda A. GRAY, Bot. Jap. 382. 1859.

HONDA, Nom. Pl. Jap. ed. em. 168. 1957.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Nom. Jap.: *Tsubo-sumire.*

Hab.: Meadow of lower part and lower mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles, Saghalien, Korea, Manchuria,

China, Formosa.

Specimens from Mt. Yûpari: June 15, 1956 & June 6, 1958. NOSAKA-SAP.

224. V. yubariana NAKAI in Bot. Mag. Tokyo **36**: 31. 1922.
HONDA, Nom. Pl. Jap. ed. em. 168. 1957.—TOYOKUNI in Journ. Geobot. **7**: 38. 1958.—NOSAKA in Journ. Geobot. **9**: 90. 1961.

Syn. *V. glabella* NUTT. var. *crassifolia* KOIDZUMI in Bot. Mag. Tokyo **31**: 139. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Shisoba-sumire.*

Hab.: Serpentine landslips both in lower mountain area and in alpine area (Fig. 8–10).

Distrib.: An endemic species.

Specimens from Mt. Yûpari: Aug., 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug., 1934. OHWI-SAPT; July 5, 1959. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

FAM. ONAGRACEAE

Chamaenerion ADANSON

225. C. angustifolium (LINNAEUS) SCOPOLI, Fl. Carn. ed. 2, **1**: 271. 1771.
HONDA, Nom. Pl. Jap. ed. em. 172. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Epilobium angustifolium* LINNAEUS, Sp. Pl. ed. 1, 347. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Yanagiran.*

Hab.: Sunny meadow of lower part.

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, Eurasia, N. America, Greenland.

Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

Circaea LINNAEUS

226. C. alpina LINNAEUS, Sp. Pl. ed, 1, 9, 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 172. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Miyama-tanitade.*

Hab.: In the undergrowth of the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô to Kyûshû, Isl. Yaku-shima, Saghalien, Kuriles, Korea, Eurasia, N. America.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 27, 1957.

NOSAKA-SAP.

227. **C. erubescens** FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 170. 1875. nom. nud.; Enum. Pl. Jap. **2**: 370. 1877.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 172. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Nom. Jap.: *Tanitade.*
Hab.: In the undergrowth of the *Abies-Picea-Betula* forest.
Distrib.: Hokkaidô to Kyûshû, S. Saghalien, China, Formosa.
Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

Epilobium LINNAEUS

228. **E. amurense** HAUSSKNECHT in Oester. Bot. Zeits. **29**: 55. 1879.
HONDA, Nom. Pl. Jap. ed. em. 173. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Syn. *E. cephalostigma* (non HAUSSKNECHT) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.
Nom. Jap.: *Kegon-akabana.*
Hab.: Moist place of mountain area.
Distrib.: Hokkaidô, Honshû, Shikoku, Saghalien, M. & S. Kuriles, Korea, Manchuria, Ussuri, Amur, Formosa.
Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

229. **E. cephalostigma** HAUSSKNECHT in Oester. Bot. Zeits. **29**: 57. 1879.
HONDA, Nom. Pl. Jap. ed. em. 173. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Syn. *E. japonicum* (non HAUSSKNECHT) sensu NAKAI in Bot. Mag. Tokyo **22**: 74 & 81. 1908.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.
Nom. Jap.: *Iwa-akabana.*
Hab.: Mountain area.
Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, S. Kuriles, Korea, Manchuria.
Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; July 12, 1964. NOSAKA-SAP.

230. **E. glandulosum** LEHMANN var. **asiaticum** HARA in Journ. Jap. Bot. **18**: 241. 1942; Enum. Sperm. Jap. **3**: 266. 1954.
HONDA, Nom. Pl. Jap. ed. em. 173. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Syn. *E. glandulosum* (non LEHMANN) sensu MIYABE et MIYAKE, Fl. Saghal. 179. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Karafuto-akabana.*
Hab.: Mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, Kamchatka.

231. E. hornemanni REICHENBACH var. **foucaudianum** (LÉVEILLÉ) HARA in Journ. Jap. Bot. **18**: 247. 1942, pro syn.; Enum. Sperm. Jap. **3**: 267. 1954.
HONDA, Nom. Pl. Jap. ed. em. 173. 1957.
Syn. *E. foucaudianum* LÉVEILLÉ in Bull. Acad. Geogr. Bot. **9**: 211. 1900.
E. hornemanni (non REICHENB.) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 409. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.
Nom. Jap.: *Miyama-akabana.*
Hab.: On rocky outcrops, e. g., Tsurigane-iwa etc.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA–SAPT.

FAM. ALANGIACEAE

Alangium LAMARCK

232. A. platanifolium (SIEBOLD et ZUCCARINI) HARMS var. **macrophyllum** (SIEBOLD et ZUCCARINI) WANGERIN in ENGLER, Pfl.-reich **41** (4–220b): 22, f. 6 A–E. 1910.
Syn. *Marlea macrophylla* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4** (2): 135. 1845.
Marlea platanifolia SIEB. et ZUCC. var. *triloba* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 159. 1865.—HONDA, Nom. Pl. Jap. ed. em. 175. 1957.
Nom. Jap.: *Uriniki.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria.
Specimens from Mt. Yûpari: July, 1969. YAMAGUCHI–SAP.

FAM. ARALIACEAE

Acanthopanax MIQUEL

233. A. sciadophylloides FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 193. 1875, nom. nud.; Enum. Pl. Jap. **2**; 378. 1877.
KUSAKA in Goryôrin **152**: 57. 1942.—HONDA, Nom. Pl. Jap. ed. em. 176. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Nom. Jap.: *Koshiabura.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaidô to Kyûshû.
Specimens from Mt. Yûpari: July 5, 1959. NOSAKA–SAP.

Aralia LINNAEUS

234. A. cordata THUNBERG, Fl. Jap. 127. 1784.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 176. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Udo.*

Hab.: Meadow and the undergrowth of the mixed forest, common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., Saghalien, S. Kuriles, China.

235. A. elata (MIQUEL) SEEMANN var. **canescens** (FRANCHET et SAVATIER) NAKAI in Journ. Arnold Arb. **5**: 31. 1924.
HONDA, Nom. Pl. Jap. ed. em. 176. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *A. spinosa β. canescens* FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 192. 1875.—*Aralia chinensis* L. var. *canescens* (FRANCH. et SAVAT.) MATSUMURA, Ind. Pl. Jap. **2**(2): 418. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Medara.*

Hab.: In the mixed forest of lower mountain to mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, Honshû, Saghalien.

Kalopanax MIQUEL

236. K. pictus (THUNBERG) NAKAI, Fl. Sylv. Korea. **16**: 34, t. 8–10. 1927.
HONDA, Nom. Pl. Jap. ed. em. 177. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Acer pictum* THUNBERG in Nov. Act. Reg. Soc. Sci. Upsal. **4**: 36 & 40. 1783.
Kalopanax ricinifolium (SIEB. et ZUCC.) MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **1**: 16. 1863.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Hari-giri.*

Hab.: In the mixed forest of lower part, relatively common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Korea, Manchuria, Ussuri, China.

Specimens from Mt. Yûpari: July, 1958 & Aug. 19, 1958. NOSAKA-SAP.

Panax LINNAEUS

237. P. japonicus C. A. MEYER in Bull. Phys.-Math. Acad. St.-Pét. **1**:

340. 1843.
HONDA, Nom. Pl. Jap. ed. em. 177. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Nom. Jap.: *Tcchiba-ninjin.*
Hab.: Meadow of lower mountain area (NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû.

FAM. UMBELLIFERAE

Aegopodium LINNAEUS

238. A. alpestre LEDEBOUR, Fl. Alt. **1**: 354. 1829.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 177. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Nom. Jap.: *Ezo-bôfû.*
Hab.: Mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, Siberia, Kamchatka, China.
Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO.

Angelica LINNAEUS

239. A. anomala LALLEMANT in Ind. Sem. Hort. Petrop. **9**: 57. 1842.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 177. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Nom. Jap.: *Ezono-yoroigusa.*
Hab.: Mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, E. Siberia, Temperate zone in E. Asia.
Specimens from Mt. Yûpari: Aug. 18, 1958. NOSAKA-SAP.

240. A. stenoloba KITAGAWA in Bot. Mag. Tokyo **51**: 659. 1937; in Bull. Nat. Sci. Mus. Tokyo **46**: 8. 1960.
HONDA, Nom. Pl. Jap. ed. em. 178. 1957.—TOYOKUNI in Journ. Geobot. **7**: 38. 1958.—NOSAKA in Journ. Geobot. **9**: 91. 1961.
Syn. *Ligsticum linearilobum* KOIDZUMI in Bot. Mag. Tokyo **31**: 31. 1917.—*L. japonicum* MAXIM. form. *linearilobum* (KOIDZ.) KUDO ex NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.
Nom. Jap.: *Hosoba-tôki.*
Hab.: Serpentine-pebble-fields both in the lower part (near Ishiwata-yama) and in the alpine area (Fig. 8–11).
Distrib.: Hokkaidô (prov. Ishikari & prov. Hidaka).

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 29, 1951. HIROE-SAPT; Aug. 19, 1954. NOSAKA-SAP.

241. A. ursina (RUPRECHT) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **22**: 258. 1876.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 179. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Angelophyllum ursinum* RUPRECHT in Beitr. Pfl. Russ. Reich. **11**: 8. 1859.

Nom. Jap.: *Ezo-nyû.*

Hab.: Meadow of lower mountain area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 29, 1952. HIROE-KYO.

Bupleurum LINNAEUS

242. B. longeradiatum TURCZANINOW var. **breviradiatum** FR. SCHMIDT ex MAXIMOWICZ, Prim. Fl. Amur. 125. 1859.

NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *B. longeradiatum* TURCZ. form. *elatius* KOSO-POLJANSKY in Bull. Soc. Nat. Moscou n. s. **29**: 60. 1916.—HONDA, Nom. Pl. Jap. ed. em. 179. 1957.
B. longifolium L. var. *aureum* WOLF subvar. *breviinvolucratum* WOLF apud TAKEDA in Journ. Linn. Soc. **42**: 467. 1914.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Hotaru-saiko.*

Hab.: Gama-iwa and the serpentine-pebble-field of lower part (near Ishiwata-yama).

Distrib.: Hokkaidô, Honshû, Korea, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 4, 1921. TAKEDA & TATEWAKI-SAPT; Aug. 18, 1956. NOSAKA-SAP.

243. B. triradiatum ADAMS var. **alpinum** RUPRECHT in Beitr. Pfl. Russ. Reich **11**: 26. 1859.

HONDA, Nom. Pl. Jap. ed. em. 179. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *B. ranunculoides* var. *triradiatum* (ADAMS) REGEL form. *alpinum* (RUPRECHT) WOLF in ENGLER, Pfl.-reich **43** (4-228): 117. 1910.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Rebun-saiko.*

Hab.: Gama-iwa (TAKEDA & TATEWAKI, 1921) and Maëdake peaks (Fig. 8–11).

Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 4, 1921. TAKEDA & TATEWAKI-SAPT (at Gama-iwa); Aug. 2, 1967. NOSAKA-SAP (at Maëdake).

Coelopleurum LEDEBOUR

244. C. lucidum (LINNAEUS) FERNALD var. **gmelini** (DC.) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(2): 91. 1952; Enum. Sperm. Jap. **3**: 307. 1954.

HONDA, Nom. Pl. Jap. ed. em. 180. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Archangelica gmelini* DE CANDOLLE, Prodr. **4**: 170. 1830.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Ezo-no-shishiudo.*

Hab.: Meadow and lower mountain area, sometimes in alpine area.

Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka, Bering.

Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO.

Conioselinum HOFFMANN

245. C. filicinum (WOLFF) HARA in Journ. Jap. Bot. **18**: 28. 1942; Enum. Sperm. Jap. **3**: 307. 1954.

HONDA, Nom. Pl. Jap. ed. em. 180. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Peucedanum filicinum* WOLFF in FEDDE, Rep. Sp. Nov. **21**: 246. 1925.

Nom. Jap.: *Miyama-senkyû.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO.

Cryptotaenia DE CANDOLLE

246. C. canadensis DE CANDOLLE, Prodr. **4**: 119. 1830.

HONDA, Nom. Pl. Jap. ed. em. 180. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *C. japonica* HASSKARL in Retzia **1**: 113. 1855.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Mitsuba.*

Hab.: Moist place in lower part, sometimes cultivated as a vegetable; very common.

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China, Formosa, N. America.

Heracleum LINNAEUS

247. H. lanatum MICHAUX var. **asiaticum** (HIROE) HARA in Journ. Fac.

Sci. Univ. Tokyo sect. 3. **6**(2): 92. 1952, in adnota; Enum. Sperm. Jap. **3**: 310. 1954.

HONDA, Nom. Pl. Jap. ed. em. 180. 1957.

Syn. *H. lanatum* MICHAUX subsp. *asiaticum* HIROE in Acta Phytotax. Geobot. **14**: 4. 1949.

H. lanatum (non MICHAUX) sensu A. GRAY, Bot. Jap. 391. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

H. dulce FISCHER in Ind. Sem. Hort. Petrop. 9, suppl. 23. 1844.—NOSAKA in Journ. Geobot. **9**: 91, 1961.

Nom. Jap.: *Ô-hanaudo.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, Kuriles, Korea, China, E. Siberia, N. America.

Specimens from Mt. Yûpari: Aug. 28, 1951. HIROE-KYO.

Oenanthe LINNAEUS

248. O. javanica (BLUME) DE CANDOLLE, Prodr. **4**: 138. 1830.

HONDA, Nom, Pl. Jap. ed. em. 181. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Sium javanicum* BLUME, Bijdr. Fl. Ned. Ind. **15**: 881. 1826.

Oenanthe stolonifera DE CANDOLLE, Prodr. **4**: 138. 1830.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Seri.*

Hab.: Moist or damp place in lower part, sometimes cultivated as a vegetable, common.

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., S. Saghalien, S. Kuriles, Korea, Manchuria, Formosa, Southeastern Asia, Australia.

Osmorhiza RAFINEQUE-SCHMALTZ

249. O. aristata (THUNBERG) MAKINO et YABE in Bot. Mag. Tokyo **17**: 14. 1903.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 181. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Chaerophyllum aristatum* THUNBERG, Fl. Jap. 119. 1784.

Nom. Jap.: *Yabu-ninjin.*

Hab.: Meadows of lower part.

Distrib.: Hokkaidô to Loochoo Isls., S. Kuriles, Korea, S. Siberia, E. Asia, Formosa, Caucasus.

Specimens from Mt. Yûpari: Aug. 28, 1951. HIROE-KYO.

Peucedanum LINNAEAS

250. P. multivittatum MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét.

31: 52. 1886.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.—HONDA, Nom. Pl. Jap. ed. em. 181. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Hakusan-bôfû.*

Hab.: Alpine meadow, common.

Distrib.: Hokkaidô, Honshû.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Pleurospermum HOFFMANN

251. P. austriacum (LINNAEUS) HOFFMANN, Gen. Umbel. 10. 1814.
Subsp. **uralense** (HOFFMANN) SOMMIER, Fl. dell'Ob Infer. 73. 1896. HONDA, Nom. Pl. Jap. ed. em. 181. 1957.

Syn. *P. uralense* HOFFMANN, Gen. Umbel. 9, in adnota & 180. 1814.
P. austriacnm (L.) HOFFMANN, Gen. Umbel. 10. 1814.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.
Pleurospermum camtschaticum HOFFMANN, Gen. Umbel. 10. 1814.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Ô-kasamochi.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Manchuria, Siberia, E. Europe.

Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO.

Sanicula LINNAEUS

252. S. chinensis BUNGE, Enum. Pl. Chin. Bor. 106. 1833.
HONDA, Nom. Pl. Jap. ed. em. 181. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *S. europaea* L. var. *elata* MAKINO in IINUMA, Sômoku-dzusetsu ed. MAKINO **1**: 381. 1907.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Uma-no-mitsuba.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Saghalien, S. Kuriles, Korea, Manchuria, China, Ussuri.

Specimens from Mt. Yûpari: Aug. 28, 1951. HIROE-KYO; July 27, 1957. NOSAKA-SAP.

Tilingia REGEL

253. T. ajanensis REGEL et TILING, Fl. Ajan. 97. 1858.
HONDA, Nom. Pl. Jap. ed. em. 182. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Cnidium ajanense* (REGEL) DRUDE in ENGLER, Pfl.-fam. **3**(8): 210. 1897.—

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Chishima-ninjin.*

Hab.: Alpine area, common.

Distrib.: Hokkaidô, Honshû, Shikoku, Saghalien, Kuriles, E. Siberia.

Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO; Aug. 19, 1954. NOSAKA-SAP.

254. T. holopetala (MAXIMOWICZ) KITAGAWA in Journ. Jap. Bot. **21**: 74. 1947; in Bull. Nat. Sci. Mus. Tokyo **46**: 34. 1960.

HONDA, Nom. Pl. Jap. ed. em. 182. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Carum holopetalum* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **31**: 48. 1886.

Nom. Jap.: *Ibuki-zeri.*

Hab.: Mountain to subalpine area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 29, 1951. HIROE-KYO; Aug. 19, 1954. NOSAKA-SAP.

Torilis ADANSON

255. T. japonica (HOUTTUYN) DE CANDOLLE, Prodr. **4**: 219. 1830.

HONDA, Nom. Pl. Jap. ed. em. 182. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *Caucalis japonica* HOUTTUYN, Nat. Hist. **26**: 42, f. 1. A. 1777.
Torilis anthriscus BERNHARDI ex FORBES et HEMSLEY in Journ. Linn. Soc. **23**: 337. 1888.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 143. 1919.

Nom. Jap.: *Yabu-jirami.*

Hab.: Meadow of lower part (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., Formosa, Korea, Himalaya, Temperate zone in E. Asia.

FAM. CORNACEAE

Chamaepericlymenum HILL

256. C. canadense (LINNAEUS) ASCHERSON et GRAEBNER, Fl. N. O. Flachl. 539. 1898.

HONDA, Nom. Pl. Jap. ed. em. 183. 1957.

Syn. *Cornus canadensis* LINNAEUS, Sp. Pl. ed. 1, 118, 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Gozen-tachibana.*

Hab.: Mountain to alpine area, common.

Distrib.: Hokkaidô, N. & C. Honsû, Shikaku, Saghalien, Kuriles, Korea,

Ussuri, Amur, Ayan, N. America, Greenland.

Specimens from Mt. Yûpari: July 27, 1957 & July 5, 1959. NOSAKA-SAP.

Cornus LINNAEUS

257. C. controversa HEMSLEY ex PRAIN in CURTIS, Bot. Mag. t. 8261 in textu. 1909. nom. subnud.—SCHNEIDER, Illust. Handb. Laubh. **2**: 437. 1909.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 183. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Mizuki.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkoidô to Loochoo Isls., S. Kuriles, Korea, Manchuria, China, Indo-China, Formosa, Himalaya.

FAM. PYROLACEAE

Chimaphila PURSH

258. C. japonica MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 165. 1886. HONDA, Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Umegasasô.*

Hab.: In the undergrowth of the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kurilea, Korea, Manchuria, China.

Specimens from Mt. Yûpari: Aug., 1962. NOSAKA-SAP.

Monotropastrum H. ANDERS

259. M. globosum H. ANDRES ex HARA in Journ. Jap. Bot. **14**: 426. 1938, nom. seminud.; HARA, Enum. Sperm. Jap. **1**: 3. 1949.

HONDA, Nom. Pl. Jap. ed. 1, 254 & 511. 1939, sine descr.; Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Ginryôsô.*

Hab.: In the undergrowth of the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Korea.

Specimens from Mt. Yûpari: July 29, 1958. NOSAKA-SAP.

Pyrola LINNAEUS

260. P. alpina H. ANDRES in Deut. Bot. Monatsschr. **22** (3 u. 4): 19. 1911.

HONDA, Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Nom. Jap.: *Koba-no-ichiyakusô.*

Hab: Lower mountain to subalpine area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957 & July 29, 1958. NOSAKA-SAP.

261. P. faurieana H. ANDRES in Verh. Bot. Ver. Prov. Brandenb. **65**: 219. 1913.

HONDA, Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *P. minor* (non LINNAEUS) sensu FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 158. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Karafuto-ichiyakusô.*

Hab.: Alpine meadow (Fig. 8–11).

Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

262. P. japonica KLENZE form. **subaphylla** (MAXIMOWICZ) OHWI, Fl. Jap. ed. 1, 875. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 81. 1953; Fl. Jap. ed. 2, 1011. 1965.

HONDA, Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ. Geobot. **9**: 91. 1961.

Syn. *P. subaphylla* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **11**: 433. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Hitotsuba-ichiyakusô.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, Honshû, Korea, Manchuria.

Specimens from Mt. Yûpari: Aug. 4, 1912. YANAGISAWA-SAPT.

263. P. renifolia MAXIMOWICZ, Prim. Fl. Amur. 190. 1859.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 185. 1957.—NOSAKA in Journ, Geobot. **9**: 92. 1961.

Nom. Jap.: *Jin'yô-ichiyakusô.*

Hab.: Relatively shady place of lower part.

Distrib.: Hokkaidô, Honshû, Saghalien, S. Kuriles, Korea, Manchuria, Amur.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

264. P. secunda LINNAEUS, Sp. Pl. ed. 1. 396. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—NOSAKA

in Journ. Geobot. **9**: 92. 1961.

Syn. *Orthilia secunda* (LINNAEUS) HOUSE in Amer. Midl. Nat. **7**: 134. 1921.—HONDA, Nom. Pl. Jap. ed. em. 185. 1957.

Nom. Jap.: *Ko-ichiyakusô.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, Temperate zone of northern hemisphere.

Specimens from Mt. Yûpari: July 8, 1957. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

FAM. EMPETARACEAE

Empetrum LINNAEUS

265. E. nigrum LINNAEUS var. **japonicum** K. KOCH, Hort. Dendr. 89. 1853.

HONDA, Nom. Pl. Jap. ed. em. 186. 1967.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *E. nigrum* (non LINNAEUS) sensu MIQUEL, Prol. Fl. Jap. 99. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 145. 1919.

Nom. Jap.: *Gankôran.*

Hab.: Alpine area, very common.

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea, E. Siberia.

Specimens from Mt. Yûpari: Aug. 12, 1956. NOSAKA-SAP.

FAM. DIAPENSIACEAE

Diapensia LINNAEUS

266. D. lapponica LINNAEUS subsp. **obovata** (FR. SCHMIDT) HULTÉN, Fl. Alask. & Yuk. **8**: 1265. 1948.

HONDA, Nom. Pl. Jap. ed. em. 196. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *D. lapponica* L. var. *obovata* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 161. 1868.

D. lapponica (non LINNAEUS) sensu A. GRAY, Bot. Jap. 400. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Iwa-ume.*

Hab.: On rocky outcrops in alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, N. America.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

FAM. ERICACEAE

Andromeda LINNAEUS

267. A. polifolia LINNAEUS, Sp. Pl. ed. 1, 393. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 186. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Hime-shakunage.*

Hab.: Peat bog in alpine area (Fig. 8–12).

Distrib.: Hokkaidô, N. & C. Honshû, Widely distributed in the frigid zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSALA-SAP.

Arcterica COVILLE

268. A. nana (MAXIMOWICZ) MAKINO in Bot. Mag. Tokyo **20**: 85. 1906. HONDA, Nom. Pl. Jap. ed. em. 186. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Andromeda nana* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 47. 1873.—*Pieris nana* (MAXIM.) MAKINO in Bot. Mag. Tokyo **8**: 213. 1894.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Komeba-tsugazakura.*

Hab.: Alpine area, mainly on rocky outcrops. Common.

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Arctous NIEDENZU

269. A. alpina (LINNAEUS) NIEDENZU var. **japonica** (NAKAI) OHWI in Acta Phytotax. Geobot. **1**: 119. 1932; Fl. Jap. ed. 1, 905. 1953; Fl. Jap. ed. 2, 1043. 1965.

HONDA, Nom. Pl. Jap. ed. em. 186. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *A. japonica* NAKAI in Bot. Mag. Tokyo **35**: 134. 1921.

A. alpina (non NIEDENZU) sensu MATSUMURA, Ind. Pl. Jap. **2**(2): 145. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. 7: 141. 1919.

Nom. Jap.: *Urashima-tsutsuji.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Aleutian, N. America.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Bryanthus GMELIN

270. B. gmelini D. DON in Edinb. New Philos. Journ. **17**: 160. 1834. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 186. 1957.—NOSAKA in Journ. Geobot **9**: 92. 1961.

Nom. Jap.: *Chishima-tsugazakura.*

Hab.: Alpine meadow in the eastern margin of the central peat bog (Fig. 8–12).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Cassiope D. DON

271. C. lycopodioides (PALLAS) D. DON in Edinb. New Philos. Journ. **17**: 158. 1834.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 186. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Andromeda lycopodioides* PALLAS, Fl. Ross. **1** (2): 55, t. 73, f. 1. 1788.

Nom. Jap.: *Iwa-hige.*

Hab.: On rocky outcrops in alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles. Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Eubotryoides HARA

272. E. grayana (MAXIMOWICZ) HARA var. **oblongifolia** (MIQUEL) HARA in Journ. Jap. Bot. **11**: 629. 1935; Enum. Sperm. Jap. **1**: 13–14. 1949.

HONDA, Nom. Pl. Jap. ed. em. 187. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Leucothoe chlorantha* A. GRAY var. *oblongifolia* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 163. 1866.

L. grayana MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 46. 1872.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Hanahiri-no-ki.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 28, 1957 & July 5, 1959. NOSAKA-SAP.

Gaultheria LINNAEUS

273. G. adenothrix (MIQUEL) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 44. 1872.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 187. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Andromeda adenothrix* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **1**: 31. 1863.

Nom. Jap.: *Iwa-haze.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Shikoku.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

274. G. miqueliana TAKEDA in Bot. Mag. Tokyo **32**: 195. 1918. HONDA, Nom. Pl. Jap. ed. em. 187. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *'Gaultheria pyroloides* HOOKER et THOMSON': MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **1**: 30. 1863.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Shiratama-no-ki.*
Hab.: Subalpine to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Aleutian.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Harrimanella COVILLE

275. H. stelleriana (PALLAS) COVILLE in Prodr. Washing. Acad. Sci. **3**: 574, f. 62. 1901.
HONDA, Nom. Pl. Jap. ed. em. 187. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Andromeda stelleriana* PALLAS, Fl. Ross. **1** (2): 58, t. 74, f. 2. 1788.—*Cassiope stelleriana* (PALLAS) DE CANDOLLE, Prodr. **7**: 611. 1838.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Jimukade.*
Hab.: Alpine area, near Tsurigane-iwa (Fig. 8–12).
Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka, N. America.
Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

Ledum LINNAEUS

276. L. palustre LINNAEUS subsp. **diversipilosum** (NAKAI) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 351. 1956, in adnota. HONDA, Nom. Pl. Jap. ed. em. 187–188. 1957.

Syn. *L. palustre* var. *diversipilosum* NAKAI in Bot. Mag. Tokyo **31**: 102. 1917.—NOSAKA in Journ. Geobot. **9**: 92. 1961.
L. palustre var. *dilatatum* (non WAHL) sensu FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 293. 1875.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**:-141. 1919.

Nom. Jap.: *Kabafuto-iso-tsutsuji.*
Hrb.: Alpine area.
Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles, Korea, Siberia.
Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

Loiseleuria DESVAUX

277. L. procumbens (LINNAEUS) DESVAUX in Journ. de Bot. **1**: 35. 1813.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 188. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Azalea procumbens* LINNAEUS, Sp. Pl. ed. 1, 151. 1753.

Nom. Jap.: *Mine-zuô.*

Hab.: Alpine area.

Distrib.: Hokkaidô, Honshû, Kuriles, Frigid zone in the northern hemisphere.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Menziesia J. E. SMITH

278. M. pentandra MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **11**: 431. 1867.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 188. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Ko-yôraku-tsutsuji.*

Hab.: Mountain to subalpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Oxycoccus HILL

279. O. quadripetalus GILIBERT, Fl. Lithuan. **1**: 5. 1781.

HONDA, Nom. Pl. Jap. ed. em. 188. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Vaccinium oxycoccus* LINNAEUS, Sp. Pl. ed. 1, 351. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Tsuru-kokemomo.*

Hab.: Peat bog in the alpine area (Fig. 8–12).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles; Swamps and bogs of frigid zone in the northern hemisphere.

Specimens from Mt. Yûpari: July 5, 1957. NOSAKA-SAP.

Phyllodoce SALISBURY

280. P. aleutica (SPRENGEL) A. HELLER in Mühlenbergia **1**: 1. 1900.

HONDA, Nom. Pl. Jap. ed. em. 188. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.—TOYOKUNI in Symb. Asahikawa. **3**: 124–128. 1968.

Syn. *Menziesia aleutica* SPRENGEL, Syst. Veg. **2**: 202. 1825.
Phyllodoce pallasiana D. DON in Edinb. New Philos. Journ. **17**: 159. 1834.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Ao-no-tsugazakura.*

Hab.: Relatively moist meodow in the alpine area (Fig. 8–13).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Alaska.

Specimens from Mt. Yûpari: July 26, 1958 & Aug. 5, 1959. NOSAKA-SAP.

In the serpentine landslip and the serpentine-pebble-field along the headwaters of the Ebanazawa River, a special form of this plant, bearing much flattened corollae, is met with.

var. **marmorata** TOYOKUNI in Symb. Asahikawa. **3**: 128. 1968.

Nom. Jap.: *Nishiki-tsugazakura.*

Hab.: Serpentine-pebble-field along the headwaters of the Ebanazawa River.

Distrib.: Hokkaidô (Mt. Yûpari, Mt. Ashibetsu, Mts. Taisetsu etc.).

Specimens from Mt. Yûpari: July 28, 1969. NOSAKA-SAP.

This variety is distinguishable from the mother species by having greenish-yellow and rosy dappled corollae and rubescent calyces.

281. P. caerulea (LINNAEUS) BABINGTON, Manual Brit. Bot. ed. 1, 194. 1843.

Syn. *Andromeda caerulea* LINNAEUS, Sp. Pl. ed 1, 393. 1753.

form. **caerulea.**

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—TOYOKUNI in Hokuriku Journ. Bot. 4: 10–11. 1955; in Symb. Asahikawa. **3**: 128–131. 1968.—HONDA, Nom. Pl. Jap. ed. em. 188. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Ezo-no-tsugazakura.*

Hab.: Relatively moist meadow in the alpine area, along the headwaters of the Ebanazawa River(Fig. 8–13).

Distrib.: Hokkaidô, Saghalien, Kuriles, N. Korea, Frigid zone in the northern hemisphere.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

form. **yesoensis** (KOIDZUMI) NAKAI, Tr. & Shr. ed. 2, 36, f. 15. 1927.

HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.—TOYOKUNI in Symb. Asahikawa. **3**: 131. 1968.

Syn. *P. caerulea* var. *yesoensis* KOIDZUMI in Bot. Mag. Tokyo **32**: 58. 1918.

Nom. Jap.: *Ko-ezo-tsugazakura.*

Hab.: Relatively moist meadow in the alpine area, along the headwaters of the Ebanazawa River. Accompanied with the former and the latter forms (Fig. 8–13).

Distrib.: Hokkaidô, Frigid zone of northern hemisphere.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

form. **takedana** (TATEWAKI) OHWI, Fl. Jap. ed. 1, 897. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 82. 1953; Fl. Jap. ed. 2, 1035. 1965. HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.—TOYOKUNI in Symb. Asahikawa. **3**: 131. 1968.

Syn. *P. caerulea* var. *takedana* TATEWAKI in Journ. Sapporo Soc. Agr. & For. **28** (131): 27. 1936.

Nom. Jap.: *Yûpari-tsugazakura.*

Hab.: Relatively moist meadow in the alpine area along the Ebanazawa River (Fig. 8–13).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

Remarks: In the lower part of the serpentine landslip along the headwaters of the Ebanazawa River, noticeable colonies consisting of *Phyllodoce* plants are found. *Phyllodoce aleutica* and *P. caerulea* show complexly mixed assemblages. Many forms of seemingly hybrid plants between these plants

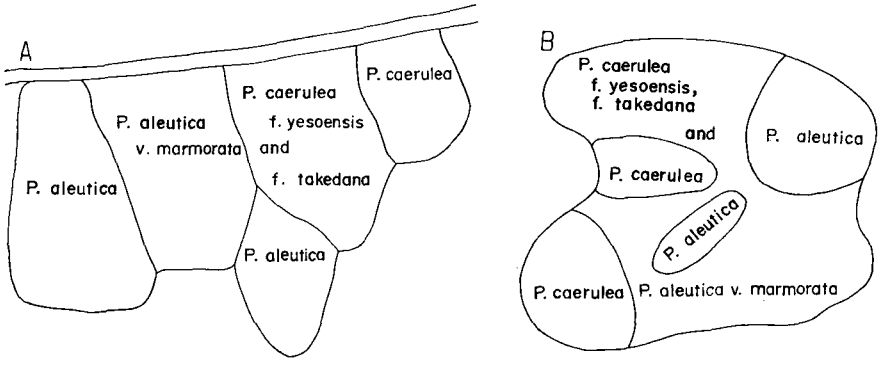

Fig. 12. Sketches of the *Phyllodoce* communities.
A: The *Phyllodoce* community on the slope of Mt. Naka-dake, Taisetsu Mts. ca. 22 m×10 m
B: The *Phyllodoce* community on Mt. Yûpari. ca. 10 m×8 m

are found there. The present author and TOYOKUNI have respectively or sometimes together examined these intermediate forms of *Phyllodoce* plants. The author mainly examined Yûpari plants, while TOYOKUNI mainly examined Taisetsu and Ashibetsu plants; though their examinations have not yet finished, their opinions are agrreable as to the following accounts.

i. The forms previously named *Phyllodoce caerulea* form. *yesoensis* and form. *takedana* are probably the hybrids between *P. aleutica* and *P.*

caerulea.

ii. Cross-fertilization occurred naturally between *P. caerulea* form. *yesoensis* and *P. aleutica* made a comparatively distinct form of Mt. Ashibetsu plant as well Taisetsu plant, namely, *Phyllodoce aleutica* var. *marmorata* TOYOKUNI.

iii. Many variations are found on the hairiness and coloration of the corolla. As these variations are seemingly consecutive, it seems very difficult to set clear demarcation lines among the various intermediate forms. However, on taking together with variations of corolla shape into consideration, they adopt in the mean time, NAKAI's form. *yesoensis* and OHWI's form *takedana* for the common or the extreme forms of these intermediate plants respectively.

The author and TOYOKUNI adopted the 'Hybrid Index Metdod' as to the ratio of length of corolla to the width, color of the corolla, hairiness

TABLE 8. Hybrid index in *Phyllodoce* plants.

Indices / Plant name	Corolla			Stamen length
	L/W	Color	Hairiness	
Phyllodoce aleutica	0 1 2	0	0	0
Phyllodoce aleutica var. marmorata	1 2	1	0	0
P. caerulea form. takedana	0 1	2	0	1
P. caerulea form. yesoensis	2 3	2	0	1
Phyllodoce caerulea	3 4	2	1	2
	5	3	3	2

Corolla index.

a. Length/Width:
0···0.70–0.80, 1···0.80–0.90, 2···0.90–1.00, 3···1.00–1.10, 4···1.10–1.20, 5···1.20–1.30.

b. Color:
0···2.5 GY 9/2–5 GY 9/2, 1···2.5 GY 9/4–5 GY 9/4 & 7.5 YR 9/2–10 yr 9/2,
2···5 RP 4/14–7.5 RP 4/14.

c. Hairiness
0···Glabrous, 1···Slightly pubescent, 2··· Pubescent.

Stamen index.

Length
0···2.7–3.5 mm, 1···3.8–4.0 mm, 2···4.5–5.0 mm

of the corolla, length of the stamen. The color standard was the Revised Munsell's Color Standard, Nihon Shikiken (1957), the results are shown in Table 8.

Judging from the data shown in Table 8, there are four series of hybrid index; viz., in a order shown in Table 9, 0–2, 0, 0, 0; 1–2, 1, 0, 0; 0–1 or 2–3, 2, 0, 1; 3–5, 2, 1, 2. The plant in the head series is recognized as *P. aleutica*, and the plant in the fourth series is recognized as *P. caerulea*. The second and the third series are intermediate between the head and the fourth, both are measured 0 in the third term. The series showing 0 in the fourth term as well as in the third term (i. e., the second series) is referable to that of *P. aleutica* var. *marmorata*.

The third series is divided into two by the value of the first term. The value of the first term is available for discrimination between *P. caerulea* form. *yesoensis* and *P. caerulea* form. *takedana*.

282. P. nipponica MAKINO var. **oblongo-ovata** (TATEWAKI) TOYOKUNI ex SUGIMOTO, New Keys Jap. Tr. 368. 1961.—TOYOKUNI in Journ. Univ. N. Japan **1**: 101. 1969.

Syn. *P. tsugifolia* NAKAI var. *oblongo-ovata* TATEWAKI in Journ. Sapporo Soc. Agr. & For. **28** (131): 27. 1936.—TOYOKUNI & IGARASHI in Journ. Jap. Bot. **27**: 283. 1952.—HONDA, Nom. Pl. Jap. ed. em. 189. 1957.
P. nipponica MAKINO in Bot. Mag. Tokyo **19**: 131. 1905, *pro minore parte*.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.
P. tsugaefolia NAKAI, Tr. & Shr. ed. 1, 24, f. 11. 1922.—NOSAKA in Journ. Geobot. **9**: 92. 1961.—*P. nipponica* subsp. *tsugifolia* (NAKAI) TOYOKUNI in Hokuriku Journ. Bot. **3**: 76. 1954.

Nom. Jap.: *Nagaha-tsugazakura*.
Hab.: On rocky outcrops in alpine area.
Distrib.: Hokkaidô, N. Honshû.
Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

form. **viridiflora** (TOYOKUNI) TOYOKUNI in Journ. Univ. N. Japan **1**: 102. 1969.

Syn. *P. tsugifolia* NAKAI var. *oblongo-ovata* TATEWAKI form. *viridiflora* TOYOKUNI ex TOYOKUNI & IGARASHI in Journ. Jap. Bot. **27**: 263. 1952.—HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961, ut *P. tsugifolia* form. *viridiflora*.—*P. nipponica* MAKINO subsp. *tsugifolia* (NAKAI) TOYOKUNI form. *viridiflora* (TOYOKUNI) TOYOKUNI in Hokuriku Journ. Bot. **5**: 82. 1956. in adnota.

Nom. Jap.: *Kaoru-tsugazakura*.
Hab.: On rocky outcrops in alpine area (Fig. 8–13).
Distrib.: Hokkaidô (Mt. Yûpari, Mt. Ashibetsu).

Specimens from Mt. Yûpari: July 27, 1951. TOYOKUNI-SAP (typus, at Tsurigane-iwa); July 28, 1957. NOSAKA-SAP.

Almost plants of *Phyllodoce nipponica* var. *oblongo-ovata* in this mountain are recognizable as form. *viridiflora*, having light greenish white corollae.

Rhododendron LINNAEUS

283. R. albrechti MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **15**: 227. 1870.

KUSAKA in Goryôrin **152**: 58. 1942.—HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Murasaki-yashio-tsutsuji.*

Hab.: Lower mountain to mountain area, forming the shrub layer in the mixed forest and the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; Aug. 18, 1957. NOSAKA-SAP.

284. R. aureum GEORGI, Bemerk, Reis. Russ. Reich **1**: 214. 1775.

HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *R. chrysanthum* PALLAS, Reis. Russ. Reich. **3**: 729, t. N, f. 1-2. 1776.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Kibana-shakunage.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, N. Korea, Frigid zone in E. Asia.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 28, 1957. NOSAKA-SAP.

285. R. dauricum LINNAEUS, Sp. Pl. ed. 1, 392. 1753.

KUSAKA in Goryôrin **152**: 58. 1942.—HONDA, Nom. Pl. Jap. ed. em. 189. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Ezo-murasaki-tsutsuji.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, Korea, N. china, E. Siberia.

Specimens from Mt. Yûpari: May 18, 1958. NOSAKA-SAP.

286. R. fauriae FRANCHET var. **roseum** (KOIDZUMI) NAKAI, Tr. & Shr. ed. 2, 58. 1927.

Syn. *R. brachycarpum* var. *roseum* KOIDZUMI in Bot. Mag. Tokyo **30**: 77. 1916. '*Rhododendron brachycarpum* D. DON': A. GRAY, Bot. Jap. 400. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

R. fauriae FRANCHET in Bull. Soc. Philom. Paris ser. 7, **10**: 143. 1886.—HONDA, Nom. Pl. Jap. ed. em. 190. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Ezo-shakunage.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles (Isl. Shikotan), Korea.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; June 28, 1959. NOSAKA-SAP.

287. R. tschonoskii MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **15**: 230. 1870.

HONDA, Nom. Pl. Jap. ed. em. 193. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Kome-tsutsuji.*

Hab.: Mountain area, sometimes on rocky outcrops.

Distrib.: Hókkaidô to Kyûshû, Korea.

Specimens from Mt. Yûpari: June 28, 1959. NOSAKA-SAP.

Therorhodion SMALL

288. T. camtschaticum (PALLAS) SMALL in N. Amer. Fl. **29**(1): 45. 1914.

HONDA, Nom. Pl. Jap. ed. em. 193. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *Rhododendron camtschaticum* PALLAS, Fl. Ross. **1**(1): 48, t. 33. 1784.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Ezo-tsutsuji.*

Hab.: Alpine area, mainly on rocky ridge.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Kamchatka, Okhotsk, Alaska, Aleutian.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

Tripetaleia SIEBOLD et ZUCCARINI

289. T. bracteata MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **11**: 433. 1867.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 193. 1957.—NOSAKA in Journ, Geobot. **9**: 92. 1961.

Nom. Jap.: *Miyama-ho-tsutsuji.*

Hab.: Mountain to subalpine area.

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 31, 1959. NOSAKA-SAP.

Vaccinium LINNAEUS

290. V. ovalifolium J. E. SMITH apud MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 40. 1872.

var. **coriaceum** H. BOISSIEU in Bull. Herb. Boiss. **5**: 906. 1897. HONDA, Nom. Pl. Jap. ed. em. 194. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. '*Vaccinium ovalifolium* SMITH': FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 156. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Ezo-kurousugo.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Saghalien.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

var. **subcoriaceum** (TATEWAKI) HONDA, Nom. Pl. Jap. ed. em. 194 & 388. 1957.

NOSAKA in Journ. Geobot. **9**: 92. 1961.

Syn. *V. chamissonis* BONGARD var. *subcoriaceum* TATEWAKI in Journ. Sapporo Soc. Agr. & For. **28** (131): 29. 1936.

Nom. Jap.: *Maruba-no-ezo-kurousugo.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

291. V. praestans LAMBERT in Trans. Linn. Soc. **10**: 264, t. 9. 1811. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.—HONDA, Nom. Pl. Jap. ed. em. 195. 1957.—NOSAKA in Journ. Geobot. **9**: 92. 1961.

Nom. Jap.: *Iwa-tsutsuji.*

Hab.: Lower mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Ussuri, Amur, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

292. V. smallii A. GRAY, Bot. Jap. 398. 1859.

HONDA, Nom. Pl. Jap. ed. em. 195. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *V. hirtum* THUNBERG var. *smallii* (A. GRAY) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **18**: 41. 1872.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Ôba-sunoki.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 5, 1959. NOSAKA-SAP.

293. V. uliginosum LINNAEUS var. **alpinum** BIGELOW, Fl. Bost. ed. 2, 153. 1824.

HONDA, Nom. Pl. Jap. ed. em. 195. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *V. uliginosum* (non LINNAEUS) sensu MAXIMOWICZ in Mél. Biol. **8**: 605. 1872.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Koba-no-kuromamenoki.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Frigid zone of Asia and N. America.

Specimens from Mt. Yûpari: July 29, 1958. NOSAKA-SAP.

294. V. vitis-idaea LINNAEUS var. **minus** LODDIGES, Bot. Cabin. 11, t. 1023. 1825.

HONDA, Nom. Pl. Jap. ed. em. 195. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *V. vitis-idaea* (non L.) sensu MIQUEL, Prol. Fl. Jap. 92. 1857.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 142. 1919.

Nom. Jap.: *Kokemomo.*

Hab.: Subalpine to alpine area, very common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Frigid zones in Asia and N. America, Greenland.

Specimens from Mt. Yûpari: July 28, 1957 & July 5, 1959. NOSAKA-SAP.

FAM. MYRSINACEAE

Bladhia THUNBERG

295. B. japonica THUNBERG, Nov. Gen. Pl. **1** (7), t. 1. 1781.

KUSAKA in Goryôrin **152**: 58. 1942.

Syn. *Bladhia japonica* (non THUNB.) HORNSTEDT ex DE CANDOLLE in Trans. Linn. Soc. **17**: 123. 1834.—HONDA, Nom. Pl. Jap. ed. em. 197. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Nom. Jap.: *Yabu-kôji.*

Hab.: Reported only by KUSAKA in Goryôrin **152**: 58. 1942, specimens absent.

Distrib.: Hokkaidô (Isl. Okushiri), Honshû to Loochoo Isls., Korea, Formosa, China.

The occurrence of this evergreen shrub in Hokkaidô is ever known from Isl. Okushiri (TATEWKI in Trans. Sapporo Nat. Hist. Soc. **16**: 106.

1940).

FAM. PRIMULACEAE

Cortusa LINNAEUS

296. C. matthioli LINNAEUS subsp. **pekinensis** KITAGAWA var. **yezoensis** (MIYABE et TATEWAKI) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 357–358. 1956.

HONDA, Nom Pl. Jap. ed. em. 198. 1957.

Syn. *C. sachalinensis* LOSINA-LOSINSKAYA var. *yezoensis* MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **16**: 184. 1940.—*C. coreana* (NAKAI) NAKAI var. *yezoensis* (MIYABEet TATEWAKI) HARA, Enum. Sperm. Jap. **1**: 84. 1949.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Sakurasô-modoki.*

Hab.: Maëdake peaks (Fig. 8–14).

Distrib.: Hokkaidô (prov. Ishikari, prov. Oshima).

Specimens from Mt. Yûpari: June 25, 1968. EZAWA & MORIMOTO-Herb. Ôyûbari Forestry Office; July 28, 1968. NOSAKA-SAP.

Lysimachia LINNAEUS

297. L. thyrsiflora LINNAEUS, Sp. Pl. ed. 1, 147. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 198. 1957.

Syn. *L. fortunei* (non MAXIM.) sensu NOSAKA in Journ. Geobot. **9**: 93. 1961.

Nom. Jap.: *Yanagi-torano-o.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Subfrigid zone of northern hemisphere.

298. L. vulgaris LINNAEUS subsp. **davurica** (LEDEBOUR) TATEWAKI form. **latifolia** (KORSHINSKY) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 358. 1956.

HONDA, Nom. Pl. Jap. ed. em. 198. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *L. davurica* LEDEBOUR form. *latifolia* KORSHINSKY in Act. Hort. Petrop. **12**: 368. 1892.

L. vulgaris (non LINNAEUS) sensu FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 302. 1875.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Hiroha-kusaredama.*

Hab.: Relatively swampy meadow of low land.

Distrib.: Hokkaidô, Honshû, Saghalien, S. Kuriles, Korea, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: July, 1958. NOSAKA-SAP.

Primula LINNAEUS

299. P. modesta BISSET et MOORE in Journ. Bot. **16**: 134. 1878. HONDA, Nom. Pl. Jap. ed. em. 199. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *P. farinosa* LINNAEUS subsp. *modesta* (BISSET et MOORE) PAX in ENGLER Pfl.-reich 4-237, Ht. 22, **1**: 85. 1905.
P. modesta var. *fauriae* (non TAKEDA) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Yukiwarisô.*

Hab.: Gama-iwa, Maëdake peaks and Rôsoku-iwa (Fig. 8–14).

Distrib.: Hokkaidô to Kyûshû.

Specimens from Mt. Yûpari: Aug. 23, 1928, ISHIDA-SAPT; July 28, 1957. NOSAKA-SAP.

300. P. yuparensis TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 94, pl. 25. 1913.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 200. 1957.—TOYOKUNI in Journ. Geobot. **9**: 11–12. 1960.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *P. modesta* BISSET et MOORE subsp. *yuparensis* (TAKEDA) SMITH et FORREST in Not. Roy. Bot. Gard. Edinb. **16**: 25. 1928.
P. farinosa LINNAEUS subsp. *yuparensis* (TAKEDA) KITAMURA in Acta Phytotax. Geobot. **17**: 13. 1957.

Nom. Jap.: *Yûpari-kozakura.*

Hab.: Serpentine-pebble-fields in the alpine area (Fig. 8–14).

Distrib.: An endemic species.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 5, 1921. TAKEDA & TATEWAKI-SAPT; Aug. 6, 1926. SAKAMOTO-SAPT; July 28, 1957 & July 5, 1959. NOSAKA-SAP.

Remarks: This pretty primrose was firstly described by H. TAKEDA (1913) based upon the specimen collected from this mountain in 1912 by H. YANAGISAYA. TAKEDA distinguished it from any other allied species of Primulas as a new species because the very plant had whitish-farinose on the under surface of leaf, few-flowered inflorescence, larger flowers and longer corolla-tubes. After that, the rank of this plant was transferred to a minor taxa of other species by SMITH & FORREST (1928), and, recently, a similar treatment was made by KITAMURA to transfer the plant to a subspecies of *P. farinosa* (KITAMURA, 1957). On the other hand, TOYOKUNI (1960) stated under discussion that this plant should be a good species

(TOYOKUNI, 1960). The author agrees with TOYOKUNI's opinion, and recognizes this novel primrose as a distinct species on the basis of the following facts.

i. As TAKEDA's original description, it has few-flowered inflorescence, larger flower and longer corolla-tube than those of previously known *Primula modesta* or *P. farinosa*. (Fig. 13).

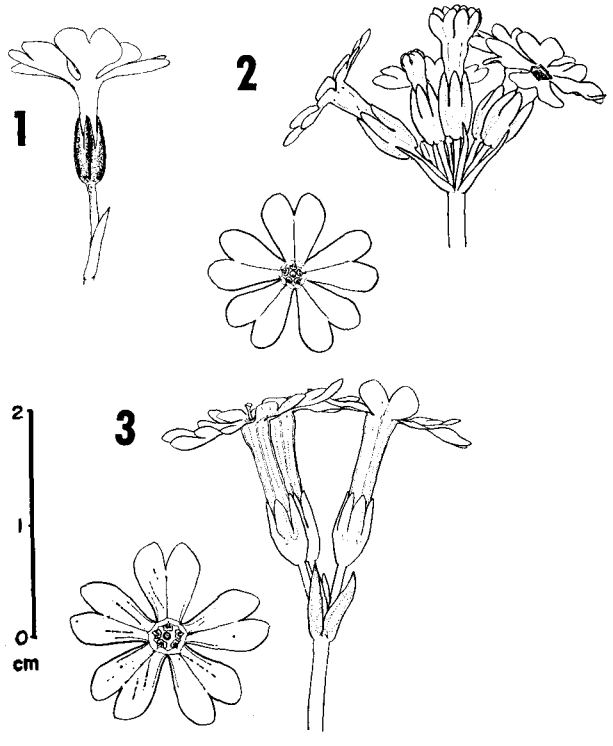

Fig. 13. *Primula yuparensis* and its alliss.
1. Pedicel and flower of *Primula modesta* BISSET et MOORE var. *samanimontana* NAKAI. Mt. Apoi, prov. Hidaka.
2. Cyme and flower of *Primula modesta* BISSET et MOORE. Gama-iwa, Mt. Yûpari, prov. Ishikari.
3. Cyme and flower of *Primula yuparensis* TAKEDA.

Undergrown plants of *P. modesta* or *P. farinosa* have sometimes few-flowered inflorescence, but they have smaller flowers and shorter corolla-tubes. There are commonly several millimeters' remainders between the corolla diameter of this plant and that of *P. modesta* or *P. farinosa* as well between the length of corolla-tube of this plant and that of *P. modesta* or

P. farinosa. Moreover, at least as to the plants in Hokkaidô, the ratio of length of corolla-tube to calyx of this plant is usually larger than that of other allied species.

ii. Chromosome numbers of *P. modesta* and allied Primulas were given as follows: *P. ajanensis* E. BUSCH, 2n=36 (BRUUN, H. G., 1938); *P. modesta* BISSET et MOORE, 2n=18 (IINUMA, M., 1926); *P. farinosa* LINNAEUS, 2n=18 (MARSCHAL, E., 1920); *P. fauriae* FRANCHET, 2n=18 (BRUUN, H. G., 1930); *P. yuparensis* TAKEDA, 2n=36 (BRUUN, H. G., 1938).

The above mentioned list shows the basic chromosome number of these Primulas is 9, and *Primula modesta, P. farinosa* and *P. fauriae* are diploid plants, while *P. yuparensis* is a tetraploid plant as well as *P. ajanensis.*

iii. In this mountain, both *P. yuparensis* and *P. modesta* occur. They are never found in the same locality, viz., the former is found strictly in the moist serpentine soil area, while the latter is found in the rock crevices, debris or on the rocky shelves of the metamorphic rock belonging to 'the Yûbaridake Metamorphic Group'. These two allied Primulas show their respective edaphic and topographical localities separately with each other, however contiguous their habitats may stand. It seems to the author, they show an example of 'habitat segregation'.

iv. As in well-grown individuals of the plant, leaves are subulate and apparently serrulate on the margin. This form is occasionally met with in the alpine district of this mountain.

v. This species and *P. modesta* or *P. farinosa* grow somehow on various kinds of soils. This plant blooms sometimes twice, rarely three times, in a year under rich nutrient cultivation. The secondarily and third times blooming flowers hardly have scapes and pedicels (NOSAKA, 1968). The flowers except the firstly blooming are almost sterile. These facts are scarecely found in *P. modesta* or *P. farinosa.*

Trientalis LINNAEUS

301. T. europaea LINNAEUS, Pl. ed. 1, 334. 1753.
HONDA, Nom. Pl. Jap. ed. em. 200. 1957.—NOSAKA in Journ. Geobot. **9**; 93. 1961.
Syn. *T. europaea* L. var. *eurasiatica* KNUTH in ENGLER, Pfl.-reich, 4-237, H. 22: 313. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Tsumatorisô.*

Hab.: Alpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Eurasia, Alaska.

Specimens from Mt. Yûpari: July 28, 1957 & July 26, 1961. NOSAKA-

SAP.

FAM. SYMPLOCACEAE

Palura HAMILTON

302. P. chinensis (LOUREIRO) KOIDZUMI form. **pilosa** (NAKAI) HARA, Enum. Sperm. Jap. **1**: 108. 1949.
HONDA, Nom. Pl. Jap. ed. em. 202. 1957.—NOSAKA in Journ. Geobot. **9**: 93 1961.
Syn. *P. paniculata* var. *pilosa* NAKAI, Tr. & Shr. ed. 2, 309, f. 144. 1927.
'*Palura crataegoides* BUCH.-HAMILT.': MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 102. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.
Nom. Jap.: *Sawa-futagi.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria. China.
Specimens from Mt. Yûpari: July, 1959. NOSAKA-SAP.

FAM. STYRACACEAE

Styrax LINNAEUS

303. S. obassia SIEBOLD et ZUCCARINI, Fl. Jap. **1**: 93, t. 46. 1735.
KUSAKA in Goryôrin **152**: 58. 1942.—HONDA, Nom. Pl. Jap. ed. em. 202. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.
Nom. Jap.: *Hakuunboku.*
Hab.: In the mixed forest of lower part (KUSAKA, 1942; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.

FAM. OLEACEAE

Fraxinus LINNAEUS

304. F. lanuginosa KOIDZUMI var. **serrata** (NAKAI) HARA in Journ. Jap. Bot. **31**: 59. 1956.
HONDA, Nom. Pl. Jap. ed. em. 293. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.
Syn. *F. sieboldiana* BLUME var. *serrata* NAKAI, Tr. & Shr. ed. 2, 391. f. 186. 1927.
F. longicuspis SIEBOLD et ZUCCARINI in FRANCHET et SAVATIER, Enum. Pl. Jap. **1**: 310. 1875.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.
Nom. Jap.: *Koba-no-toneriko.*
Hab.: In the mixed forest of lower part.
Distrib.: Hokkaidô to Isl. Yaku-shima, S. Kuriles, Korea.
Specimens from Mt. Yûpari.: Aug. 11, 1893. TOKUBUCHI—SAPT; July,

1930. AKIYAMA-SAP.

305. F. mandshurica RUPRECHT var. **japonica** MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **20**: 432. 1873.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 203. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.
Nom. Jap.: *Yachi-damo.*
Hab.: In the mixed forest of lower part, common.
Distrib.: Hokkaidô, Honshû.
Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; June, 1896. ISHIKAWA-SAPT.

Ligustrum LINNAEUS

306. L. tschonoskii DECAISNE in Nouv. Arch. Mus. Paris ser. 2, **2**: 18. 1878.
HONDA, Nom. Pl. Jap. ed. em. 204. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.
Syn. *L. acuminatum* KOEHNE in URBAN et GRAEBNER, Festschr. Aschers. 182. 1904.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.
Nom. Jap.: *Miyama-ibota.*
Hab.: Mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, Saghalien.

Syringa LINNAEUS

307. S. reticulata (BLUME) HARA in Journ. Jap. Bot. **17**: 21. 1941; Enum. Sperm. Jap. **1**: 126-127. 1949.
HONDA, Nom. Pl. Jap. ed. em. 204. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.
Syn. *Ligustrum reticulatum* BLUME in Ann. Mus. Bot. Lugd.-Bat. **1**: 313. 1850. *Syringa amurensis* RUPRECHT var. *japonica* (MAXIMOWICZ) FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 435. 1877.—KUSAKA in Goryôrin **152**: 58. 1942.
Nom. Jap.: *Hashidoi.*
Hab.: In the mixed forest of lower part (KUSAKA, 1942; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, S. Kuriles, Korea.

FAM. GENTIANACEAE

Fauria FRANCHET

308. F. crista-galli (MENZIES ex HOOKER) MAKINO subsp. **japonica** (FRANCHET) J. M. GILLET in Canad. Journ. Bot. **46**: 95. 1968.

Syn. *F. japonica* FRANCHET in Bull. Soc. Philom. Paris ser. 7, **10**: 141. 1886. *F. crista-galli* (MENZIES ex HOOKER) MAKINO in Bot. Mag. Tokyo **18**: 15. 1904. excl. pl. ex Jap.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 205. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Nom. Jap.: *Iwa-ichô.*

Hab.: Swampy meadow in the alpine area(Fig. 8–14).

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 28, 1957 & July 12, 1864. NOSAKA-SAP.

According to J. M. GILLET (1968), MAKINO's *Fauria crista-galli* is to be divided into two phytogeographically isolated subspecies. One is, the subsp. *japonica* based on FRANCHET's *Fauria japonica*, while the other, the typical phase (subsp. *crista-galli*). The former is distinguishable from the latter by showing larger dimension than the latter with respect to the length and the width of petals, the length of seeds and the width of thecae.

Gentiana LINNAEUS

309. G. jamesii HEMSLEY in Journ. Linn. Soc. **26**: 128. 1890.
HONDA, Nom. Pl. Jap. ed. em. 205. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.—TOYOKUNI in Journ. Fac. Sci. Hokkaido Univ. ser. 5, **7**(4): 223–224. 1963.

Syn. *G. kawakamii* (MAKINO) MAKINO in Bot. Mag. Tokyo **18**: 67. 1904.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Rishiri-rindô.*

Hab.: Alpine meadow, very restricted (Fig. 24–15).

Distrib.: Hokkaidô, Saghalien, Kuriles, N. Korea.

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954 & Aug. 5, 1959. NOSAKA-SAP; Aug., 1960. TOYOKUNI-SAP.

310. G. nipponica MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **32**: 507. 1888.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—HONDA, Nom. Pl. Jap. ed. em. 205. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.—TOYOKUNI in Journ. Fac. Sci. Hokkaidô Univ. ser. 5, **7**(4): 220–222. 1963.

Hab.: Alpine meadow, relatively common (Fig. 8–15).

Distrib.: Hokkaidô N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 18, 1957. NOSAKA-SAP; July, 1960.

TOYOKUNI-SAP.

311. G. triflora PALLAS var. **japonica** (KUSNEZOW) HARA form. **montana** (HARA) TOYOKUNI et TANAKA in Hokuriku Journ. Bot. **4**: 38. 1955.

TOYOKUNI in Journ. Fac. Sci. Hokkaidô Univ. ser. 5, **7** (4): 235. 1963.

Syn. *G. axilliflora* LÉV. et VANT. var. *montana* HARA in Journ. Jap. Bot. **21**: 19. 1947.—*G. triflora* var. *montana* (HARA) HARA, Enum. Sperm. Jap. **1**: 136. 1949.—*G. triflora* var. *japonica* subvar. *montana* (HARA) TOYOKUNI in Acta Phytotax. Geobot. **16**: 115. 1956.—HONDA, Nom. Pl. Jap. ed. em. 206. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

G. makinoi (non KUSNEZOW) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.

Nom. Jap.: *Ezo-oyama-rindô.*

Hab.: Alpine area (Fig. 8–15).

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug. 8, 1913. YANAGISAWA-SAPT; Aug. 19, 1954. NOSAKA-SAP; Aug. 19, 1957. TOYOKUNI & KIMURA & NOSAKA-SAP; Aug., 1957. TOYOKUNI-SAP; Aug., 1916. KOIDZUMI-TI.

312. G. zollingeri FAWCETT in Journ. Bot. **21**: 183. 1883.

HONDA, Nom. Pl. Jap. ed. em. 206. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.—TOYOKUNI in Journ. Fac. Sci. Hokkaidô Univ. Ser. 5, **7** (4): 217–220. 1963.

Nom. Jap.: *Fude-rindô.*

Hab.: Sunny meadow and hillside of lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.

Specimens from Mt. Yûpari: May 17, 1958. NOSAKA-SAP.

Gentianella MOENCH

313. G. yuparensis (TAKEDA) SATAKE in Bull. Nat. Sci. Mus. Tokyo **43**: 275. 1959.

NOSAKA in Journ. Geobot. **9**: 93. 1961.—TOYOKUNI in Journ. Fac. Sci. Hokkaido Univ. Ser. 5, **7** (4): 194–196. 1963.

Syn. *Gentiana yuparensis* TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 234. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.—TOYOKUNI in Acta Phytotax. Geobot. **16**: 118. 1956.—HONDA, Nom. Pl. Jap. ed. em. 206. 1957.

Gentiana yezoalpina KOIDZUMI in Bot. Mag. Tokyo **30**: 70. 1916.

Nom. Jap.: *Yûpari-rindô.*

Hab.: Serpentine-pebble-fields both in lower mountain and alpine areas (Fig. 8–15).

Distrib.: Central Hokkaidô (Mt. Yûpari, Mts. Taisetsu, Mt. Nipesotsu etc.).

Specimens from Mt. Yûpari: Aug. 8, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 5, 1921. TAKEDA & TATEWAKI-SAPT; Aug. 19, 1954 & Aug. 18, 1957. TOYOKUNI & NOSAKA-SAP; Aug. 19, 1958. NOSAKA-SAP.

Swertia LINNAEUS

314. S. perennis LINNAEUS subsp. **cuspidata** (MAXIMOWICZ) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 361. 1956. HONDA, Nom. Pl. Jap. ed. em. 207. 1957.—TOYOKUNI in Journ. Fac. Sci. Hokkaido Univ. ser 5, **7**(4): 181–184. 1963.

Syn. *S. perennis* L. var. *cuspidata* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **20**: 434. 1875.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 141. 1919.
S. obtusa LEDEB. var. *stenopetala* (non REGEL et TILING) sensu TAKEDA et TANABE et TAKENAKA, Illust. Man. Alp. Pl. Jap. rev. ed. 106, n. 91. 1954.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Nom. Jap.: *Miyama-akebonosô.*

Hab.: Swampy meadow in alpine area (Fig. 8–15).

Distrib.: Hokkaidô, N. & C. Honshû.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP; Aug., 1954. TOYOKUNI-SAPT; Aug. 19. 1958. NOSAKA-SAP; Aug., 1959 & Aug., 1960. TOYOKUNI-SAP.

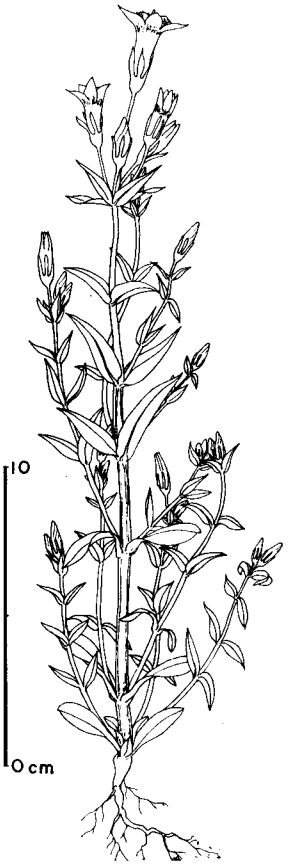

Fig. 14.
A well-grown form of *Gentianella yuparensis* (TAKEDA) SATAKE at Ishiwata-yama in Mt. Yûpari.

Tripterospermum BLUME

315. T. japonicum (SIEBOLD et ZUCCARINI) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pet. **20**: 435. 1975.
HONDA, Nom. Pl. Jap. ed. em. 208. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.—TOYOKUNI in Journ. Fac. Sci. Hokkaido Univ. ser. 5, 7(4): 247–250. 1963.

Syn. *Crawfurdia japonica* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**: 160. 1846.

Nom. Jap.: *Tsuru-rindô.*

Hab.: Relatively shady place in mountain area.

Distrib.: Hokkaidô to Kyûshû, Isl. Yaku-shima, Saghalien, S. Kuriles, Formosa, China.

Specimens from Mt. Yûpari: July, 1956. TOYOKUNI-SAP.

FAM. ASCLEPIADACEAE

Cynanchum LINNAEUS

316. C. caudatum (MIQUEL) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **23**: 375. 1877.

HONDA, Nom. Pl. Jap. ed. em. 209. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *Endotropis caudata* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 128. 1865.

Nom. Jap.: *Ikema.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles, China.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

317. C. inamoenum (MAXIMOWICZ) LOESNER ex GLIG et LOESNER in Bot. Jahrb. **34**, Beibl. **75**: 60. 1904.

HONDA, Nom. Pl. Jap. ed. em. 209. 1957.

Syn. *Vincetoxicum inamoenum* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **23**: 361. 1877.

Nom. Jap.: *Ezo-no-kusatachibana.*

Hab.: At the foot of Rôsoku-iwa (EZAWA, 1972).

Distrib.: Hokkaidô, Saghalien, Korea, Manchuria, China.

Specimens from Mt. Yûpari: Aug. 10, 1972. EZAWA-SAP.

FAM. POLEMONIACEAE

Polemonium LINNAEUS

318. P. yezoense (MIYABE et KUDO) KITAMURA in Acta Phytotax. Geobot. **10**: 177. 1941.

NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *P. coeruleum* LINNAEUS subsp. *vulgare* BRAND var. *yezoense* MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **4**: 99. 1913.—*P. coeruleum* L. subsp. *yezoense* (MIYABE et KUDO) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 364. 1956, in nota.—HONDA, Nom. Pl. Jap. ed. em. 212. 1957.

Nom. Jap.: *Ezo-no-hanashinobu.*

Hab.: South of Mt. Koyûbari (T. HAMAYA, 1964).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 7, 1964. T. HAMAYA-SAPT.

FAM. BORAGINACEAE

Cynoglossum LINNAEUS

319. C. asperrimum NAKAI var. **yesoense** NAKAI in Bot. Mag. Tokyo **37**: 7 & 69. 1923.

HONDA, Nom. Pl. Jap. ed. em. 213. 1957.—NOSAKA in Journ. Geobot. **9**: 93. 1961.

Syn. *C. micranthum* (non DESFONT.) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ezo-oni-rurisô.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Eritrichium SCHRADER

320. E. nipponicum MAKINO in Bot. Mag. Tokyo **17**: 51. 1903.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 213. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Miyama-murasaki.*

Hab.: In rock crevices of Gama-iwa and Maëdake peaks (Fig. 8–16).

Distrib.: Hokkaidô, Central Honshû, Saghalien.

Specimens from Mt. Yûpari: Aug. 27, 1957. NOSAKA-SAP.

HARA (1937) pointed out that the plant in this mountain shows the intermediate form between the Honshû form (the typical form) and the S. Hidaka form (form. *yesoense*). Plants with whitish corollae are relatively frequently found in this mountain.

Mertensia ROTH

321. M. pterocarpa (TURCZANINOW) TATEWAKI et OHWI var. **yezoensis** TATEWAKI et OHWI in Acta Phytotax. Geobot. **2**: 106. 1933.

HONDA, Nom. Pl. Jap. ed. em. 214. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *M. rivularis* DC. var. *japonica* TAKEDA in Journ. Bot. **49**: 222. 1911, *pro parte.*—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ezo-rurisô.*

Hab.: On rocky outcrops in alpine area (summit of Hondake-ISHIKAWA, 1896; Maëdake peaks-NOSAKA, 1967).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: June, 1896. ISHIKAWA-SAPT; Aug. 2. 1967. NOSAKA-SAP.

Trigonotis STEVEN

322. T. guilielmi A. GRAY ex GÜRKE in ENGLER, Pfl.-fam. **4** (3a): 121. 1897.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 214. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Tachikamebasô.*

Hab.: Mountain area.

Distrib.: Hokkaidô and Honshû.

Specimens from Mt. Yûpari: July 15, 1956. NOSAKA-SAP.

FAM. LAMIACEAE

Clinopodium LINNAEUS

323. C. sachalinense (FR. SCHMIDT) KOIDZUMI in Bot. Mag. Tokyo **43**: 387. 1929.

HONDA, Nom. Pl. Jap. ed. em. 218. 1957.—NOSAKA in Jonrn. Geobot. **9**: 94. 1961.

Syn. *Calamintha umbrosa* var. *sachalinensis* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 164. 1868.

Satureia umbrosa BRIQ. var. *japonica* MATSUMURA et KUDO in sched.—KUDO in Journ. Coll. Sci. Imp. Univ. Tokyo **43** (8): 35. 1921.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Miyama-tôbana.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles.

Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

Glechoma LINNAEUS

324. G. hederacea LINNAEUS subsp. **grandis** (A. GRAY) HARA ex HARA et TANAKA et KUROSAWA in Bot. Mag. Tokyo **67**: 15. 1954.

HONDA, Nom. Pl. Jap. ed. em. 218. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *Nepeta glechoma* var. *grandis* A. GRAY, Bot. Jap. 402, 1859, in adnota.

Nom. Jap.: *Kakidôshi.*

Hab.: Low land, sometimes found near the cultivated place.

Distrib.: Hokkaidô to Loochoo Isls., Formosa, Korea, Widely distributed in temperate zone of E. Asia.

Specimens from from Mt. Yûpari: July 15, 1956. NOSAKA-SAP.

Leonurus LINNAEUS

325. L. macranthus MAXIMOWICZ, Prim. Fl. Amur. 476. 1859.
HONDA, Nom. Pl. Jap. ed. em. 220. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Kisewata.*

Hab.: Lower mountain area, along the Shirokane River.

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.

Specimens from Mt. Yûpari: Aug. 31, 1958. NOSAKA-SAP.

Lycopus LINNAEUS

326. L. uniflorus MICHAUX, Fl. Bor.-Amer. **1**: 14. 1803.
HONDA, Nom. Pl. Jap. ed. em. 220. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Ezo-shirone.*

Hab.: Lower mountain to mountain area (NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Temperate zone in E. Asia and N. America.

Nepeta LINNAEUS

327. N. subsessilis MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **20**: 469. 1875.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 221. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Misogawasô.*

Hab.: Relatively moist meadow in subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Shikoku.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Prunella LINNAEUS

328. P. vulgaris LINNAEUS subsp. **asiatica** (NAKAI) HARA, Enum. Sperm. Jap. **1**: 220. 1949.
HONDA, Nom. Pl. Jap. ed. em. 221. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *P. asiatica* NAKAI, Rep. Veg. Kamikochi 29. 1928, nom. nud.; in Bot. Mag. Tokyo **44**: 19. 1930.
P. vulgaris (non. L.) sensu THUNBERG, Fl. Jap. 250. 1784.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Utsubogusa.*

Hab.: Sunny meadow in subalpine to alpine area.

Distrib.: Hokkaidô to Loochoo Isls., Saghalien, S. Kuriles, Korea, Formosa, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

Scutellaria LINNAEUS

329. S. dependens MAXIMOWICZ, Prim. Fl. Amur. 219. 1859.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 222. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Hime-namiki.*
Hab.: Along the water course in lower mountain to mountain area.
Distrib.: Hokkaidô, Honshû, Kyûshû, Korea, Temperate zone in E. Asia.
Specimens from Mt. Yûpari: July 6, 1958. NOSAKA-SAP.

330. S. pekinensis MAXIMOWICZ var. **ussuriensis** (REGEL) HANDEL-MAZZETTI in Act. Hort. Götob. **13**: 339. 1939.
HONDA, Nom. Pl. Jap. ed. em. 223. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *S. japonica* MORR. et DECNE. *β. ussuriensis* REGEL, Tent. Fl. Ussuri 118. 1861.—*S. ussuriensis* (REGEL) KUDO in KUDO et NEMOTO, Rep. Veg. Tomakomai For. 53. 1916; in Journ. Coll. Sci. Imp. Univ. Tokyo **43** (8): 9. 1921.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ezo-tatsunamisô.*
Hab.: Mountain area.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, Ussuri, Amur.
Specimens from Mt. Yûpari: July 6, 1958. NOSAKA-SAP.

Teucrium LINNAEUS

331. T. viscidum BLUME var. **miquelianum** (MAXIMOWICZ) HARA in Bot. Mag. Tokyo **51**: 145. 1937; Enum. Sperm. Jap. **1**: 233. 1949. HONDA, Nom. Pl. Jap. ed. em. 224. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *T. stoloniferum* ROXBURGH *β. miquelianum* MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **23**: 388. 1877.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Tsuru-nigakusa.*
Hab.: Lower mountain to mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, Formosa, Korea.

Thymus LINNAEUS

332. T. quinquecostatus ČELAKOVSKÝ var. **ibukiensis** (KUDO) HARA, Enum. Sperm. Jap. **1**: 233. 1949.

HONDA, Nom. Pl. Jap. ed. em. 224. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *T. serpyllum* LINNAEUS var. *ibukiensis* KUDO in Journ. Coll. Sci. Imp. Univ. Tokyo **43**(8): 40. 1921.
T. serpyllum L. var. *vulgaris* (non BENTHAM) sensu MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 106. 1865.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ibuki-jakôsô.*

Hab.: Serpentine-pebble-fields of alpine area and Rôsoku-iwa (Fig. 8–16).

Distrib.: Hokkaidô, Honshû, Saghalien, Korea, Manchuria.

Specimens From Mt. Yûpari: July 28, 1957. NOSAKA-SAP; July, 1970. EZAWA-SAP (at Rôsoku-iwa).

FAM. SCROPHULARIACEAE

Lagotis GAERTNER

333. L. glauca GAERTNER subsp. **takedana** (MIYABE et TATEWAKI) TOYOKUNI et NOSAKA ex TOYOKUNI in Journ. Geobot. **9**: 13. 1960. NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *L. takedana* MIYABE et TATEWAKI in Trans. Sapporo Nat. Hist. Soc. **13**: 3, t. 1, f. 3. 1933.—HONDA, Nom. Pl. Jap. ed. em. 225. 1957.
L. glauca (non GAERTNER) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Yûbarisô.*

Hab.: Serpentine-pebble-fields in alpine area (Fig. 8–16).

Distrib.: Endemic.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 9, 1913. YANAGISAWA-SAPT; Aug. 3, 1921. TAKEDA & TATEWAKI-SAPT (typus); July, 1960. T. LEU-SAPT; July 28, 1957. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

Mimulus LINNAEUS

334. M. inflatus (MIQUEL) NAKAI in Bot. Mag. Tokyo **33**: 209. 1919. HONDA, Nom. Pl. Jap. ed. em. 227. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *Torenia? inflata* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 192. 1867.
Mimulus nepalensis BENTHAM var. *japonica* MIQUEL ex MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **20**: 436. 1875.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Mizo-hôzuki.*

Hab.: Moist or swampy place in lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 5, 1959. NOSAKA-SAP.

335. **M. sessilifolius** MAXIMOWICZ in Bull. Acad Imp. Sci. St.-Pét. **20**: 436. 1875.

HONDA, Nom. Pl. Jap. ed. em. 227. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. '*Mimulus sessilifolius* MAKINO': NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ôba-mizo-hôzuki.*

Hab.: Moist place in subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 5, 1959. NOSAKA-SAP.

Pedicularis LINNAEUS

336. **P. chamissonis** STEVEN var. **japonica** MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **24**: 59. 1877.

HONDA, Nom. Pl. Jap. ed. em. 227. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *P. chamissonis* (non STEVEN) sensu MIYABE & MIYAKE, Fl. Saghal. 353-354. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Yotsuba-shiogama.*

Hab.: Alpine meadow, relatively common.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 19, 1854 & July 28, 1957. NOSAKA-SAP.

337. **P. resupinata** LINNAEUS form. **pubescens** KOMAROV, Fl. Mansh. **3**: 449. 1907.

HONDA, Nom. Pl. Jap. ed. em. 227. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *P. resupinata* LINNAEUS, Sp. Pl. ed. 1, 608. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919, quoad. pl. ex Mt. Yûpari.

Nom. Jap.: *Ke-shiogama.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, Saghalien, Korea, Manchuria, Kamchatka.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

338. **P. yezoensis** MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **24**: 69. 1877.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 228. 1957.—NOSAKA in Journ. Geobot. **9**:

94. 1961.

Nom. Jap.: *Ezo-shiogama.*

Hab.: Alpine meadow.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.

Specimens from Mt. Yûpari: Aug. 18, 1956. NOSAKA-SAP.

Pennellianthus CROSSWHITE

339. P. frutescens (LAMBERT) CROSSWHITE ex CROSSWHITE et KAWANO in Amer. Midl. Naturalist **83**(2): 362, f. 2. 1970.

Syn. *Pentstemon frutescens* LAMBERT in Trans. Linn. Soc. **10**: 259, t. 6, f. 1. 1811.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.—HONDA, Nom. Pl. Jap. ed. em. 228. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Iwabukuro.*

Hab.: Rocky outcrops in alpine area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, E. Siberia, Aleutian.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

form. **albiflora** (HAYASHI) CROSSWHITE ex CROSSWHITE et KAWANO in Amer. Midl. Naturalist **83**(2): 364. 1970.

Syn. *Pentstemon frutescens* LAMBERT form. *albiflora* HAYASHI in Journ. Jap. Bot. **29**: 199.-200. 1954.—HONDA, Nom. Pl. Jap. ed. em. 228. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Shirobana-iwabukuro.*

Hab.: Alpine area, near 'Fukitôshi'.

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

Veronica LINNAEUS

340. V. schmidtiana REGEL var. **yezoalpina** (KOIDZUMI) YAMAZAKI in Journ. Fac. Sci. Univ. Tokyo sect. 3, **7**(2): 144. 1957.
NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *V. senanensis* var. *yezoalpina* KOIDZUMI ex NAKAI, Veg. Apoi 68. 1930.—*V. yezoalpina* (KOIDZUMI) TAKEDA, Kôzan Shokubutsu Zusetsu ed. 2, 21, t. 72. 1937.—HONDA, Nom. Pl. Jap. ed. em. 230. 1957.
V. schmidtiana (non REGEL) sensu TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 230. 1915. quoad pl. ex Mt. Yûpari.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919, quoad pl. ex Mt. Yûpari.
V. senanensis MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **32**: 515. 1888, pro parte.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Ezo-miyama-torano-o.*

Hab.: Serpentine landslips both in the lower mountain area (near Ishiwata-yama) and in the alpine area (Fig. 8–16).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

341. V. stelleri PALLAS var. **lonistyla** KITAGAWA, Lin. Fl. Mansh. 127. 1942.

HONDA, Nom. Pl. Jap. ed. em. 230. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Nom. Jap.: *Ezo-hime-kuwagata.*

Hab.: Alpine area.

Distrib.: Hokkaidô, Saghalien, S. Kuriles, N. Korea.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

342. V. tenella ALLIONI, Fl. Pedemont **1**: 75, t. 22, f. 1. 1785.

Syn. *V. humifusa* DICKSON in Trans. Linn. Soc. **2**: 288. 1794.—*V. serpyllifolia* L. subsp. *humifusa* (DICKSON) PENNELL in Monogr. Acad. Nat. Sci. Philadel. **5**: 77. 1943.—HONDA, Nom. Pl. Jap. ed. em. 230. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

V. serpyllifolia (non LINNAEUS) sensu CHAMISSO et SCHLECHTENDAL in Linnaea **2**: 557. 1827.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nom. Jap.: *Tengu-kuwagata.*

Hab.: Relatively swampy place in subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Frigid zone in northern hemisphere.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

FAM. OROBANCHACEAE

Boschniakia C. A. MEYER

343. B. rossica (CHAMISSO et SCHLECHTENDAL) FEDTSCHENKO et FLEROV, Fl. Europ. Ross. 896, f. 875. 1910.

HONDA, Nom. Pl. Jap. ed. em. 231. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *Orobanche rossica* CHAMISSO et SCHLECHTENDAL in Linnaea **3**: 132. 1828.

Nom. Jap.: *Oniku.*

Hab.: Maëdake peaks (Fig. 8–17).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, E. Siberia, Kamchatka, western N. America.

Specimens from Mt. Yûpari: July 28, 1968. NOSAKA-SAP.

FAM. LENTIBULARIACEAE

Pinguicula LINNAEUS

344. P. vulgaris LINNAEUS, Sp. Pl. ed. 1, 17. 1753.

HONDA, Nom. Pl. Jap. ed. em. 232. 1957.—NOSAKA in Journ.

Geobot. **9**: 94. 1961.

Syn. *P. vulgaris* L. var. *macroceras* HERDER in Act. Hort. Petrop. **1**: 380. 1872.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

Nam. Jap.: *Mushitori-sumire.*

Hab.: Alpine meadows both in the serpentine-pebble-fields and in swamps and bogs (Fig. 8–16).

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, N. Pacific coast.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 5, 1959 & July 12, 1964. NOSAKA-SAP.

The plants with pure white flowers of this herb are occasionally found in the serpentine-pebble-field, east of the central peat bog.

FAM. PHRYMACEAE

Phryma LINNAEUS

345. P. leptostachya LINNAEUS var. **asiatica** HARA, Enum. Sperm. Jap. **1**: 297. 1949.

NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *P. leptostachya* LINNAEUS, Sp. Pl. ed. 1, 601. 1753, quoad. pl. ex Jap.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 140. 1919.

P. leptostachya L. var. *oblongifolia* HONDA in Bot. Mag. Tokyo **50**: 608. 1936; Nom. Pl. Jap. ed. em. 233. 1957.

Nom. Jap.: *Haëdokusô.*

Hab.: In the undergrowth of the mixed forest (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, China, Indo-China, Himalaya, E. Siberia.

FAM. PLANTAGINACEAE

Plantago LINNAEUS

346. P. asiatica LINNAEUS, Sp. Pl. ed. 1, 113. 1753.

HONDA, Nom. Pl. Jap. ed. em. 233. 1957.—NOSAKA in Journ. Geobot. **9**: 94. 1961.

Syn. *P. major* L. var. *asiatica* (L.) DECAISNE in DE CANDOLLE, Prodr. **13**(1): 694. 1852.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Ôbako.*

Hab.: Common in sunny waste place of low land, occasionally in sub-alpine to alpine area.

Distrib.: Hokkaidô to Loobhoo Isls., Saghalien, Kuriles, Formosa, China, Himalaya, E. Siberia.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP (at the summit).

This plant is occasionally found in the alpine area. That is probably carried and brought by climbers or campers.

FAM. RUBIACEAE

Asperula LINNAEUS

347. A. odorata LINNAEUS, Sp. Pl. ed. 1, 103. 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 234. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap. *Kurumabasô.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô, Honshû, Saghalien, S. Kuriles, Korea, Eurasia, N. America.

Specimens from Mt. Yûpari: June, 1955. NOSAKA-SAP.

Galium LINNAEUS

348. G. kamtschaticum STELLER ex ROEMER et SCHULTES, Syst. Veg. **3**, Mant. 186. 1827.
var. **kamtschaticum.**
NISHIDA in Trans. Sapporo Nat. Hist. Soc. 7: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 234. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Fzo-no-yotsuba-mugura.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Korea, Ussuri, Kamchatka, N. America.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; July, 1930. AKIYAMA-SAP.

var. **acutifolium** HARA in Bot. Mag. Tokyo **51**: 642. 1937. in adnota; Enum. Sperm. Jap. **2**: 7. 1952.
HONDA, Nom. Pl. Jap. ed. em. 234. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Ôba-no-yotsuba-mugura.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Shikooku, Saghalien, Kuriles.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; July 28, 1957. NOSAKA-SAP.

349. G. nakaii KUDO ex HARA in Journ. Jap. Bot. **9**: 517, f. 4. 1933. HONDA, Nom. Pl. Jap. ed. em. 235. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *G. japonicum* var. *intermedium* NAKAI, Fl. Korea. **2**: 500. 1911.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Miyama-kinutasô.*

Hab.: Mountain area.

Distrib.: Hokkaidô. N. Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9. 1913. NISHIDA-SAPT; July, 1930. AKIYAMA-SAP; Aug. 19, 1954. NOSAKA-SAP.

350. G. trifidum LINNAEUS var. **brevipedunculatum** REGEL, Tent. Fl. Ussur. 77. 1861.

HONDA, Nom. Pl. Jap. ed. em. 235. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *G. trifidum* (non. L.) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 588. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Hosoba-no-yotsuba-mugura.*

Hab.: Relatively swampy place of mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Loochoo Isls., Saghalien, Kuriles, Formosa, Korea, Temperate zone of E. Asia and N. America.

351. G. trifloriforme KOMAROV in Act. Hort. Petrop. **18**: 428. 1900. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 235. 1957.

Syn. *G. trifloriforme* KOMAR. var. *nipponicum* (non NAKAI) sensu NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Oku-kuruma-mugura.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, M. & S. Kuriles, Korea, Manchuria, C. China.

Specimens from Mt. Yûpari: Aug., 1963. NOSAKA-SAP.

Mitchella LINNAEUS

352. M. repens LINNAEUS subsp. **undulata** (SIEBOLD et ZUCCARINI) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6** (7): 381. 1956, in nota. HONDA, Nom. Pl. ed. em. 237. 1957.

Syn. *M. undulata* SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4** (3): 175. 1846.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Tsuru-aridôshi.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Korea.

Specimens from Mt. Yûpari: Aug. 17, 1957. NOSAKA-SAP.

FAM. CAPRIFOLIACEAE

Linnaea LINNAEUS

353. L. borealis LINNAEUS, Sp. Pl. ed. 1, 631. 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 239. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Rinnesô.*

Hab.: Alpine area, in the undergrowth of the *Pinus pumila* thicket.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, N. Korea, Manchuria, N. China, Alaska, N. Eurasia.

Specimens from Mt. Yûpari: Aug. 19, 1954 & July 28, 1957. NOSAKA-SAP.

Lonicera LINNAEUS

354. L. caerulea LINNAEUS subsp. **edulis** (TURCZANINOW) HULTÉN, Fl. Kamt. **4**: 144. 1930.
KUSAKA in Goryôrin **152**: 58. 1942.—HONDA, Nom. Pl. Jap. ed. em. 239. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *L. caerulea* L. var. *edulis* TURCZANINOW ex HERDER in Bull. Soc. Nat. Moscou **37**: 1, t. 3, f. 1-2a. 1864.

Nom. Jap.: *Keyonomi.*

Hab.: Mountain area (KUSAKA, 1942) and Maëdake peaks.

Distrib.: Hokkaidô, Saghalien, Kuriles, Dahuria, Kamchatka, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: July 12, 1969. NOSAKA-SAP.

355. L. chamissoi BUNGE in KIRILOW, Lonic. Russ. Reich 28. 1849.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 239. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Chishima-hyôtanboku.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Amur, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

356. L. chrysantha TURCZANINOW in Bull. Soc. Nat. Moscou **11**: 93. 1838, nom. nud.; in Bull. Soc. Nat. Moscou **18**: 304. 1845.
KUSAKA in Goryôrin **152**: 58. 1942.—HONDA, Nom. Pl. Jap. ed. em. 239. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Nemuro-bushidama.*

Hab.: Mountain area (KUSAKA, 1942).

Distrib.: Hokkaidô, Saghalien, S. Kuriles, Korea, Dahuria, Temperate zone in E. Asia.

This plant was reported only by KUSAKA in 1942.

Macrodiervilla NAKAI

357. M. middendorffiana (CARRIÈRE) NAKAI in Journ. Jap. Bot. **12**: 4. 1936.

HONDA, Nom. Pl. Jap. ed. em. 241. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *Diervilla middendorffiana* CARRIÈRE in Rev. Hort. ser. 4, **2**: 306. 1853.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Ukon-utsugi.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, M. & S. Kuriles, Saghalien, Amur, Ussuri.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 26, 1956 & July 28, 1957. NOSAKA-SAP.

Sambucus LINNAEUS

358. S. racemosa LINNAEUS subsp. **kamtschatica** HULTÉN var. **miquelii** NAKAI in Bot. Mag. Tokyo **31**: 211 & 214. 1917.

HONDA, Nom. Pl. Jap. ed. em. 241. 1957.

Syn. *S. sieboldiana* BLUME var. *miquelii* (NAKAI) HARA in Journ. Jap. Bot. **26**: 280. 1951.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

S. racemosa L. var. *pubescens* MIQUEL, Cat. Mus. Bot. Lugd.-Bat. 56. 1870.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Ezo-niwatoko.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, Temperate zone in E. Asia.

Viburnum LINNAEUS

359. V. furcatum BLUME ex MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **26**: 483. 1880.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 242. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Mushikari.*

Hab.: Mountain area, relatively common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Isl. Ullŭng-do.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 28, 1957.

NOSAKA-SAP.

360. V. opulus LINNAEUS var. **calvescens** (REHDER) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 385. 1956, in nota.
HONDA, Nom. Pl. Jap. ed. em. 242. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *V. sargenti* KOEHNE var. *calvescens* REHDER in Mitt. Deut. Dendr. Ges. **12**: 125. 1903.
V. pubinerve BLUME ex NAKAI in Bot. Mag. Tokyo **33**: 212. 1919.—KUSAKA in Goryôrin **152**: 59. 1942.

Nom. Jap.: *Kanboku.*

Hab.: In the mixed forest of lower part (KUSAKA, 1942; NOSAKA 1961).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Amur, Ussuri, Manchuria, China.

361. V. wrightii MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 267. 1866. KUSAKA in Goryôrin **152**: 59. 1942.—HONDA, Nom. Pl. Jap. ed. em. 243. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Miyama-gamazumi.*

Hab.: In the mixed forest of lower mountain area (KUSAKA, 1942; NOSAKA, 1961).

Distrib.: C. & S. Hokkaidô, Honshû.

Weigela THUNBERG

362. W. hortensis (SIEBOLD et ZUCCARINI) K. KOCH, Hort. Dendr. 298. 1853.
HONDA, Nom. Pl. Jap. ed. em. 244. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *Diervilla hortensis* SIEBOLD et ZUCCARINI, Fl. Jap. **1**: 70, t. 29. 1837.—KUSAKA in Goryôrin **152**: 58. 1942.

Nom. Jap.: *Tani-utsugi.*

Hab.: Mountain area (KUSAKA, 1942), along the Shirokane River, about 700 m in alt.

Distrib.: Hokkaidô, Honshû.

FAM. ADOXACEAE

Adoxa LINNAEUS

363. A. moschatellina LINNAEUS var. **japonica** HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 385–386. 1956, in nota.
HONDA, Nom. Pl. Jap. ed. em. 244. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *A. moschatellina* (non LINNAEUS) sensu MIQUEL, Prol. Fl. Jap. 362. 1867.
A. moschatellina L. var. *inodora* FALCONER ex CLARKE in HOOKER, Fl. Brit. Ind. **3**: 2. 1880.

Nom. Jap.: *Renpukusô.*

Hab.: Shady place in lower mountain area.

Distrib.: Hokkaidô, Honshû.

Specimens from Mt. Yûpari: May 10, 1954. NOSAKA-SAP.

FAM. VALERIANACEAE

Patrinia JUSSIEU

364. P. sibirica (LINNAEUS) JUSSIEU in Ann. Mus. Paris **10**: 312. 1807, in textu.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 244. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *Valeriana sibirica* LINNAEUS, Sp. Pl. ed. 1, 34. 1753.

Nom. Jap.: *Chishima-kinreika.*

Hab.: Serpentine-pebble-fields in alpine area (Fig. 8–17).

Distrib.: Hokkaidô, Saghalien, M. & S. Kuriles, Siberia, Dahuria, Okhotsk, Altai.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 5, 1959. NOSAKA-SAP.

365. P. villosa (THUNBERG) JUSSIEU ex DE CANDOLLE, Prodr. **4**: 624. 1830.

HONDA, Nom. Pl. Jap. ed. em. 245. 1957.

Syn. *Valeriana villosa* THUNBERG, Fl. Jap. 32, t. 6. 1784.

Nom. Jap.: *Otokoëshi.*

Hab.: Sunny place of low land.

Distrib.: Hokkaidô to Loochoo Isls., Korea, Manchuria, China.

Specimens from Mt. Yûpari: Aug., 1963. NOSAKA-SAP.

Valeriana LINNAEUS

366. V. fauriei BRIQUET in Ann. Conserv. Jard. Bot. Genève **17**: 327. 1914.

NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *V. sambucifolia* MIKAN var. *fauriei* (BRIQ.) HARA form. *yezoensis* (KUDO) HARA in Journ. Fac. Sci. Univ. Tokyo sect. 3, **6**(7): 387. 1956, in adnota.—HONDA, Nom. Pl. Jap. ed. em. 245. 1957.

Nom. Jap.: *Kanokosô.*

Hab.: Upper parts of Maëdake peaks (Fig. 8–17).

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Formosa, Manchuria, Korea.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

FAM. CUCURBITACEAE

Schizopepon MAXIMOWICZ

367. S. bryoniaefolius MAXIMOWICZ, Prim. Fl. Amur. 111, t. 6. 1859. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 245. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Nom. Jap.: *Miyama-nigauri.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, S. Kuriles, Korea, Temperate zone of E. Asia.

Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT.

FAM. CAMPANULACEAE

Adenophora FISCHER

368. A. pereskiaefolia (ROEMER et SCHULTES) FISCHER var. **heterotricha** (NAKAI) HARA in Journ. Jap. Bot. **26**: 281. 1951; Enum. Sperm. Jap. **2**: 90. 1952.

HONDA, Nom. Pl. Jap. ed. em. 246. 1957.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. *A. moiwana* NAKAI var. *heterotricha* NAKAI ex HARA in Bot. Mag. Tokyo **51**: 895. 1937.

A. polymorpha LEDEB. var. *lamarckii* (FISCHER) TRAUTVETTER in Bull. Soc. Nat. Moscou **39**(2): 406. 1866.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

A. polymorpha LEDEB. var. *coronopifolia* (non TRAUTV.) sensu MAKINO in Bot. Mag. Tokyo **12**: 57. 1898.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Ke-moiwa-shajin.*

Hab.: Rocky outcrops in alpine area (Gama-iwa, Maëdake peaks), sometimes occurs along the water course of mountain area.

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug., 1916. KOIDZUMI-TI; Aug. 18, 1958. NOSAKA-SAP; Aug. 4, 1959. TOYOKUNI & NOSAKA-SAP.

KOIDZUMI's specimen is the plant collected along the Tonashibetsu River, bearing linear-lanceolate leaves.

var. **yamadae** TOYOKUNI et NOSAKA in Acta Phytotax. Geobot. **18**: 196. 1960.

TOYOKUNI in Journ. Geobot. **9**: 38. 1960.—NOSAKA in Journ. Geobot. **10**: 23. 1961.

Syn. ? *A. latifolia* FISCHER var. *yezoalpina* HARA in sched. (July 24, 1933. H. HARA-n. 3040-B & 3041-B in TI, hab. at Mt. Koyûbari).

Nom. Jap.: *Yûpari-shajin.*

Hab.: Rocky outcrops in alpine area (Gama-iwa and Maëdake peaks, Fig. 8–18).

Distrib.: Endemic.

Specimens from Mt. Yûpari: at Gama-iwa: Aug. 4, 1959. TOYOKUNI & NOSAKA-SAP (typus); Aug. 4, 1969. NOSAKA-SAP.

Campanula LINNAEUS

369. C. dasyantha M. v. BIEBERSTEIN var. **chamissonis** (FEDROV) TOYOKUNI et NOSAKA in Acta Phytotax. Geobot. **18**: 193–194. 1960. NOSAKA in Journ. Geobot. **10**: 23–24. 1961.

Syn. *C. chamissonis* FEDROV in Fl. URSS **24**: 279. 1957.
C. dasyantha (non BIEBERSTEIN) sensu CHAMISSO in Linnaea **4**: 37. 1829.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 247. 1957.

Nom. Jap.: *Chishima-gikyô.*

Hab.: Rocky outcrops in alpine area (Fig. 8–17).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Aleutian.

Specimens from Mt. Yûpari: Aug. 18, 1957 & July 26, 1958. NOSAKA-SAP.

Codonopsis WALLICH

370. C. lanceolata (SIEBOLD et ZUCCARINI) TRAUTVETTER in Act. Hort. Petrop. **6**: 46. 1879.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 248. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *Campanumoea lanceolata* SIEBOLD et ZUCCARINI, Fl. Jap. **1**: 174, t. 91. 1835.

Nom. Jap.: *Tsuru-ninjin.*

Hab.: Lower mountain to mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China, Ussuri.

Specimens from Mt. Yûpari: Aug. 19, 1958. NOSAKA-SAP.

Peracarpa HOOKER f. et THOMSON

371. P. carnosa (WALLICH) HOOKER f. et THOMSON var. **circaeoides** (FR. SCHMIDT) MAKINO, Illust. Fl. Nippon f. 245. 1940, comb. nud.

HARA in Journ. Jap. Bot. **21**: 20. 1947.—HONDA, Nom. Pl. Jap. ed. em. 248. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *Campanula circaeoides* FR. SCHMIDT ex MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **3**: 195 & 204. 1867.
'*Peracarpa carnosa* HOOK.': NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Tani-gikyô.*

Hab.: Subalpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

FAM. COMPOSITAE

Achilea LINNAEUS

372. A. ptarmica LINNAEUS subsp. **macrocephala** (RUPRECHT) HEIMERL in Denks. Akad. Wiss. Wien **48**: 176. 1884.

Syn. *A. macrocephala* RUPRECHT in Beitr. Pflanzenk. Russ. Reich **2**: 41. 1845.—*A. ptarmica* L. var. *macrocephala* (RUPRECHT) OHWI, Fl. Jap. ed. 1, 1180. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 88. 1953; Fl. Jap. ed. 2, 1343. 1965.—HONDA, Nom. Pl. Jap. ed. em. 249. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Ezo-nokogirisô.*

Hab.: Sunny meadow of low land, along the road (NOSAKA, 1961).

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Kamchatka, Dahuria.

Anaphalis DE CANDOLLE

373. A. margaritacea (LINNAEUS) BENTHAM et HOOKER f., Gen. Pl. **2**: 303. 1873.

var. **angustior** (MIQUEL) NAKAI in Bot. Mag. Tokyo **40**: 148. 1926. HONDA, Nom. Pl. Jap. ed. em. 250. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *Antennaria cinnamomea* DC. var. ? *β. angustior* MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 178. 1866.
Anaphalis margaritacea (non BENTH. et HOOK. f.) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 621. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Yama-hahako.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, China, N. America.

Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

var. **yedoensis** (FRANCHET et SAVATIER) OHWI, Fl. Jap. ed. 1, 1138. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 87. 1953; Fl. Jap. ed. 2, 1298. 1965.

HONDA, Nom. Pl. Jap. ed. em. 250. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *Gnaphalium yedoense* FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 404. 1877—*Anaphalis yedoensis* (FRANCH. et SAVAT.) MATSUMURA, Shokubutsu Mei-i 29. 1897.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Kawara-hahako.*

Hab.: Lower mountain area (NISHIDA, 1919).

Distrib.: Hokkaidô to Kyûshû.

Arnica LINNAEUS

374. A. unalaschcensis LESSING in Linnaea **6**: 238. 1831.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 250. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Ezo-usagigiku.*

Hab.: Alpine area, common.

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka, Aleutian.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

Artemisia LINNAEUS

375. A. arctica LESSING in Linnaea **6**: 213. 1831.

HONDA, Nom. Pl. Jap. ed. em. 250. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. '*Artemisia norvegica* FRIES': BESSER in Nouv. Mem. Soc. Nat. Mosc. **3**: 77. 1834.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Samani-yomogi.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, E. Siberia, N. America.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

376. A. montana (NAKAI) PAMPANINI in Nouv. Giorn. Bot. Ital. n. s. **36**: 461. 1930.

HONDA, Nom. Pl. Jap. ed. em. 251. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *A. vulgaris* var. *indica* form. *montata* NAKAI in Bot. Mag. Tokyo **26**: 104. 1912.

'*Artemisia vulgaris* var. *kamtschatica* BESS.': NAKAI in Bot. Mag. Tokyo **26**: 104. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Ezo-yomogi.*

Hab.: Lower mountain area, very common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, Honshû, Saghalien, M. & S. Kuriles.

Aster LINNAEUS

377. A. glehni FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 146. 1868. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 252. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap: *Ezo-gomana.*

Hab.: Low land up to mountain area.

Distrib.: Hokkaidô, Saghalien, M. & S. Kuriles.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

Breea LESSING

378. B. setosa (WILLDENOW) KITAMURA in Acta Phytotax. Geobot. **18**: 79. 1959.

Syn. *Serratula setosa* WILLDENOW, Sp. Pl. **3**(3): 1645. 1804.—*Cirsium setosum* (WILLD.) BIEBERSTEIN, Fl. Taur.-Cauc. **3**: 560. 1819.—*Cirsium arvense* var. *setosum* (WILLD.) LEDEBOUR, Fl. Ross. **2**: 735. 1846.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—*Cephalonoplos setosum* (WILLD.) KITAMURA in Acta Phytotax. Geobot. **3**: 8. 1934.—HONDA, Nom. Pl. Jap. ed. em. 256. 1957.

Nom. Jap.: *Ezo-no-kitsune-azami.*

Hab.: Sunny or waste place of low land (NISHIDA, 1919).

Distrib.: Hokkaidô, N. Honshû, Saghalien, Korea, Temperate zone in E. & C. Asia, Caucasus.

Cacalia LINNAEUS

379. C. auriculata DE CANDOLLE var. **kamtschatica** (MAXIMOWICZ) MATSUMURA form. **bulbifera** (KOIDZUMI) INAGAKI et TOYOKUNI et NOSAKA in Rep. Taisetsuzan Inst. Sci. **3**: 14. 1964.

Syn. *C. auriculata* var. *bulbifera* KOIDZUMI in Bot. Mag. Tokyo **31**: 137. 1917.—HONDA, Nom. Pl. Jap. ed. em. 254. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

C. matsumuraeana KUDO in Bot. Mag. Tokyo **29**: 226. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Komochi-mimikômori.*

Hab.: Mountain area.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 28, 1957 & Aug. 5, 1959. NOSAKA-SAP.

380. C. delphiniifolia SIEBOLD et ZUCCARINI in Abh. Math.-Phys. Kl. Akad. Wiss. München **4**(3): 190. 1846.
HONDA, Nom. Pl. Jap. ed. em. 254. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Nom. Jap.: *Momijigasa.*
Hab.: Lower mountain area, along the Shirokane River.
Distrib.: Hokkaidô to Kyûshû.
Specimens from Mt. Yûpari: July 29, 1958. NOSAKA-SAP.

381. C. hastata LINNAEUS subsp. **orientalis** KITAMURA in Acta Phytotax. Geobot. **7**: 244. 1938; Compos. Jap. **3**: 216. 1942.
NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *C. hastata* var. *orientalis* (KITAMURA) OHWI, Fl. Jap. ed. 1, 1177. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 88. 1953; Fl. Jap. ed. 2, 1340. 1965.—HONDA, Nom. Pl. Jap. ed. em. 254. 1957.
C. hastata var. *glabra* (non LEDEBOUR) sensu MATSUMURA, List. Pl. Nikko 89. 1894.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.
Nom. Jap.: *Yobusumasô.*
Hab.: Lower mountain area, mainly occurs along riverside (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, Korea, Manchuria, China, Kamchatka.

Carpesium LINNAEUS

382. C. triste MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **19**: 479. 1874.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 255. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Nom. Jap.: *Miyama-yabutabako.*
Hab.: Mountain area.
Distrib.: Hokkaidô to Kyûshû.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Cirsium MILLER

383. C. grayanum (MAXIMOWICZ) NAKAI in Bot. Mag. Tokyo **26**: 360. 1912.
HONDA, Nom. Pl. Jap. ed. em. 259. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *Cnicus kamtschaticus* MAXIMOWICZ β ? *grayanus* MAXIMOWICZ in Bull.

Acad. Imp. Sci. St.-Pét. **19**: 495. 1874.—*Cirsium kamtschaticum* LEDEBOUR var. *grayanum* (MAXIM.) MATSUMURA, Shokubutsu Mei-i 82. 1895.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Maruba-hire-azami.*

Hab.: Lower mountain to mountain area, along the water course.

Distrib.: W. & S. Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

384. C. kamtschaticum LEDEBOUR ex DE CANDOLLE, Prodr. **6**: 644. 1837.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 259. 1957.—NOSAKA in Journ. Gobot. **10**: 24. 1961.

Nom. Jap.: *Ezo-azami.*

Hab.: Low land to mountain area, relatively common.

Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka, Aleutian.

Specimens from Mt. Yûpari: July 27, 1957 & Aug. 5, 1959. NOSAKA-SAP.

In this mountain, the plant having leaves very velvety beneath is occasionaly found. This form is referable to form. *velutina* S. KAWANO.

385. C. pectinellum A. GRAY, Bot. Jap. 395. 1859.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 261. 1957.

Syn. *C. kamtschaticum* LEDEB. subsp. *pectinellum* (A. GRAY) KITAMURA, Compos. Jap. **1**: 44. 1937, pro syn.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Ezo-no-sawa-azami.*

Hab.: Along the water course in lower mountain area.

Distrib.: Hokkaidô, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Crepis LINNAEUS

386. C. gymnopus KOIDZUMI in Bot. Mag. Tokyo **31**: 141. 1917.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 262. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Ezo-takane-nigana.*

Hab.: Serpentine-pebble-fields both in lower mountain and in alpine areas (Fig. 8–18).

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 8, 1956 & July 28, 1957. NOSAKA-SAP.

387. C. hokkaidoensis BABCOCK in Univ. Calif. Publ. Bot. **19**: 400. 1941.
HONDA, Nom. Pl. Jap. ed. em. 262. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *C. burejensis* (non FR. SCHMIDT) sensu MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **5**: 148–149. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.
Nom. Jap.: *Futamata-tanpopo.*
Hab.: Gama-iwa (Fig. 8–18).
Distrib.: Hokkaidô, Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: Aug. 5, 1959. NOSAKA-SAP.

Erigeron LINNAEUS

388. E. annuus (LINNAEUS) PERSOON, Syn. Pl. **2**: 431. 1807.
Syn. *Aster annuus* LINNAEUS, Sp. Pl. ed. 1, 875. 1753.
'*Erigeron annuus* LINNAEUS': HONDA, Nom. Pl. Jap. ed. em. 263. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Nom. Jap.: *Himejoon.*
Hab.: Exposed waste place in lower part, very common.
Distrib.: Naturalized almost all over the world.

389. E. canadensis LINNAEUS, Sp. Pl. ed. 1, 863. 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 263. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Nom. Jap.: *Hime-mukashi-yomogi.*
Hab.: Exposed waste place in low land, very common.
Distrib.: Naturalized almost all over the world.

390. E. thunbergii A. GRAY subsp. **glabratus** (A. GRAY) HARA, Enum. Sperm. Jap. **2**: 199. 1952.
NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *E. thunbergii* A. GRAY var. ? *glabratum* A. GRAY, Bot. Jap. 395. 1859. in adnota.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.—HONDA, Nom. Pl. Jap. ed. em. 263. 1957, ut *glabratus.*—*Aster dubius* subsp. *glabratus* (A. GRAY) KITAMURA et HARA in KITAMURA, Compos. Jap. **1**: 374. 1937.
Nom. Jap.: *Miyama-azuma-giku.*
Hab.: Alpine meadow, common.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles, N. Korea, Manchuria, Siberia.
Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; Aug. 19, 1954. NOSAKA-SAP.

form. **haruoi** TOYOKUNI in Journ. Jap. Bot. **28**: 250–251. 1953; in Journ. Geobot. **9**: 40. 1960.
NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *E. thunbergii* var. *glabratus* form. *haruoi* TOYOKUNI ex HONDA, Nom. Pl. Jap. ed. em. 263. 1957.

Nom. Jap.: *Yûpari-azuma-giku.*
Hab:. Serpentine-pebble-field in alpine area (Fig. 8–19).
Distrib.: Endemic.
Specimens from Mt. Yûpari: July 26, 1951. TOYOKUNI–SAP (typus).

Eupatorium LINNAEUS

391. E. chinense LINNAEUS subsp. **sachalinense** (FR. SCHMIDT) KITAMURA, Compos. Jap. **6**: 50. 1957.
HONDA, Nom. Pl. Jap. ed. em. 263. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *E. japonicum* var. *sachalinensis* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 145. 1868.—*E. sachalinense* (FR. SCHMIDT) MAKINO in Bot. Mag. Tokyo **23**: 90. 1909.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Yotsuba-hiyodori.*
Hab.: Sunny meadow in low land (NISHIDA, 1919), relatively common.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

Ixeris CASSINI

392. I. dentata (THUNBERG) NAKAI, Fl. Sylv. Korea. **14**: 114. 1923.
var. **dentata.**
form. **albiflora** (MAKINO) HARA, Enum. Sperm. Jap. **2**: 214. 1952.

Syn. *Lactuca thunbergii* var. *β albiflora* MAIKNO in Bot. Mag. Tokyo **12**: 48. 1898.—*Ixeris dentata* var. *albiflora* (MAKINO) NAKAI, Fl. Sylv. Korea. **14**: 114. 1923.—'*Ixeris dentata* var. *albiflora* MAKINO': HONDA, Nom. Pl. Jap. ed. em. 265. 1957.

Nom. Jap.: *Shirobana-nigana.*
Hab.: Rôsoku-iwa, headwaters of the Takinosawa River.
Distrib.: Hokkaidô to Loochoo Isls., S. Kuriles, Korea.
Specimens from Mt. Yûpari: Aug. 6, 1969. NOSAKA–SAP.

var. **alpicola** (TAKEDA) OHWI, Fl. Jap. ed. 1, 1246. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 90. 1953; Fl. Jap. ed. 2, 1413. 1965.
HONDA, Nom. Pl. Jap. ed. em. 265. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *Lactuca thunbergii* lusus *alpicola* TAKEDA in Bot. Mag. Tokyo **24**: 70. 1910.—*L. dentata* var. *alpicola* (TAKEDA) MAKINO in Bot. Mag. Tokyo **27**: 29. 1913.—NISHIDA in Trans Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Takane-nigana.*
Hab.: Alpine meadow.
Distrib.: Hokkaidô, Honshû, Shikoku, Isl. Yaku-shima.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

393. I. stolonifera A. GRAY, Bot. Jap. 396. 1859.
HONDA, Nom. Pl. Jap. ed. em. 266. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Nom. Jap.: *Iwa-nigana.*
Hab.: Lower mountain area, occasionally found along the road.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China.
Specimens from Mt. Yûpari: June 28, 1959. NOSAKA-SAP.

Lactuca LINNAEUS

394. L. raddeana MAXIMOWICZ var. **elata** (HEMSLEY) KITAMURA in Journ. Jap. Bot. **21**: 52. 1947; Compos. Jap. **5**: 139. 1956.
HONDA, Nom. Pl. Jap. ed. em. 267. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *L. elata* HEMSLEY in Journ. Linn. Soc. **23**: 481. 1888.
L. raddeana (non MAXIMOWICZ) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 654. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.
Nom. Jap.: *Yama-nigana.*
Hab.: Mountain area.
Distrib.: Hokkaidô to Kyûshû, Isl. Yaku-shima, S. Saghalien, S. Kuriles, C. & S. China, Indo-China.
Specimens from Mt. Yûpari: July 29, 1958. NOSAKA-SAP.

Leibnitzia CASSINI

395. L. anandria (LINNAEUS) NAKAI in Journ. Jap. Bot. **13**: 852. 1937.
HONDA, Nom. Pl. Jap. ed. em. 267. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.
Syn. *Tussilago anandria* LINNAEUS, Sp. Pl. ed. 1, 865. 1753.
Nom. Jap.: *Senbon-yari.*
Hab.: Low land to mountain area.
Distrib.: Hokkaidô to Kyûshû, S. Saghalien, S. Kuriles, Formosa, Korea, Temperate zone in E. Asia, Siberia.
Specimens from Mt. Yûpari: June, 1955. NOSAKA-SAP.

Ligularia CASSINI

396. L. hodgsoni HOOKER f. in CURTIS, Bot. Mag. t. 5417. 1863.
HONDA, Nom. Pl. Jap. ed. em. 268. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *L. sibirica* (non CASSINI) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 657. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. 7: 138. 1919.

Nom. Jap.: *Ezo-takarakô.*

Hab.: Subalpine to alpine area, relatively swampy place.

Distrib.: Hokkaidô, N. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Petasites MILLER

397. P. japonicus (SIEBOLD et ZUCCARINI) MAXIMOWICZ var. **giganteus** (FR. SCHMIDT) Hort. in Gard. Chron. ser. 3, **22**: 311. 1897.

HONDA, Nom. Pl. Jap. ed. em. 269. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *P. giganteus* FR. SCHMIDT ex TRAUTVETTER in Act. Hort. Petrop. **8**: 433. 1883.—*P. japonicus* subsp. *giganteus* (FR. SCHM.) KITAMURA, Compos. Jap. **3**: 164. 1942.

P. japonicus MIQUEL, Prol. Fl. Jap. 380. 1867.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Akita-buki.*

Hab.: Low land up to alpine area, common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, M. & S. Kuriles.

Picris LINNAEUS

398. P. hieracioides LINNAEUS subsp. **kamtschatica** (LEDEBOUR) HULTÉN, Fl. Kamt. **4**: 217. 1930.

HONDA, Nom. Pl. Jap. ed. em. 269. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *P. kamtschatica* LEDEBOUR in Mém. Acad. Sci. St.-Pét. **5**: 557. 1815.

P. hieracioides (non L.) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 660. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 138. 1919.

Nom. Jap.: *Kanchi-kôzorina.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka, Aleutian.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Saussurea DE CANDOLLE

399. S. chionophylla TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 234, t, 145. 1915.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 269. 1957.—TOYOKUNI in Journ. Geobot. **9**: 40. 1960.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Yukiba-higotai.*

Hab.: Serpentine-pabble-fields in alpine area (Fig. 8–19).

Distrib.: Endemic to Hokkaidô (Mt. Yûpari, Mt. Tottabetsu etc.).

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1954. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

In the serpentine-pebbl-fields of this mountain, the white flowered plant of this species, from. *albiflora* SUGIMOTO, is occasionally found.

400. S. riederi HERDER var. **yezoensis** MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **19**: 518. 1874.

HONDA, Nom. Pl. Jap. ed. em. 271. 1957.—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Syn. *S. riederi* (non. HERDER) sensu MATSUMURA, Ind. Pl. Jap. **2** (2): 663. 1912.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

form. **yezoensis.**

Nom. Jap.: *Nagaba-kita-azami.*

Hab.: Alpine meadow, common.

Distrib.: Hokkaidô, N. Honshû (Mt. Hayachine), S. Kuriles.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 28, 1957. NOSAKA-SAP.

form. **yuparensis** (KITAMURA) NOSAKA, stat. nov.

Syn. *S. riederi* subsp. *yezoensis* var. *yuparensis* KITAMURA, Compos. Jap. **1**: 173. 1937.—HONDA, Nom. Pl. Jap. ed. em. 271. 1957, ut *S. riederii* var. *yuparensis.*—NOSAKA in Journ. Geobot. **10**: 24. 1961.

Nom. Jap.: *Yûbari-kita-azami.*

Hab.: Serpentine-pebble-fields both in lower mountain and the alpine areas.

Distrib.: Endemic.

Specimens from Mt. Yûpari: Aug. 23, 1928. ISHIDA-SAPT; Aug. 18, 1958. NOSAKA-SAP.

Saussurea riederi in this mountain is rather polymorphous, the author hardly sets a distinct demarcation line between the typical subsp. *yezoensis* and subsp. *yezoensis* var. *yuparensis* in KITAMURA's sense (KITAMURA, 1937). However, the plant occurring in the serpentine-pebble-fields shows considerable features with respect to the shpe of leaves and the general appearance of corymbs of heads.

Senecio LINNAEUS

401. S. cannabifolius LESSING in Linnaea **6**: 242. 1831.

HONDA, Nom. Pl. Jap. ed. em. 272. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *S. palmatus* PALLAS, Reis. **3**: 321. 1776, nom. nud.—LEDEBOUR, Fl. Ross. **2**: 636. 1845.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Hangonsô.*

Hab.: Sunny meadow in lower mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Dahuria, Temperate zone in E. Asia, Western N. America.

402. S. kawakamii MAKINO in Bot. Mag. Tokyo **26**: 291. 1912. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 272. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Miyama-oguruma.*

Hab.: Alpine area.

Distrib.: Hokkaidô, Saghalien, S. Kuriles (Isl. Shikotan).

Specimens from Mt. Yûpari: July 28, 1957 & Aug. 8, 1957. NOSAKA-SAP.

Solidago LINNAEUS

403. S. virga-aurea LINNAEUS subsp. **leiocarpa** (BENTHAM) HULTÉN, Fl. Aleut. 315. 1937.

HONDA, Nom. Pl. Jap. ed. em. 273. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *Amphirhapis leiocarpa* BENTHAM in HOOKER, London Journ. Bot. **1**: 488. 1842.

Solidago virga-aurea (non LINNAEUS) sensu HAYATA, Compos. Formos. 10. 1904.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Miyama-akino-kirinsô.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Kyûshû, Isl. Yaku-shima, Sghalien, Kuriles, Formosa, Korea, Temperate zone in E. Asia.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

Sonchus LINNAEUS

404. S. brachyotis DE CANDOLLE, Prodr. **7**: 186. 1838.

HONDA, Nom. Pl. Jap. ed. em. 273. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Hachijôna.*

Hab.: Sunny, waste place in low land, common (NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, Siberia, Temperate zone in E. Asia.

405. S. oleraceus LINNAEUS, Sp. Pl. ed. 1, 794. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.—HONDA, Nom. Pl. Jap. ed. em. 273. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Nogeshi.*

Hab.: Sunny place in low land, common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Formosa, Korea, Saghalien, Siberia, Temperate zone in E. Asia.

Taraxacum WIGGARD

406. T. officinale WEBER in WIGGARD, Prim. Fl. Holsat. 56. 1780. NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Seiyô-tanpopo.*

Hab.: Sunny meadow of low land, very common.

Distrib.: Widely distributed in the N. hemisphere.

407. T. yuparense H. KOIDZUMI in Journ. Jap. Bot. **9**: 358. 1933. HONDA, Nom. Pl. Jap. ed. em. 275. 1957.—TOYOKUNI in Journ. Geobot. **9**: 41. 1960.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *T. officinale* var. *lividum* KOCH subvar. *dissectissimum* KOIDZUMI in Bot. Mag. Tokyo **31**: 142. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 139. 1919.

Nom. Jap.: *Takane-tanpopo.*

Hab.: Serpentine-pebble-fields (Fig. 8–19).

Distrib.: Endemic to Hokkaidô (Mt. Yûpari, Mt. Apoi, Mt. Teine, the Shunbetsu River district).

Specimens from Mt. Yûpari: July, 1934. OHWI-SAPT; July 26, 1951. TOYOKUNI-SAPT; July, 1930. AKIYAMA-SAP; Aug. 19, 1954. NOSAKA-SAP.

CLASSIS MONOCOTYLEDONEAE

FAM. TYPHACEAE

Typha LINNAEUS

408. T. latifolia LINNAEUS, Sp. Pl. ed. 1, 971. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.—HONDA, Nom. Pl. Jap. ed. em. 276. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Gama.*

Hab.: In the pond or swampy place of low land (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Shikoku, Temperate zone in E. Asia.

FAM. SPARGANIACEAE

Sparganium LINNAEUS

409. S. angustifolium MICHAUX, Fl. Bor.-Amer. **2**: 189. 1803.
TATEWAKI in Bull. Soc. Pl. Ecol. **3**: 4. 1954.—HONDA, Nom. Pl. Jap. ed. em. 276. 1957.——NOSAKA in Journ. Geobot. **17**: 11. 1969.
Syn. ? '*Sparganium minimum* FRIES': NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.
Nom. Jap.: *Hosoba-uki-mikuri.*
Hab.: Mt. Yûbari, at Horokatonashibetsu (NISHIDA, 1919).
Distrib.: Hokkaidô (Mt. Yûpari), Saghalien, S. Kuriles (Isl. Kunashiri), Europe, N. America, Kamchatka.
Specimens from Mt. Yûpari: July 16, 1916. NISHIDA-SAPT.

410. S. glomeratum LAESTADIUS ex BEURLING in Ofvers. Svensk. Vet. Akad. Förhand. **9**: 192. 1853.
HONDA, Nom. Pl. Jap. ed. em. 276. 1957.
Syn. '*Sparganium hyperboreum*': NOSAKA in Journ. Geobot. **10**: 25. 1961.
Nom. Jap.: *Tama-mikuri.*
Hab.: Pond in low land.
Distrib.: Hokkaidô, N. Honshû, Kuriles, Temperate zone in the N. hemisphere.
Specimens from Mt. Yûpari: Aug. 23, 1928. NISHIDA-SAPT.

FAM. POTAMOGETONACEAE

Potamogeton LINNAEUS

411. P. heterophyllus SCHREBER, Spicil. Fl. Lips. 21. 1771.
HONDA, Nom. Pl. Jap. ed. em. 277. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *P. gramineus* L. var. *heterophyllus* (SCHREBER) FRIES, Novit. Fl. Suec. ed. 2, 36. 1828.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Ezo-no-hirumushiro.*
Hab.: Mt. Yûbari at Horokatonashibetsu (NISHIDA, 1919).
Distrib.: Hokkaidô, C. Honshû, Temperate zone in the N. hemisphere.

FAM. ALISMATACEAE

Alisma LINNAEUS

412. A. plantago-aquatica LINNAEUS var. **orientale** SAMUELSSON in Act. Hort. Gotob. **2**: 84. 1926.
NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *A. plantago-aquatica* L. subsp. *orientale* SAMUELSSON in Ark. f. Bot. **24** (A-7): 16. 1932.—*A. orientale* (SAMUELS.) JUSEPCZEK in Fl. URSS **1**: 281. 1934.—HONDA, Nom. Pl. Jap. ed. em. 279. 1957.
A. plantago LINNAEUS var. *parviflorum* (non TORREY) sensu MIYABE & MIYAKE, Fl. Saghal. 505. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 153. 1919.

Nom. Jap.: *Saji-omodaka.*

Hab.: Pond and humid place in low land.

Distrib.: Hokkaidô, N. Honshû, Saghalien, Korea, Manchuria, Mongolia, E. Siberia.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

FAM. VALLISNERIACEAE

Vallisneria LINNAEUS

413. V. asiatica MIKI in Bot. Mag. Tokyo **48**: 329–331. 1934.
HONDA, Nom. Pl. Jap. ed. em. 280. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *V. spiralis* LINNAEUS, Sp. Pl. ed. 1, 1015. 1753.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Sekishômo.*

Hab.: Mountain area (NISHIDA, 1919).

Distrib.: Hokkaidô to Kyûshû, E. Asia, Indo-China.

FAM. POACEAE

Agropyron GAERTNER

414. A. tsukushiense (HONDA) OHWI var. **transiens** (HACKEL) OHWI, Fl. Jap. ed. 1, 106. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 67. 1953; Fl. Jap. ed. 2, 135. 1965.
HONDA, Nom. Pl. Jap. ed. em. 306. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *A. semicostatum* var. *transiens* HACKEL in Bull. Herb. Boiss. ser. 2, **3**: 507. 1903.

Nom. Jap.: *Kamojigusa.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Loochoo Isls., Korea, Manchuria, China.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

Agrostis LINNAEUS

415. A. flaccida HACKEL in Bull. Herb. Boiss. **7**: 649. 1899.
HONDA, Nom. Pl. Jap. ed. em. 306. 1957.

Nom. Jap.: *Miyama-nukabo.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles (Isl. Shikotan), Korea.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; July 28, 1957. NOSAKA-SAP.

416. A. scabra WILLDENOW, Sp. Pl. **1**: 370. 1798.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Syn. *A. hiemalis* BRITTON, STERNS et POGGENBURG, Prel. Catal. N. Y. 68. 1888.—HONDA, Nom. Pl. Jap. ed. em. 306. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Nom. Jap.: *Ezo-nukabo.*
Hab.: Mountain area.
Distrib.: Hokkaidô, Honshû, Kuriles, Saghalien, N. America, E. Siberia.
Specimens from Mt. Yûpari: Aug., 1958. NOSAKA-SAP.

Brylkinia FR. SCHMIDT

417. B. schmidtii OHWI in Acta Phytotax. Geobot. **10**: 108. 1941.
HONDA, Nom. Pl. Jap. ed. em. 308. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *B. caudata* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 199, t. 8, f. 22–27. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Hogaëri-gaya.*
Hab.: Mountain area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Manchuria.
Specimens from Mt. Yûpari: July 12, 1964. NOSAKA-SAP.

Deschampsia P. BEAUVOIS

418. D. caespitosa BEAUVOIS subsp. **levis** (TAKEDA) NOSAKA, stat. nov.
Syn. *Trisetum leve* TAKEDA in Not. Roy. Bot. Gard. Edinb. **8**: 237. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—*Deschampsia caespitosa* BEAUV. var. *levis* (TAKEDA) OHWI in Journ. Jap. Bot. **17**: 448. 1941.—HONDA, Nom. Pl. Jap. ed. em. 309. 1957.—TOYOKUNI in Journ. Geobot. **6**: 63. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
D. caespitosa (non BEAUV.) sensu MIYABE et MIYAKE, Fl. Saghal. 570. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
D. takedana HONDA in Bot. Mag. Tokyo **41**: 385. & 415. 1927.
Nom. Jap.: *Yûpari-kanitsuri.*
Hab.: Alpine medaow (Fig. 8–20).
Distrib.: Endemic to this mountain.
Specimens from Mt. Yûpari: Aug. 6, 1916. NISHIDA-SAPT; Aug., 1934. OHWI-SAPT; July 27, 1957. KAWANO-SAPT; Aug. 19, 1957. NOSAKA-SAP.

419. D. flexuosa TRINIUS in Bull. Acad. Imp. Sci. St.-Pét. **1**: 66. 1836.

HONDA, Nom. Pl. Jap. ed. em. 310. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Komesusuki.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô to Loochoo Isls. (Isl. Yaku-shima), Saghalien, Kuriles, Formosa, Kamchatka, Siberia, Subfrigid to frigid zones in the N. hemisphere.

Specimens from Mt. Yûpari: Aug. 19, 1957. NOSAKA-SAP.

Deyeuxia CLARION ex P. BEAUVOIS

420. D. hakonensis (FRANCHET et SAVATIER) KENG in Sinensia **11**: 411. 1940.

OHWI in Journ. Jap. Bot. **33**: 210. 1958.

Syn. *Calamagrostis hakonensis* FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 168. 1876. nom. nud.—HONDA, Monogr. Poac. Jap. 167. 1930; Nom. Pl. Jap. ed. em. 308. 1957.

Nom. Jap.: *Hime-nogariyasu.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles, China.

Specimens from Mt. Yûpari: Aug. 13, 1893. TOKUBUCHI-SAPT.

421. D. langsdorffii (LINK) KUNTH, Rév. Gram. **1**: 77. 1829.

OHWI in Journ. Jap. Bot. **33**: 209. 1958.

Syn. *Arundo langsdorffii* LINK, Enum. Hort. Berol. **1**: 74. 1821.—*Calamagrostis langsdorffii* (LINK) TRINIUS, Gram. Unifl. Diss. 225, t. 4, f. 10. 1824.—HONDA, Nom. Pl. Jap. ed. em. 309. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

C. villosa (non MUTEL) sensu HACKEL in Bull. Herb. Boiss. **77**: 650. 1889.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Iwa-nogariyasu.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû, Shikoku, Kuriles, Saghalien, Siberia.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 19, 1957. NOSAKA-SAP.

422. D. purpurascens (R. BROWN) KUNTH, Rév. Gram. **1**: 77. 1829.

OHWI in Journ. Jap. Bot. **33**: 211. 1958.

Syn. *Calamagrostis purpurascens* R. BROWN in RICHARDSON, Bot. App. Frankl. Journ. 731. 1923.—HONDA, Nom. Pl. Jap. ed. em. 309. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

C. urelytra HACKEL var. *parvigluma* (non TAKEDA) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Miyama-nogariyasu.*

Hab.: Subalpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka, E. Siberia.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; July 26, 1958. NOSAKA-SAP.

423. D. sachalinensis (FR. SCHMIDT) RENDLE in Journ. Linn. Soc. Bot. **36**: 395. 1904.
OHWI in Journ. Jap. Bot. **33**: 209. 1958.
Syn. *Calamagrostis sachalinensis* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 202, t. 8, f. 8-14. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 309. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Nom. Jap.: *Takane-nogariyasu.*
Hab.: Subalpine to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Saghalien, S. Kuriles, Kamchatka.
Specimens from Mt. Yûpari: Aug. 19, 1957. NOSAKA-SAP.

Elymus LINNAEUS

424. E. yubaridakensis (HONDA) OHWI in Acta Phytotax. Geobot. **6**: 54. 1937.
HONDA, Nom. Pl. Jap. ed. em. 311. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *Clinelymus yubaridakensis* HONDA in Bot. Mag. Tokyo **50**: 572. 1936.
Nom. Jap.: *Takane-ezo-mugi.*
Hab.: Hondake peak and Gama-iwa, very rare (Fig. 8-20).
Distrib.: Endemic to this mountain.
Specimens from Mt. Yûpari: July, 1933. SUGIMOTO-TI (typus); July 28, 1957. NOSAKA-SAP.

Festuca LINNAEUS

425. F. ovina LINNAEUS var. **supina** (SCHUR) HACKEL in Bot. Centralbl. **8**: 405. 1881.
HONDA, Nom. Pl. Jap. ed. em. 311. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *F. supina* SCHUR, Enum. Pl. Trans. 784. 1866.
F. ovina LINNAEUS, Sp. Pl. ed. 1, 73. 1853.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Miyama-ushinokegusa.*
Hab.: Alpine meadow.
Distrib.: Hokkaidô, N. & C. Honshû, Alpine regions of N. hemisphere.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

426. F. rubra LINNAEUS, Sp. Pl. ed. 1, 74. 1753.
var. **rubra.**
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 311. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Nom. Jap.: *Ô-ushinokegusa.*
Hab.: Subalpine to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Temperate & subfrigid zones in the N. hemisphere.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.
var. **hondoensis** OHWI in Acta Phytotax. Geobot. **10**: 112. 1942. HONDA, Nom. Pl. Jap. ed. em. 312. 1957.—Kô. ITO in Journ. Geobot. **8**: 75. 1960.
Nom. Jap.: *Miyama-ô-ushinokegusa.*
Hab.: Alpine area.
Distrib.: Alpine zones in Hokkaidô & Honshû.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT.

Glyceria R. BROWN

427. G. leptolepis OHWI in Bot. Mag. Tokyo **45**: 381. 1931, excl. syn. HULTÉN; Fl. Jap. ed. 1, 123. 1953; Fl. Jap. ed. 2, 144. 1965. HONDA, Nom. Pl. Jap. ed. em. 312. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *G. aquatica* (non WAHLENBERG) SMITH, Engl. Fl. **1**: 586. 1823.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Hiroha-no-dojôtsunagi.*
Hab.: Relatively humid place in lower mountain area.
Distrib.: Hokkaidô to Kyûshû, Korea, Ussuri, Manchuria.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

Hierochloe R. BROWN

428. H. alpina (SWARTZ) ROEMER et SCHULTES, Syst. Veg. **2**: 514. 1817. Fig. 15-A.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 312. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.
Syn. *Holcus alpina* SWARTZ in WILLDENOW, Sp. Pl. **4**: 937. 1805.
Nom. Jap.: *Miyama-kôbô.*
Hab.: Alpine meadow (Fig. 8-20).
Distrib.: Hokkaidô, N. & C. Honshû, Circumpolar and alpine regions

in the northern hemisphere.

Specimens from Mt. Yûpari: Aug. 7, 1916. NISHIDA-SAPT.

429. H. pluriflora KOIDZUMI in Bot. Mag. Tokyo **31**: 136. 1917. Fig. 15-B.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 312. 1957.—KAWANO in Journ. Jap. Bot. **34**: 14. 1959.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *H. pauciflora* (non R. BROWN) sensu HONDA, Monogr. Poac. Jap. 222. 1930.

Nom. Jap.: *Ezo-kôbô.*

Hab.: Serpentine-pebble-fields in alpine area (Fig. 8-20).

Distrib.: Endemic to Hokkaidô (sp.).

Specimens from Mt. Yûpari: Aug. 4, 1916. NISHIDA-SAPT; Aug. 2, 1921. TAKEDA & TATEWAKI-SAPT; July 12-14. 1934. OHWI-SAPT; July 28, 1957 & July 26, 1958. NOSAKA-SAP.

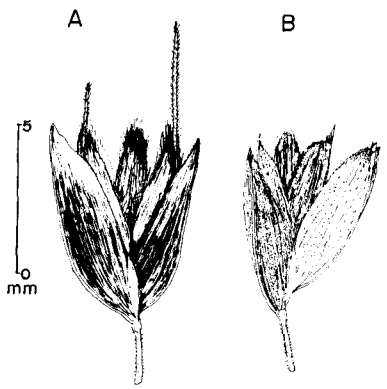

Fig. 15.

A: Spikelet of *Hierochloe alpina* ROEMER et SCHULTES.

B: Spikelet of *Hierochloe pluriflora* KOIDZUMI.

Melica LINNAEUS

430. M. nutans LINNAEUS, Sp. Pl. ed. 1, 66. 1753.

HONDA, Nom. Pl. Jap. ed. em. 313. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Komegaya.*

Hab.: Low land to mountain area, occasionally occurs in alpine area (at Gama-iwa etc.).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, China, Siberia, Europe.

Specimens from Mt. Yûpari: July 28, 1959. NOSAKA-SAP.

Miscanthus ANDERSSON

431. M. sacchariflorus BENTHAM et HOOKER ex FRANCHET, Pl. David. **1**: 327. 1884.

NOSAKA in Journ. Geobot. **10**: 25. 1961.

Syn. *M. sacchariflorus* (non BENTH. et HOOK.) HACKEL in ENGLER & PRANTL, Nat. Pfl.-fam. **2** (2): 23. 1887.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Triarrhena sacchariflora (MAXIM.) NAKAI in Journ. Jap. Bot. **25**: 7. 1950.—HONDA, Nom. Pl. Jap. ed. em. 318. 1957.

Nom. Jap.: *Ogi.*

Hab.: Humid meadow in lower mountain area (NISHIDA, 1919.)

Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China, Ussuri.

432. M. sinensis ANDERSSON in Öfv. Svensk. Vet. Akad. Förh. **12**: 166. 1856.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 314. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Susuki.*

Hab.: Meadow in low land, relatively common (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., S. Kuriles, Korea, China, Formosa.

Phragmites ADANSON

433. P. communis TRINIUS, Fund. Agrost. 134. 1820.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 315. 1957.—NOSAKA in Journ. Geobot. **10**: 25. 1961.

Nom. Jap.: *Yoshi.*

Hab.: Swampy place in low land (NISHIDA, 1919).

Distrib.: Hokkaidô to Kyûshû, Temperate and subfrigid zones in the northern hemisphere.

Poa LINNAEUS

434. P. annua LINNAEUS, Sp. Pl. ed. 1, 68. 1753.

HONDA, Nom. Pl. Jap. ed. em. 315. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Suzume-no-katabira.*

Hab.: Sunny and waste place in the low land, common.

Distrib.: Widely distributed in the whole world.

435. P. fauriei HACKEL in Bull. Herb. Boiss. **7**: 711. 1899.

HONDA, Nom. Pl. Jap. ed. em. 316. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Ainu-somosomo.*

Hab.: Mountain area.

Distrib.: W. Hokkaidô, Honshû (Japan Sea-side).

Specimens from Mt. Yûpari: July 27, 1958. KAWANO-SAPT.

436. P. hayachinensis KOIDZUMI in Bot. Mag. Tokyo **31**: 254. 1917. HONDA, Nom. Pl. Jap. ed. em. 316. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. ? *P. kurilensis* (non HACKEL) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Nanbu-somosomo.*

Hab.: Alpine meadow (Fig. 8–19).

Distrib.: Hokkaidô (Taisetsu Mts.; Mt. Koidzumi, Mt Chûbetsu, Takanegahara Plateau, Mt. Kaun, Mt. Taira, Mt. Oputateshike etc.; Yûbari Range; Mt. Ashibetsu, Mt. Yûpari; Hidaka Range; Mt. Satsunai, Mt. Koikakushi-satsunai, Mt. Esaoman-tottabetsu etc.), N. Honshû (Mt. Hayachine).

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; July 20, 1952. TOYOKUNI-SAPT; July 28, 1957 & July 23, 1959. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

437. P. sphondylodes TRINIUS in BUNGE, Enum. Pl. Chin. Bor. 71. 1831. HONDA, Nom. Pl. Jap. ed. em. 316. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Ichigo-tsunagi.*

Hab.: Lower mountain area (NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Korea, Formosa, China, E. Siberia.

438. P. viridula PALIBIN in Act. Hort. Petrop. **19**: 134. 1901. HONDA, Nom. Pl. Jap. ed. em. 316. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *P. nemoralis* (non LINNAEUS) sensu MIQUEL, Prol. Fl. Jap. 168. 1866.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Ao-ichigo-tsunagi.*

Hab.: Mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, Honshû, Saghalien, S. Kuriles, Korea, Manchuria.

Sasa MAKINO et NEMOTO

439. S. kurilensis (RUPRECHT) MAKINO et SHIBATA in Bot. Mag. Tokyo **15**: 27. 1901.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 291. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *Arundinaria kurilensis* RUPRECHT in Bull. Phys.-Math. Acad. St.-Pét. **8**: 121. 1850.

Nom. Jap.: *Chishima-zasa.*

Hab.: Mountain to alpine area, very common.

Distrib.: Hokkaidô, Honshû, Saghalien, Kuriles, Korea.

440. S. senanensis (FRANCHET et SAVATIER) REHDER in Journ. Arnold Arb. **1**: 58. 1919, *pro parte.*

HONDA, Nom. Pl. Jap. ed. em. 297. 1957.

Syn. *Bambusa senanensis* FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 606. 1879. *Sasa paniculata* MAKINO et SHIBATA in Bot. Mag. Tokyo **15**: 25. 1901, *pro parte.*—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Kumai-zasa.*

Hab.: Lower mountain to mountain area, very common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles.

Setaria P. BEAUVOIS

441. S. viridis (LINNAEUS) BEAUVOIS, Ess. Agrost. 55 & 178, t. 13, f. 3. 1812.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 317. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *Panicum viride* LINNAEUS, Syst. Nat. ed. 10, **2**: 870. 1759.

Nom. Jap.: *Enokorogusa.*

Hab.: Sunny meadow in low land, relatively common.

Distrib.: Hokkaidô to Kyûshû, Temperate zone in the world.

Trisetum PERSOON

442. T. spicatum (LINNAEUS) RICHTER, Pl. Eur. **1**: 59. 1890.

HONDA, Nom. Pl. Jap. ed. em. 318. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *Aira spicata* LINNAEUS, Sp. Pl. ed. 1, 64. 1753.

Trisetum subspicatum BEAUVOIS, Ess. Agrost. 88. 1812.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Rishiri-kanitsuri.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Frigid zones in the N. & the S. hemispheres and alpine zones in the tropical region.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7-9, 1913. NISHIDA-SAPT; Aug., 1934. OHWI-SAPT; Aug. 19, 1954 & July 28, 1957. NOSAKA-SAP.

FAM. CYPERACEAE

Carex LINNAEUS

443. C. augustinowiczii MEINSHAUSEN ex KORSHINSKY in Act. Hort.

Petrop. **12**: 411. 1892.
HONDA, Nom. Pl. Jap. ed. em. 320. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Hiragishi-suge.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, C. Honshû, Saghalien, Kuriles, Korea, Kamchatka, Ussuri.

Specimens from Mt. Yûpari: July 28, 1957 & July 26, 1958. NOSAKA-SAP.

444. C. blepharicarpa FRANCHET var. **dueensis** AKIYAMA in Journ. Jap. Bot. **10**: 332. 1934, in adnota.
HONDA, Nom. Pl. Jap. ed. em. 320. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *C. yezo-montana* AKIYAMA in Journ. Fac. Sci. Hokkaido Imp. Univ. ser. 5, **1**: 62. 1931.

Nom. Jap.: *Takane-shôjô-suge.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, Honshû, N. Saghalien.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP; July, 1960. T. LEU-SAPT.

445. C. brunnescens POIRET form. **sphaerostachya** (DEWEY) AKIYAMA, Car. Far East. Reg. Asia 61, pl. 27. 1955.
HONDA, Nom. Pl. Jap. ed. em. 320. 1957.

Syn. *C. sphaerostachya* DEWEY in Amer. Journ. Sci. **49**: 44. 1845.—*C. brunnescens* var. *sphaerostachya* (DEWEY) KÜKENTHAL in ENGLER, Pfl.-reich **4**(20): 220. 1909.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Hime-kawazu-suge.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Europe, N. America.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

446. C. caespitosa LINNAEUS, Sp. Pl. ed. 1, 978. 1753.
HONDA, Nom. Pl. Jap. ed. em. 320. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Kabu-suge.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Subfrigid zone in the Eurasian Continent.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

447. C. canescens LINNAEUS, Sp. Pl. ed. 1, 974. 1753.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 320. 1957.

Syn. *C. curta* GOODEN. in Trans. Linn. Soc. **2**: 145. 1794.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Hakusan-suge.*

Hab.: Subalpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Manchuria, Kamchatka, Siberia, C. Asia, Europe, N. America, S. America, Australia.

Specimens from Mt. Yûpari: July, 1960. T. LEU-SAPT.

448. C. capillaris LINNAEUS, Sp. Pl. ed. 1, 977. 1753.
KOIDZUMI in Bot. Mag. Tokyo **31**: 143. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 320. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *C. capillaris* subsp. *chlorostachys* (STEVEN) LÖVE et LÖVE et RAYMOND in Canad. Journ. Bot. **35**: 749. 1957.

Nom. Jap.: *Takane-shiba-suge.*

Hab.: Serpentine-pebble-fields in alpine area (Fig. 8–20).

Distrib.: Hokkaidô (Mt. Yûpari, Mt. Tottabetsu), N. Honshû (Mt. Hayachine–YOSHIKAWA, Icon. Jap. Car. **3**: 390, pl. 195. 1960; KIKUCHI & KOMIDZUNAI, Fl. Mt. Hayachine & Adj. Mts. 15 & 31. 1961), Kuriles, Saghalien, N. Korea, Siberia, Europe and N. Ameria.

Specimens from Mt. Yûpari: Aug. 6, 1959. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

449. C. confertiflora BOOTT in Proc. Linn. Soc. **1**: 286. 1845.
HONDA, Nom. Pl. Jap. ed. em. 321. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *C. olivacea* (non BOOTT) sensu KÜKENTHAL in ENGLER, Pfl.-reich **4**(20): 617. 1909, *pro min. parte.*—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.

Nom. Jap.: *Miyama-shira-suge.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

450. C. dispalata BOOTT ex A. GRAY, Narr. Exped. PERRY **2**: 325. 1857.
HONDA, Nom. Pl. Jap. ed. em. 321. 1957.

Nom. Jap.: *Kasa-suge.*

Hab.: River side in mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea, Ussuri, Manchuria, China,

Saghalien.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP.

451. C. dissitiflora FRANCHET in Bull. Soc. Philom. Paris **8**, ser. 7, 32. 1895.

HONDA, Nom. Pl. Jap. ed. em. 321. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Miyama-juzu-suge.*

Hab.: Mountain area, rare.

Distrib.: Hokkaidô to Kyûshû, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 12, 1893. TOKUBUCHI-SAPT; July 31, 1963. AKIYAMA & NOSAKA-SAP.

452. C. flavocuspis FRANCHET et SAVATIER var. **breviaristata** AKIYAMA, Car. Far East. Reg. Asia 116, pl. 99-F. 1955.

HONDA, Nom. Pl. Jap. ed. em. 322. 1957.

Syn. *C. flavocuspis* (non FRANCH. et SAVAT.) sensu MIYABE et KUDO, Fl. Hokk. & Saghal. **2**: 243. 1931.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Ezo-tanukiran.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; July 28, 1957. NOSAKA-SAP.

453. C. foliosissima FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 195. 1868. HONDA, Nom. Pl. Jap. ed. em. 322. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Okuno-kan-suge.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

454. C. hakkodensis FRANCHET in Bull. Soc. Philom. Paris ser. 8, **7**: 28. 1895.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 323. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Nom. Jap.: *Ito-kin-suge.*

Hab.: Alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

455. C. hakonensis FRANCHET et SAVATIER in Bull. Soc. Philom. Paris ser. 8, **7**: 28. 1895.
HONDA, Nom. Pl. Jap. ed. em. 323. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.
Nom. Jap.: *Ko-hari-suge.*
Hab.: Mountain area.
Distrib.: Hokkaidô to Kyûshû, Korea.
Specimens from Mt. Yûpari: Aug., 1934. OHWI-SAPT; July 31, 1963. AKIYAMA & NOSAKA-SAP.

456. C. jacens C. B. CLARKE in Kew Bull. Addit. Ser. 8, 80. 1908.
HONDA, Nom. Pl. Jap. ed. em. 323. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Hagakure-suge.*
Hab.: Mountain to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Kuriles.
Specimens from Mt. Yûpari: Aug., 1934. OHWI-SAPT; July 26, 1958. NOSAKA-SAP.

457. C. leucochlora BUNGE, Enum. Pl. Chin. Bor. 68. 1833; in Mem. Acad. St.-Pét. **2**: 142. 1835.
HONDA, Nom. Pl. Jap. ed. em. 324. 1957.
Syn. *C. breviculmis* BOOTT, Ill. **4**: 181. 1867, *pro parte.*—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Ao-suge.*
Hab.: Mountain to alpine area.
Distrib.: Hokkaidô to Kyûshû, Korea, China, India, Himalaya.
Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 26, 1958. NOSAKA-SAP.

458. C. limosa LINNAEUS, Sp. Pl. ed. 1, 977. 1753.
HONDA, Nom. Pl. Jap. ed. em. 324. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.
Syn. *C. limosa* var. *fuscocuprea* KÜKENTHAL in ENGLER, Pfl.-reich, **4**(20): 505. 1909.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919 (hab. Mt. Ashibetsu).
Syn. ? '*C. rariflora* SMITH': NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Yachi-suge.*
Hab.: Swamp and bog near Maëdake peaks (Fig. 8-21).
Distrib.: Hokkaidô, N. & C. Honshû, Swamps and moors in the N. hemisphere.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

459. C. melanocarpa CHAMISSO in MIDDENDORF, Sibir. Reis. **1** (2): 21, t. 4. 1847.
HONDA, Nom. Pl. Jap. ed. em. 325. 1957.—YOSHIKAWA, Icon. Jap. Car. **3**: 370, pl. 185. 1960.—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Takane-hime-suge.*
Hab.: Serpentine-pebble-fields in the alpine area (Fig. 8–20).
Distrib.: Hokkaidô (Mt. Yûpari), C. Siberia, Dahuria etc.
Specimens from Mt. Yûpari: Aug. 1934. OHWI-SAPT; Aug. 6, 1959. NOSAKA-SAP; July 31, 1963. AKIYAMA & NOSAKA-SAP.

460. C. mertensii PRESCOTT var. **urostachys** KÜKETHAL in ENGLER, Pfl.-reich **4** (20): 401. 1909.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 325. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Kinchaku-suge.*
Hab.: Subalpine to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Kuriles.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

461. C. mollicula BOOTT, Illust. **4**: 192. 1867.
HONDA, Nom. Pl. Jap. ed. em. 326. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Hime-shira-suge.*
Hab.: Lower mountain area, relatively common.
Distrib.: Hokkaidô to Kyûshû, S. Korea, Saghalien.
Specimens from Mt. Yûpari: Aug. 11, 1893. TOKUBUCHI-SAPT; July 26, 1958. NOSAKA-SAP.

462. C. omiana FRANCHET et SAVATIER var. **monticola** OHWI in Acta Phytotax. Geobot. **1**: 71. 1932.
HONDA, Nom. Pl. Jap. ed. em. 327. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.
Nom. Jap.: *Kawazu-suge.*
Hab.: Swamp or bog in alpine area (Fig. 8–21).
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

463. C. oxyandra KUDO, Rep. Veg. N. Saghal. 72. 1923.
HONDA, Nom. Pl. Jap. ed. em. 327. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *C. wrightii* FRANCHET in Bull. Soc. Philom. Paris ser. 8, **7**: 47. 1895.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919,

Nom. Jap.: *Hime-suge.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Formosa.

Specimens from Mt. Yûpari: July 25, 1956 & July 26, 1958. NOSAKA-SAP.

464. C. planata FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 126 & 555. 1879.

HONDA, Nom. Pl. Jap. ed. em. 328. 1957.—NOSAKA in Journ. Geobot. **10**: 59. 1961.

Syn. *C. ponmoshiriensis* MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **6**: 165. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Takane-masukusa.*

Hab.: Mt. Yûpari, at Ponmoshiri (NISHIDA, 1919).

Distrib.: Hokkaidô (prov. Ishikari), Honshû, Shikoku, Kyûshû.

Specimens from Mt. Yûpari: Aug. 10, 1916. NISHDA-SAPT.

465. C. pyrenaica WAHLENBERG in Vet. Akad. Nya Handl. Stockh. **24**: 139. 1803.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 328. 1957. NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Kin-suge.*

Hab.: Subalpine to alpine area (Fig. 8–21).

Distrib.: Hokkaidô, N. & C. Honshû, Europe, Siberia, N. America.

Specimens from Mt. Yûpari: July 31, 1963. AKIYAMA & NOSAKA-SAP.

According to Dr. AKIYAMA, both varieties of this species, var. *pyrenaica* (type) and var. *altior*, occur in this mountain.

466. C. rhizopoda MAXIMOWICZ in Mél. Biol. **12**: 561. 1886.

HONDA, Nom. Pl. Jap. ed. em. 329. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Nom. Jap.: *Shirako-suge.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, Kuriles.

Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP.

467. C. rhynchophysa C. A. MEYER, Ind. Sem. Hort. Petrop. 9, Suppl. 9. 1844.

HONDA, Nom. Pl. Jap. ed. em. 329. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Ô-kasa-suge.*
Hab.: Swampy place in lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Ussuri, Siberia.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

468. C. sadoensis FRANCHET in Bull. Soc. Philom. Paris ser. 8, **7**: 42. 1895. HONDA, Nom. Pl. Jap. ed. em. 329. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Sado-suge.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, S. Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

469. C. scita MAXIMOWICZ var. **riishirensis** (FRANCHET) KÜKENTHAL in ENGLER, Pfl.-reich **4**(20): 414. 1909.
HONDA, Nom. Pl. Jap. ed. em. 329. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *C. riishirensis* FRANCHET in Bull. Soc. Philom. Paris Ser. 8, **7**: 88. 1895.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Rishiri-suge.*
Hab.: Alpine area. (Fig. 8–21).
Distrib.: Hokkaidô, Saghalien S. Kuriles.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; July 26. 1958. NOSAKA-SAP.

470. C. shimidzensis FRANCHET in Bull. Soc. Philom. Paris ser. 8, **7**: 33. 1895.
HONDA, Nom. Pl. Jap. ed. em. 330. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Azuma-naruko.*
Hab.: Lower mountain to mountain area.
Distrib.: Hokkaidô, Honshû, N. Kyûshû, S. Kuriles, S. Korea.
Specimens from Mt. Yûpari: July 27, 1957. NOSAKA-SAP.

471. C. stenantha FRANCHET et SAVATIER var. **taisetsuensis** AKIYAMA in Journ. Fac. Sci. Hokkaidô Imp. Univ. ser. 5, **1**: 60, t. 11, f. 5. 1931; in Journ. Fac. Sci. Hokkaidô Imp. Univ. ser. 5, **2**(1): 176–177. 1932; Car. Far East. Reg. Asia 133, pl. 117, f. 2. 1955.
HONDA, Nom. Pl. Jap. ed. em. 330. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Taisetsu-iwa-suge.*

Hab.: Alpine area, mainly on exposed place. (Fig. 8–21).
Distrib.: Hokkaidô, Saghalien, Kuriles, Kamchatka.
Specimens from Mt. Yûpari: July 27, 1961. NOSAKA-SAP.

472. C. subumbellata MEINSHAUSEN in Act. Hort. Petrop. **18**: 395. 1901. HONDA, Nom. Pl. Jap. ed. em. 331. 1957.—YOSHIKAWA, Icon. Jap. Car. **1**: 98. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Miyake-suge.*
Hab.: Alpine area.
Distrib.: Hokkaidô (Mt. Yûpari), Saghalien.
Specimens from Mt. Yûpari: Aug., 1934. OHWI-SAPT.

473. C. vanheurckii J. MULLER in v. HEURCK, Obs. Bot. 30. 1870. TATEWAKI in Journ. Sapporo Soc. Agr. & For. **143**: 15. 1938.—HONDA, Nom. Pl. Jap. ed. em. 332. 1957.
Nom. Jap.: *Nuio-suge.*
Hab.: Alpine area (OHWI, 1936; TATEWAKI, 1938).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, E. Siberia, Manchuria, Kamchatka.

474. C. verna CHAIX var. **microtricha** (FRANCHET) OHWI in Journ. Jap. Bot. **11**: 410. 1935; Cyper. Jap. **1**: 350. 1936; Fl. Jap. ed. 1, 193. 1953; Fl. Jap. ed. 2, 264. 1965.
HONDA, Nom. Pl. Jap. ed. em. 332. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *C. microtricha* FRANCHET in Nouv. Arch. Mus. Paris ser. 3, **9**: 189. 1897.
Nom. Jap.: *Cha-shiba-suge.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka.
Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Eleocharis R. BROWN

475. E. mamillata LIDBERG f. var. **cyclocarpa** KITAGAWA, Lineam. Fl. Mansh. 119–120. 1939.
HONDA, Nom. Pl. Jap. ed. em. 334. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *E. palustris* (non R. BROWN) sensu MATSUMURA, Ind. Pl. Jap. **2**(1): 145. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.
Nom. Jap.: *Numa-hari-i.*
Hab.: Swampy place in lower mountain to alpine areas.
Distrib.: Hokkaidô, Honshû, Korea, Ussuri, Manchuria.
Specimens from Mt. Yûpari: Aug. 30, 1958. NOSAKA-SAP.

Eriophorum LINNAEUS

476. E. vaginatum LINNAEUS, Sp. Pl. ed. 1, 52. 1753.
NOSAKA in Journ. Geobot. **10**: 60. 1961.

Syn. *E. fauriei* E. G. CAMUS in LECOMTE, Notul. Syst. **1**: 249. 1910.—HONDA, Nom. Pl. Jap. ed. em. 335. 1957.

Nom. Jap.: *Wata-suge.*

Hab.: Swamp and bog near Maëdake peaks.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Siberia, Europe, N. America.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 2, 1967. NOSAKA-SAP.

Scirpus LINNAEUS

477. S. caespitosus LINNAEUS, Sp. Pl. ed. 1, 48. 1753.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 337. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Mine-hari-i.*

Hab.: Peat bog in alpine area (Fig. 8–21).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Widely distributed in the frigid zone of N. hemisphere.

Specimens from Mt. Yûpari: Aug. 19, 1954. NOSAKA-SAP.

478. S. maximowiczii C. B. CLARKE in Kew Bull. Add. Ser. 8, 30. 1908. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.—HONDA, Nom. Pl. Jap. ed. em. 337. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Takane-kuro-suge.*

Hab.: Alpine meadow, mainly swampy place, very common (Fig. 8–21).

Distrib.: Hokkaidô, N. Honshû (Mt. Shibutsu, Ozegahara moor etc.), Saghalien, Kuriles, Korea, Ussuri.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

479. S. wichurai BOECKELER form. **borealis** OHWI in Mem. Coll. Sci. Kyoto Imp. Univ. ser. B, **18**: 107. 1944; Fl. Jap. ed. 1, 236. 1953. HONDA, Nom. Pl. Jap. ed. em. 338. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Syn. *S. cyperinus* var. *eriophorum* (non O. KUNTZE) MAKINO in Bot. Mag. Tokyo **18**: 120. 1904.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 152. 1919.

Nom. Jap.: *Ezo-abura-gaya.*

Hab.: Lower mountain area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô (to Kyûshû, Korea, Manchuria, Ussuri, China.

FAM. ARACEAE

Arisaema MARTIUS

480. A. angustatum FRANCHET et SAVATIER var. **peninsulae** NAKAI ex MIYABE et KUDO, Fl. Hokk. & Saghal. **3**: 283. 1932.
HONDA, Nom. Pl. Jap. ed. em. 339. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Ezo-tennanshô.*
Hab.: Lower mountain area, in marshy place (NOSAKA, 1961).
Distrib.: Hokkaidô, Honshû, Kyûshû, S. Kuriles, Korea, Manchuria.

Lysichiton SCHOTT

481. L. camtschatcense (LINNAEUS) SCHOTT in Oester. Bot. Wochenbl. **3**: 62. 1857.
HONDA, Nom. Pl. Jap. ed. em. 341. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *Dracontium camtschatcense* LINNAEUS, Sp. Pl. ed. 1, 968. 1753.
Nom. Jap.: *Mizubashô.*
Hab.: Swampy places in low land up to alpine area (NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Ussuri.

Symplocarpus SALISBURY

482. S. renifolius SCHOTT ex MIQUEL in Ann. Mus. Bot. Lugd.-Bat. **2**: 202. 1866.
HONDA, Nom. Pl. Jap. ed. em. 341. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Zazensô.*
Hab.: Swampy place in low land (NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Ussuri, Korea.

FAM. COMMELINACEAE

Commelina LINNAEUS

483. C. communis LINNAEUS, Sp. Pl. ed. 1, 40. 1753.
HONDA, Nom. Pl. Jap. ed. em. 344. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Tsuyukusa.*
Hab.: Low land to mountain area, relatively common (NOSAKA, 1961).

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria, Ussuri, China.

FAM. JUNCACEAE

Juncus LINNAEUS

484. J. beringensis BUCHENAU, Monogr. Junc. 226. 1890.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 345. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Nom. Jap.: *Miyama-i.*
Hab.: Peat bog in the alpine area (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô, N. & C. Honshû, Kuriles, Kamchatka, Bering.

485. J. effusus LINNAEUS var. **decipiens** BUCHENAU, Monogr. Junc. 229. 1890.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *J. decipiens* (BUCHENAU) NAKAI, Rep. Veg. Kamikochi 35. 1928.—HONDA, Nom. Pl. Jap. ed. em. 345. 1957.
Nom. Jap.: *Tôshinsô.*
Hab.: Marshy place in low land (NISHIDA, 1919; NOSAKA, 1961).
Distrib.: Hokkaidô to Kyûshû, Korea, Ussuri, China, N. America.

486. J. filiformis LINNAEUS, Sp. Pl. ed. 1, 326. 1753.
HONDA, Nom. Pl. Jap. ed. em. 345. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *J. curvatus* BUCHENAU, Monogr. Junc. 128. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Ezo-hoso-i.*
Hab.: Peat bog in alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Europe, N. America.
Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA–SAPT.

Luzula DE CANDOLLE

487. L. oligantha G. SAMUELSSON in HULTÉN, Fl. Kamt. **1**: 227. 1927.
HONDA, Nom. Pl. Jap. ed. em. 347. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.
Syn. *L. campestris* DC. var. *pauciflora* BUCHENAU, Monogr. Junc. 88. 1890.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Takane-suzume-no-hie.*
Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Kuriles, Kamchatka, Korea, China.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7, 1913. NISHIDA-SAPT; Aug. 7, 1931. S. ITO-SAPT; July 26, 1958. NOSAKA-SAP.

488. L. plumosa E. MEYER var. **macrocarpa** (BUCHENAU) OHWI, Fl. Jap. ed. 1, 272. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 68. 1953; Fl. Jap. ed. 2, 320. 1965.

HONDA, Nom. Pl. Jap. ed. em. 347. 1957.

Syn. *L. rufescens* FISCHER var. *macrocarpa* BUCHENAU in ENGLER, Pfl.-reich **4**(36): 47. 1906.

L. plumosa E. MEYER in Linnaea **22**: 387. 1849.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Nukaboshisô.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Manchuria.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 26, 1958. NOSAKA-SAP.

FAM. LILIACEAE

Allium LINNAEUS

489. A. maximowiczii REGEL form. **shibutsuense** (KITAMURA) TOYOKUNI in Hokuriku Journ. Bot. **6**: 64. 1957.

Syn. *A. schoenoprasum* LINNAEUS var. *shibutsuense* KITAMURA in Bot. Mag. Tokyo **59**: 35. 1946.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

A. schoenoprasum L. var. *orientale* (non REGEL) sensu NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

A. maximowiczii REGEL in Act. Hort. Petrop. **3**: 153. 1875.—HARA & MIZUSHIMA, Sci. Res. Ozegahara Moor 473. 1954.—HONDA, Nom. Pl. Jap. ed. em. 353. 1957.

Nom. Jap.: *Shibutsu-asatsuki.*

Hab.: Alpine meadow, mainly in serpentine-pebble-fields and surroundings of the peat bog (Fig. 8–22).

Distrib.: Hokkaidô, N. Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 29, 1951. HIROSE-SAPT; July 28, 1957. NOSAKA-SAP.

490. A. splendens WILLDENOW ex J. A. et J. H. SCHULTES, Syst. Veg. **7**(2): 1023. 1830.

HONDA, Nom. Pl. Jap. ed. em. 353. 1957.—NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *A. strictum* (non SCHRADER) sensu MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **5**: 71. 1914.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.

Nom. Jap.: *Miyama-rakkyô.*

Hab.: Gama-iwa (Fig. 8–22).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka.

Specimens from Mt. Yûpari: Aug. 19, 1957 & July 2, 1962. NOSAKA-SAP.

491. A. victorialis LINNAEUS subsp. **platyphyllum** HULTÉN, Fl. Kamt. **1**: 239. 1927.

Syn. *A. victorialis* L. var. *platyphyllum* (HULTÉN) MAKINO, Illust. Fl. Nippon 479. f. 2245. 1940.—HONDA, Nom. Pl. Jap. ed. em. 353. 1957.—NOSAKA in Journ Geobot. **10**: 60. 1961.

A. victorialis (non LINNAEUS) sensu MATSUMURA, Ind. Pl. Jap. **2**(1): 191. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Gyôja-ninniku.*

Hab.: Lower mountain to subalpine area, occasionally, alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Korea, China, E. Siberia.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; Aug. 18, 1957 & July 6, 1958. NOSAKA-SAP.

Clintonia RAFINESQUE-SCHMALTZ

492. C. udensis TRAUTVETTER et MEYER, Fl. Ochot. 92. 1856.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 356. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Tsubame-omoto.*

Hab.: Mountain to subalpine area, mainly in the undergrowth of the *Abies-Picea-Betula* forest.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Manchuria, China, E. Siberia.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 5, 1959. NOSAKA-SAP.

Disporum SALISBURY

493. D. sessile D. DON ex J. A. et J. H. SCHULTES, Syst. Veg. **7**(1): 370. 1829.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA,

Nom. Pl. Jap. ed. em. 356. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Hôchakusô.*

Hab.: Mountain area.

Distrib.: Hokkaidô to Kyûshû, Loochoo Isls., Saghalien, Korea, China.

Specimens from Mt. Yûpari: Early in June, 1955. NOSAKA-SAP.

494. D. smilacinum A. GRAY in PERRY, Exped. Jap. **2**: 321. 1857. HONDA, Nom. Pl. Jap. ed. em. 356. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Chigo-yuri.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea, S. Kuriles, China.

Specimens from Mt. Yûpari: Late in May, 1958. NOSAKA-SAP.

Heloniopsis A. GRAY

495. H. orientalis (THUNBERG) C. TANAKA in Bull. Fakult. Terk. Kjus. Imp. Univ. **1**: 200. 1925.
HONDA, Nom. Pl. Jap. ed. em. 350. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Syn. *Scilla orientalis* THUNBERG, Fl. Jap. 137. 1784.
Heloniopsis pauciflora A. GRAY, Bot. Jap. 416. 1859.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Shôjôbakama.*

Hab.: Mountain to alpine area.

Distrib.: Hokkaidô, Honshû, Kyûshû.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Hemerocallis LINNAEUS

496. H. middendorffii TRAUTVETTER et MEYER, Fl. Ochot. 94. 1856. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 350. 1957.—NOSAKA, in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Ezo-kanzô.*

Hab.: Relatively humid place in subalpine to alpine area.

Distrib.: Hokkaidô, Saghalien, Kuriles, Amur, Ussuri, Korea, N. China.

Specimens from Mt. Yûpari: July 30, 1958. NOSAKA-SAP.

Hosta TRAUTVETTER

497. H. rectifolia NAKAI subsp. **atropurpurea** (NAKAI) INAGAKI et TOYOKUNI in Rep. Taisetsuzan Inst. Sci. **2**(1): 17. 1963.
NOSAKA in Journ. Geobot. **17**: 11. 1969.

Syn. *H. atropurpurea* NAKAI in Bot. Mag. Tokyo **44**: 26 & 58. 1930.—HONDA, Nom. Pl. Jap. ed. em. 350. 1957.

Nom. Jap.: *Yachi-gibôshi.*

Hab.: Peat bog in alpine area.

Distrib.: Hokkaidô.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

Lilium LINNAEUS

498. L. cordatum KOIDZUMI var. **glehni** (FR. SCHMIDT) OHWI, Fl. Jap. ed. 1, 305. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 68. 1953; Fl. Jap. ed. 2, 358. 1965.

NOSAKA in Journ. Geobot. **10**: 60. 1961.

Syn. *L. glehni* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 187. 1868.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—*Cardiocrinum glehni* (FR. SCHM.) MAKINO in Bot. Mag. Tokyo **27**: 125. 1913.—*C. cordatum* MAKINO var. *glehni* (FR. SCHM.) HARA in HARA & MIZUSHIMA, Sci. Res. Ozegahara Moor 473. 1954.—HONDA, Nom. Pl. Jap. ed. em. 354. 1957.

Nom. Jap.: *Ô-ubayuri.*

Hab.: Lower mountain to mountain area (NISHIDA, 1919; NOSAKA, 1961).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, S. Kuriles.

499. L. medeoloides A. GRAY, Bot. Jap. 415. 1859, in adnota.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 355. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Nom. Jap.: *Kuruma-yuri.*

Hab.: Low land to alpine area.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, S. Korea, China, Ussuri, Amur.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; July 25, 1958. NOSAKA-SAP.

Lloydia SALISBURY

500. L. serotina (LINNAEUS) REICHENBACH, Fl. Germ. Excurs. 102. 1830. HONDA, Nom. Pl. Jap. ed. em. 356. 1957.—NOSAKA in Journ. Geobot. **10**: 60. 1961.

Syn. *Bulbocodium serotinum* LINNAEUS, Sp. Pl. ed. 1, 294. 1753.
Lloydia alpina SALISBURY in Trans. Hort. Soc. **1**: 328. 1812.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.

Nom. Jap.: *Chishima-amana.*

Hab.: Rocky cliffs in alpine area (Fig. 8–22).

Distrib.: Hokkaidô, N. & C. Honshû, Frigid zone in the northern hemisphere.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

Maianthemum WEBER

501. M. dilatatum (WOOD) NELSON et MACBRIDE in Bot. Gaz. **61**: 30. 1916.

Syn. *M. bifolium* var. *dilatatum* WOOD in Proc. Acad. Nat. Sci. Philadelph. 174. 1868.

M. kamtschaticum NAKAI in Bot. Mag. Tokyo **31**: 282. 1917.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.

M. dilatatum var. *nipponicum* sensu HONDA, Nom. Pl. Jap. ed. em. 357. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Ô-maizurusô.*

Hab.: Lower mountain to alpine area, common.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Kamchatka, Korea, Manchuria, E. Siberia, N. America.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; June 29, 1958. NOSAKA-SAP.

Paris LINNAEUS

502. P. tetraphylla A. GRAY, Bot. Jap. 412. 1859.
HONDA, Nom. Pl. Jap. ed. em. 358. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Tsukubanesô.*

Hab.: Low land to mountain area, in relatively shady place.

Distrib.: Hokkaidô to Kyûshû.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; Late in May, 1955. NOSAKA-SAP.

503. P. verticillata M. v. BIEBERSTEIN, Fl. Taur.-Cauc. **3**: 287. 1819. NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *P. hexaphylla* CHAMISSO in Linnaea **6**: 586. 1831.

P. obovata LEDEBOUR, Fl. Ross. **4**: 120. 1853.—HONDA, Nom. Pl. Jap. ed. em. 358. 1957.

P. quadrifolia L. var. *obovata* (non REG. et. TIL.) sensu MATSUMURA, Ind. Pl. Jap. **2** (1): 209. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.

Nom. Jap.: *Kurumaba-tsukubanesô.*

Hab.: Low land to mountain area, relatively shady place.

Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea, Kuriles, China, Siberia.

Specimens from Mt. Yûpari: July, 1930. KANDA-SAP; Late in May,

1955. NOSAKA-SAP.

Polygonatum ADANSON

504. P. odoratum DRUCE var. **maximowiczii** (FR. SCHMIDT) KOIDZUMI in Bot. Mag. Tokyo **33**: 111. 1920.
NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *P. maximowiczii* FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 185. 1868.—HONDA, Nom. Pl. Jap. ed. em. 357. 1957.—*P. officinale* var. *maximowiczii* (FR. SCHM.) MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **29**: 207. 1883.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Ô-amadokoro.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô, N. Honshû, Saghalien, S. Kuriles, Ussuri.
Specimens from Mt. Yûpari: July 1958. NOSAKA-SAP.

Smilacina DESFONTAINES

505. S. japonica A. GRAY in PERRY, Exped. Jap. **2**: 321. 1857.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919—HONDA, Nom. Pl. Jap. ed. em. 357. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Yukizasa.*
Hab.: Lower mountain area.
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria, China, Ussuri, Amur.
Specimens from Mt. Yûpari: Early in June, 1955. NOSAKA-SAP.

Streptopus MICHAUX

506. S. amplexifolius DE CANDOLLE var. **papillatus** OHWI in Bot. Mag. Tokyo **45**: 185. 1931; Fl. Jap. ed. 1, 315. 1953; Fl. Jap. ed. 2, 369. 1965.
HONDA, Nom. Pl. Jap. ed. em. 358. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *S. amplexifolius* (non DC.) sensu MATSUMURA, Ind. Pl. Jap. **2**(1): 214. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Ôba-takeshimaran.*
Hab.: Mountain to alpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Amur, China.
Specimens from Mt. Yûpari: July, 1930. AKIYAMA-SAP; July 30, 1958. NOSAKA-SAP.

507. S. streptopoides FRYE et RIGG, Northwest. Fl. 109. 1912.
HONDA, Nom. Pl. Jap. ed. em. 358. 1957.
Syn. *S. ajanensis* (non TILING) sensu MIYABE & MIYAKE, Fl. Saghal. 464. 1915.—

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
S. streptopoides var. *japonicus* (non FASSETT) sensu NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Ezo-takeshimaran* (KIKUCHI & KOMIDZUNAI, 1961).
Hab.: Mountain to alpine arer.
Distrib.: Hokkaidô, Saghalien, E. Siberia, N. America, S. Kuriles.
Specimens from Mt. Yûpari; July 28, 1957. NOSAKA-SAP.

Tofieldia WILLDENOW

508. T. coccinea RICHARDSON var. **fusca** (MIYABE et KUDO) HARA in Journ. Jap. Bot. **36**: 392. 1961.

Syn. *T. fusca* MIYABE et KUDO in Trans. Sapporo Nat. Hist. Soc. **5**: 75. 1914.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—*T. nutans* WILLDENOW var. *fusca* (MIYABE et KUDO) OHWI, Fl. Jap. ed. 1, 284. 1953; in Bull. Nat. Sci. Mus. Tokyo **33**: 68. 1953.—HONDA, Nom. Pl. Jap. ed. em. 348. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Kuromi-zekishô.*
Hab.: Relatively arid place in alpine area (Fig. 8–23).
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.
Specimens from Mt. Yûpari: Aug. 6. 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 27, 1958. NOSAKA-SAP.

509. T. okuboi MAKINO in Bot. Mag. Tokyo **12**: 42. 1898.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919—HONDA, Nom. Pl. Jap. ed. em. 348. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Hime-iwa-shôbu.*
Hab.: Swampy place in alpine area (Fig. 8–23).
Distrib.: Hokkaidô, N. & C. Honshû.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; July 28, 1957 & Aug. 18, 1957. NOSAKA-SAP.

Trillium LINNAEUS

510. T. kamtschaticum PALLAS in Herb. LAMBERT ex PURSH, Fl. Amer. Sept. **1**: 246. 1814, pro syn. sub. *T. obovatum.*
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 358. 1957.

Nom. Jap.: *Ôbana-no-enreisô.*
Hab.: Relatively shady, swampy place in low land.
Distrib.: Hokkaidô, N. Honshû, Saghalien, Kuriles, Korea, Manchuria, Ussuri, Amur, Kamchatka.

Specimens from Mt. Yûpari: Late in May, 1955. NOSAKA-SAP.

511. T. smallii MAXIMOWICZ in Bull. Acad. Imp. Sci. St.-Pét. **29**: 218. 1883.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 358. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Enreisô.*
Hab.: Lower mountain to mountain area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles.
Specimens from Mt. Yûpari: Late in May, 1955. NOSAKA-SAP.

512. T. tschonoskii MAXIMOWICZ in Mél. Biol. 863. 1884.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.—HONDA, Nom. Pl. Jap. ed. em. 359. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Miyama-enreisô.*
Hab.: Lower mountain to subalpine area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Korea.
Specimens from Mt. Yûpari: Late in May, 1955. NOSAKA-SAP.

Veratrum LINNAEUS

513. V. grandiflorum (MAXIMOWICZ) LOESNER, f. in Verhandl. Bot. Verein. Prov. Brandenb. **68**(2): 135 & 162. 1926.
HONDA, Nom. Pl. Jap. ed. em. 349. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *V. album* L. var. *grandiflorum* MAXIMOWICZ ex MIQUEL in Versl. Meded. Natuurk. ser. 2, **4**: 17 & 19. 1869.
V. album L. var. *loberianum* (non REICHENBACH) sensu MIYABE & MIYAKE, Fl. Saghal. 484. 1915.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
Nom. Jap.: *Baikeisô.*
Hab.: Swampy meadow in low land to subalpine area.
Distrib.: Hokkaidô, N. & C. Honshû, Saghalien.
Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA & HAMANA-SAPT; July, 1958. NOSAKA-SAP.

514. V. japonicum (BAKER) LOESNER, f. in Verhandl. Bot. Verein. Prov. Brandenb. **68**(2): 141 & 164. 1926.
NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *V. nigrum* L. var. *japonicum* BAKER in Journ. Linn. Soc. **17**: 472. 1879.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 151. 1919.
V. maackii REGEL var. *reymondianum* (ROESN. f.) HARA in HARA &

MIZUSHIMA, Sci. Res. Ozegahara Moor 476. 1954.—HONDA, Nom. Pl. Jap. ed. em. 349. 1957.

Nom. Jap.: *Shurosô.*

Hab.: Subalpine area (Fig. 8–23).

Distrid.: Hokkaidô, Honshû.

Specimens from Mt. Yûpari: July 28, 1956. NOSAKA-SAP.

FAM. DIOSCOREACEAE

Dioscorea LINNAEUS

515. D. batatas DECAISNE in Rev. Hort. ser. 4, **3**: 243. 1853.
HONDA, Nom. Pl. Jap. ed. em. 361. 1957.
Syn. '*Dioscorea japonica* THUNBERG': NOSAKA in Journ. Geobot. **10**: 61. 1916. mss.

Nom. Jap.: *Naga-imo.*

Hab.: Low land, near cultivated place along the Shirokane River, rare.

Distrib.: Hokkaidô to Kyûshû, Korea, Formosa.

The plant in this district is probably naturalized from cultivated ones.

FAM. IRIDACEAE

Iris LINNAEUS

516. I. setosa PALLAS ex LINK, Jahrb. **1**(3): 71. 1820.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 362. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Hiôgi-ayame.*

Hab.: Swamp and bog in alpine area (Fig. 8–23).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, E. Siberia, Aleutian.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

FAM. ORCHIDACEAE

Cephalanthera L. C. RICHARD

517. C. longibracteata BLUME, Coll. Orchid. Ind. et Jap. 188, t. 65, f. 3. 1858.
HONDA, Nom. Pl. Jap. ed. em. 365. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom Jap.: *Sasaba-ginran.*

Hab.: Lower mountain area.

Distrib.: Hokkaidô to Kyûshû, Korea.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Coeloglossum HARTMAN

518. C. viride (LINNAEUS) HARTMAN var. **bracteatum** RICHTER, Pl. Europ. **1**: 278. 1890.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 365. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Ao-chidori.*
Hab.: Mountain to subalpine area (Fig. 8–24).
Distrib.: Hokkaidô, N. & C. Honshû, Korea, China, Siberia, N. America.
Specimens from Mt. Yûpari: July 31. 1963. AKIYAMA & NOSAKA–SAP.

Ephippianthus REICHENBACH f.

519. Ephippianthus schmidtii REICHENBACH f. in Flora **51** (3): 33. 1868; in FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 221, t. 5 f. 1–7. 1868.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 366. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Ko-ichiyôran.*
Hab.: Mountain area, in the *Abies-Picea-Betula* forest.
Distrib.: Hokkaidô, N. &. C. Honshû, Saghalien, S. Kuriles.
Specimens from Mt. Yûpari: July 16, 1962. NOSAKA–SAP.

Epipactis R. BROWN

520. E. papillosa FRANCHET et SAVATIER, Enum. Pl. Jap. **2**: 519. 1877. HONDA, Nom. Pl. Jap. ed. em. 366. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Ezo-suzuran.*
Hab.: Mountain area.
Distrib.: Hokkaidô, Honshû, Kyûshû, Saghalien, S. Kuriles, Ussuri, Manchuria, Kamchatka.
Specimens from Mt. Yûpari: July 16, 1962. NOSAKA–SAP.

Gastrodia R. BROWN

521. G. elata BLUME in Ann. Mus. Bot. Lugd.-Bat. **2**: 174. 1856.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 367. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Nom. Jap.: *Oni-no-yagara.*
Hab.: Low land to lower mountain area.
Distrib.: Hokkaidô, Honshû, China, Formosa.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Gymnadenia R. BROWN

522. G. camtschatica (CHAMISSO) MIYABE et KUDO ex MIYABE et MIYAKE, Fl. Saghal. 450. 1915; MIYABE et KUDO, Fl. Hokk. & Sagnal. **3**: 362. 1932.
NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *Orchis camtschatica* CHAMISSO in Linnaea **3**: 27. 1828.—*Neolindleya camtschatica* (CHAM.) NEVSKI in Fl. URSS **4**: 646. 1935.—HONDA, Nom. Pl. Jap. ed. em. 369. 1957.
Nom. Jap.: *Nobine-chidori.*
Hab.: Relatively sunny meadow in low land to mountain area.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Saghalien, S. Kuriles, Kamchatka.
Specimens from Mt. Yûpari: Early in June, 1955. NOSAKA-SAP.
Habitat of this plant is commonly reported "shady or half shaded meadow", but in this mountain district, the habitat is almost sunny place.

523. G. cucullata (LINNAEUS) RICHARD in Mém. Mus. Paris **4**: 57. 1818. HONDA, Nom. Pl. Jap. ed. em. 367. 1957.
Syn. *Orchis cucullata* LINNAEUS, Sp. Pl. ed. 1, 939. 1753.
Nom. Jap.: *Miyama-mojizuri.*
Hab.: Lower mountain area, along the Shirokane River.
Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, Temperate zone in Europe and Asia.
Specimens from Mt. Yûpari: July 28, 1956. NOSAKA-SAP.

Liparis L. C. RICHARD

524. L. makinoana SCHLECHTER, Orchideol. Sino-Jap. Prodr. **63**: 200. 1919.
HONDA, Nom. Pl. Jap. ed. em. 368. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.
Syn. *L. liliifolia* (non L. C. RICHARD) sensu MATSUMURA, Ind. Pl. Jap. **2**(1): 252. 1905.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.
Nom. Jap.: *Suzumushisô.*
Hab.: At the eastern foot of Mt. Yûbari (NISHIDA, 1919).
Distrib.: Hokkaidô to Kyûshû, Korea, Manchuria.

Listera R. BROWN

525. L. cordata R. BROWN in AITON, Hort. Kew. ed. 2, **5**: 201. 1813. NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—NOSAKA

in Journ. Geobot. **10**: 61. 1961.

Syn. *L. cordata* var. *japonica* HARA in Bot. Mag. Tokyo **52**: 616. 1938.—HONDA, Nom. Pl. Jap. ed. em. 368. 1957.

Nom. Jap.: *Futabaran.*

Hab.: Subalpine to alpine area (Fig. 8–24).

Distrib.: Hokkaidô, N. & C. Honshû, Europe, Siberia, N. America.

Specimens from Mt. Yûpari: Aug. 7–9, 1913. NISHIDA–SAPT.

Microstylis NUTTALL

526. M. monophyllos (LINNAEUS) LINDLEY, Gen. & Sp. Orchid. 19. 1830.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 369. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *Ophrys monophyllos* LINNAEUS, Sp. Pl. ed. 1, 947. 1753.

Nom. Jap.: *Hozaki-ichiyôran.*

Hab.: Alpine meadow (Fig. 8–24).

Distrib.: Hokkaidô, N. & C. Honshû, Shikoku.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA–SAPT; Aug. 7–9, 1913. NISHIDA–SAPT; Aug. 3, 1921. TAKEDA & TATEWAKI–SAPT; July 12, 1968. NOSAKA–SAP.

Myrmechis BLUME

527. M. japonica (REICHENBACH f.) ROLFE in Journ. Linn. Soc. **36**: 44. 1903.

HONDA, Nom. Pl. Jap. ed. em. 369. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *Rhamphidia japonica* REICHENBACH f. in Bot. Zeit. **36**: 75. 1878.

Nom. Jap.: *Aridôshiran.*

Hab.: Mountain area.

Distrib.: Hokkaidô, N. & C. Honshû, Shikoku, S. Kuriles.

Specimens from Mt. Yûpari: Aug. 17, 1957. NOSAKA–SAP.

Orchis LINNAEUS

528. O. aristata FISCHER ex LINDLEY, Gen. & Sp. Orchid. 262. 1835.

NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *O. aristata* FISCHER var. *immaculata* MAKINO, Illust. Fl. Nippon 704, f. 2111. 1940.—HONDA, Nom. Pl. Jap. ed. em. 370. 1957.

Nom. Jap.: *Hakusan-chidori.*

Hab.: Alpine meadow, relatively common.

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Korea, Aleu-

tian, Alaska.

Specimens from Mt. Yûpari: July 28, 1957. NOSAKA-SAP.

Oreorchis LINDLEY

529. O. patens LINDLEY in Journ. Linn. Soc. **3**: 27. 1859.
HONDA, Nom. Pl. Jap. ed. em. 370. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Kokeiran.*

Hab.: Low land and lower mountain area, in the undergrowth of the mixed forest.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles, China, Kamchatka, Ussuri.

Specimens from Mt. Yûpari: June, 1955. NOSAKA-SAP.

Platanthera L. C. RICHARD

530. P. chorisiana (CHAMISSO) REICHENBACH f., Icon. Germ. **13–14**: 128. 1851.
HONDA, Nom. Pl. Jap. ed. em. 370. 1957.

Syn. *Habenaria chorisiana* CHAMISSO in Linnaea **3**: 31. 1828.
Platanthera matsudai MAKINO in Bot. Mag. Tokyo **16**: 56. 1902.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919, hab. Mt. Ashibetsu.

Nom. Jap.: *Takane-tonbo.*

Hab.: Alpine meadow (Fig. 8–24).

Distrib.: Hokkaidô, N. & C. Honshû, Saghalien, Kuriles, Kamchatka, Bering.

Specimens from Mt. Yûpari: Aug. 2, 1967. NOSAKA-SAP.

531. P. hyperborea LINDLEY, Gen. & Sp. Orchid. 287. 1830.
HONDA, Nom. Pl. Jap. ed. em. 370. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *P. makinoi* (non KUDO) YABE in Bot. Mag. Tokyo **17**: 19. 1930.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Shirouma-chidori.*

Hab.: Alpine meadow, rare (Fig. 8–24).

Distrib.: Hokkaidô, Central Honshû (Mt. Shirouma), Kuriles, Kamchatka, Aleutian, N. America, Iceland.

Specimens from Mt. Yûpari: Aug. 8, 1913. YANAGISAWA-SAPT; Aug. 7–9, 1913. NISHIDA-SAPT; Aug. 3, 1921. TAKEDA & TATEWAKI-SAPT.

532. P. metabifolia F. MAEKAWA in Journ. Jap. Bot. **11**: 303–305. 1935.
HONDA, Nom. Pl. Jap. ed. em. 370. 1957.—NOSAKA in Journ.

Geobot. **10**: 61. 1961.

Syn. *P. fuscescens* (non KRANZ.) sensu NISHIDA-in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.

Nom. Jap.: *Ezo-chidori.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Saghalien, Kuriles.

Specimens from Mt. Yûpari: July 28, 1956. NOSAKA-SAP.

533. P. ophrydioides FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 182. 1868.

var. **ophrydioides.**

HONDA, Nom. Pl. Jap. ed. em. 371. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Nom. Jap.: *Kiso-chidori.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô to Kyûshû, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 26, 1958. NOSAKA-SAP.

var. **takedai** (MAKINO) OHWI in Journ. Jap. Bot. **26**: 236. 1951; Fl. Jap. ed. 1, 354. 1953; Fl. Jap. ed. 2, 413. 1965.

NOSAKA in Journ. Geobot **10**: 61. 1961.

Syn. *P. takedai* MAKINO in Bot. Mag. Tokyo **17**: 120. 1903.—NISHIDA in Trans. Sapporo Nat. Hist. Soc. **7**: 150. 1919.—HONDA, Nom. Pl. Jap. ed. em. 371. 1957.

Nom. Jap.: *Miyama-chidori.*

Hab.: Subalpine to alpine area.

Distrib.: Hokkaidô, Honshû.

Specimens from Mt. Yûpari: Aug. 6, 1912. YANAGISAWA-SAPT; July 26, 1958. NOSAKA-SAP.

534. P. sachalinensis FR. SCHMIDT, Reis. Amurl. u. Ins. Sachal. 181. 1868.

HONDA, Nom. Pl. Jap. ed. em. 371. 1957.

Nom. Jap.: *Ô-yama-sagisô.*

Hab.: Mountain area.

Distrib.: Hokkaidô, Honshû, Shikoku, Saghalien, S. Kuriles.

Specimens from Mt. Yûpari: July 6, 1958. NOSAKA-SAP.

Spiranthes L. C. RICHARD

535. S. sinensis (PERSOON) AMES, Orch. **2**: 53. 1908.

HONDA, Nom. Pl. Jap. ed. em. 371. 1957.—NOSAKA in Journ. Geobot. **10**: 61. 1961.

Syn. *Neottia sinensis* PERSOON, Syn. **2**: 511. 1807.

Nom. Jap.: *Nejibana.*
Hab.: Relatively sunny place in lowland to lower mountain area.
Distrib.: Hokkaidô to Kyûshû, Saghalien, Kuriles, Korea, Manchuria, China, Formosa, India, Malaya, Australia, Siberia.
Specimens from Mt. Yûpari: Aug. 17, 1957. NOSAKA-SAP.

§2. Discussion and conclusion

1. General floristic aspect.

The total number of species of phanerogams in this mountain enumerated above is 535. These 535 species belong to 315 genera and 91 families, the contents of which are summarized as follows:

	Families.	Genera.	Species.
Gymnospermae	4	6	8
Archichlamydeae	48	143	249
Metachlamydeae	26	103	150
Dicotyledoneae	74	246	399
Monocotyledoneae	13	63	128
Angiospermae	87	309	527
Sum total	91	315	535

Among these families, those which are comparatively rich in genera and species are as follows:

Rosaceae	with	27 genera	and	39 species.
Compositae		21 gen.	and	36 spp.
Ericaceae		17 gen.	and	28 spp.
Poaceae		16 gen.	and	29 spp.
Liliaceae		16 gen.	and	26 spp.
Ranunculaceae		14 gen.	and	23 spp.
Orchidaceae		14 gen.	and	19 spp.
Apiaceae		14 gen.	and	18 spp.
Saxifragaceae		9 gen.	and	19 spp.
Polygonaceae		9 gen.	and	13 spp.
Lamiaceae		9 gen.	and	10 spp.
Scrophulariaceae		5 gen.	and	10 spp.
Cyperaceae		4 gen.	and	37 spp.

To observe a few statistics of the distribution of indigenous plants (ruling out those which may be suspected of having been introduced by human agency, such as *Sonchus oleraceus*, *Taraxacum officinale*, *Poa annua* and

Dioscorea batatas), the total number of species is 531 for investigation. Among them, 21 are endemic to Hokkaidô (ca. 4%), including 5 endemics in this mountain. Distributional relations to other districts are as follows:

	number of species	%
Common to Honshû	415	78.1
Common to Central and Northern Honshû	224	42.2
Common to Kuriles	274	51.6
Common to Saghalien	258	48.6
Common to Kamchatka	87	16.4
Common to N. America, Aleutian & Alaska	74	13.9
Common to Siberia	122	22.9
Common to Korea	216	40.7
Common to Manchuria, Amur & Ussuri	229	43.1
Common to China	151	28.4
Common to Europe	54	10.2

Among the species common to the Kuriles, those which distributed beyond the Middle Kuriles are 157 (29.6%).

These data show the flora of this mountain district has the close affinity to that of Honshû in the first place, secondarily, to those of Saghalien and the Kuriles, thirdly to those of Manchuria and Korea, and fourthly, to that of China. These observations indicate that this district is phytogeographically belonging to the 'Sino-Japanese Region' described by GOOD in his 'The Geography of the Flowering Plants (3rd. ed. 1964)'.

Distribution areas of the plants are summarized in Table 9.

To the plants occuring in the area lower than 600 m in alt. and to those occurring in the alpine area, the results of analysis are given in the following list:

	the area lower than 600 m		alpine area	
	number of species	%	number of species	%
Common to Honshû	277	77.7	204	81.3
Common to N. & C. Honshû	86	24.8	152	60.7
Common to Kuriles	152	43.9	158	62.9
(Common to M. & N. Kuriles)	(72)	(20.8)	(106)	(42.2)
Common to Saghalien	157	45.4	133	52.9
Common to Kamchatka	38	10.9	64	25.5
Common to N. America	26	7.4	60	23.9
Common to Siberia	62	17.7	58	23.1
Common to Korea	160	46.2	69	27.5
Common to Manchuria with Amur and Ussuri	174	50.3	69	27.5
Common to China	143	41.3	34	13.5
Common to Europe	38	10.8	18	7.2

Total number of species:

in the area lower than 600 m in alt. . . . . 346.

in the alpine area. . . . . 251.

TABLE 9. Distribution areas of plants occurring in Mt. Yûpari.

Distribution area \ Taxa		Gymnospermae	Angiospermae			Total
			Dicotyledoneae		Monocotyledoneae	
			Archichlamydeae	Metachlamydeae		
Endemic to Mt. Yûpari	sp.	—	3	1	1	5
	subsp.	—	—	1	—	1
	var.	—	—	(1)	1	1(1)
Endemic to Hokkaidô	sp.	—	10	5	1	16
	Subsp.	—	2	—	1	3
	var.	—	4(3)	4	1	9(3)
Hokkaidô—Saghalien Hokkaidô—S. Kuriles Hokkoidô < Saghalien / S. Kuriles		1	4	5	3	13
*Northern Japan		1	50	30	19	100
Endemic to Japan Archipelago		—	21	8	15	44
Japan—Siberia—Okhotsk		5	55	19	19	98
China—Japan		1	43	27	30	101
Eurasia		—	7	2	3	12
Panasia		—	14	13	1	28
Circumpolar region		—	18	8	15	41
Northern Pacific		—	11	21	12	44
Australia—Tropical Asia—N. E. Asia		—	5	3	2	10
Cosmopolitan		—	2	3	4	9

* 'Northern Japan' elements are those which occur in the area from central Honshû (alp.) up to Saghalien and S. Kuriles.

These data show, in the low land, the floristic feature of the area belongs to that of the Sino-Japanese Region more clearly, while, in the alpine area, the floristic composition is primarily influenced by that of Honshû

or Japan proper and secondarily by those of Kamchatka and Siberia through Saghalien and the Kuriles. The floristic feature of the alpine area of this mountain mentioned above, agrees with NISHIDA's view in his 'On the Distribution of Plants in the Yûbari Mountain Range (1919)'.

Ruling out the plants which are occasionally found or migrated in the alpine area, the total number of plants occurring in the alpine area of this mountain is 178 spp., 1 subsp., 5 varr. and 5 forms. Among these, 10 are endemic to this mountain (5.3%). These endemic plants include 6 ultrabasicosaxicolous plants. This rather high ratio of endemism seems to originate in the geological character of this area.

Among these 189 plants, 123 are common to the central mountain district of Hokkaidô (65.1%), to Rishiri and Rebun, 101 (53.4%), to the Hidaka Range, 99 (52.4%), to Mt. Yôtei and Mt. Iwao-nupuri volcanos, 86 (45.5%), to Mt. Furano-nishi-dake, 81 (42.8%), to Mt. Shari, 68 (36.0%), to Mt. Shokanbetsu, 56 (29.2%), to Mt. Kirigishi, 56 (29.2%). These data show that the alpine florula of Mt. Yûpari has closer relation with those of central mountain district, of the Hidaka Range and of Rishiri and Rebun.

This relationship suggests that the floristic feature in the alpine area of Mt. Yûpari is influenced by its geological age on one hand.

The comprehensive observation on the alpine florula of this mountain was carried out by NISHIDA in 1919. Among his observations, a clause referring to the difference of alpine florula between Mt. Ashibetsu and Mt. Yûpari must be amended by means of the results of later works. NISHIDA described the difference of alpine florula between these two mountains was the presence of *Dryas octopetala* var. *asiatica* in Mt. Ashibetsu and the absence of the plant in Mt. Yûpari. But, some of *Dryas octopetala* var. *asiatica* were collected by Drs. TAKEDA & TATEWAKI at Maëdake peaks in 1921, also by the present author in 1967. So, the most remarkable floristic feature has been the occurrence of serpentine plants (ultrabasicosaxicolous plants) in the alpine area of Mt. Yûpari.

Among the plants common to other mountains, the followings are noticeable from the view point of plant distribution; viz., to the Hidaka Range, *Arenaria katoana*, *Stellaria nipponica* var. *yezoensis*, *Draba japonica*, *Rhamnus ishidae* and *Saussurea chionophylla*; to the central mountain district, *Saxifraga laciniata*, *Gentianella yuparensis*, *Platanthera hyperborea*; to Mt. Kirigishi and Mt. Furano-nishi-dake; *Arenaria katoana*, *Thlaspi japonicum*, *Alchemilla japonica*, *Potentilla nivea*, *Hedysarum ussuriense*, *Rhamnus ishidae*, *Eritrichium nipponicum*; to Rishiri and Rebun; *Potentilla nivea*, *Oxytropis rishiriensis*, *Gentiana jamesii*, *Eritrichium nipponicum*.

After the flora of Mt. Kirigishi was disclosed, some plants endemic to Hokkaidô must be treated as 'Yûpari-Hidaka montane-alpine elements'. Previously treated as 'serpentinomorphosed form' or 'ultrabasicosaxicolous plants' are not always reasonable; for instance, *Rhamnus ishidae* is distributed not only in the ultrabasic rock area but also in Mt. Kirigishi, which is built of limestone. It is suggested, *Rhamnus ishidae* has been preserved

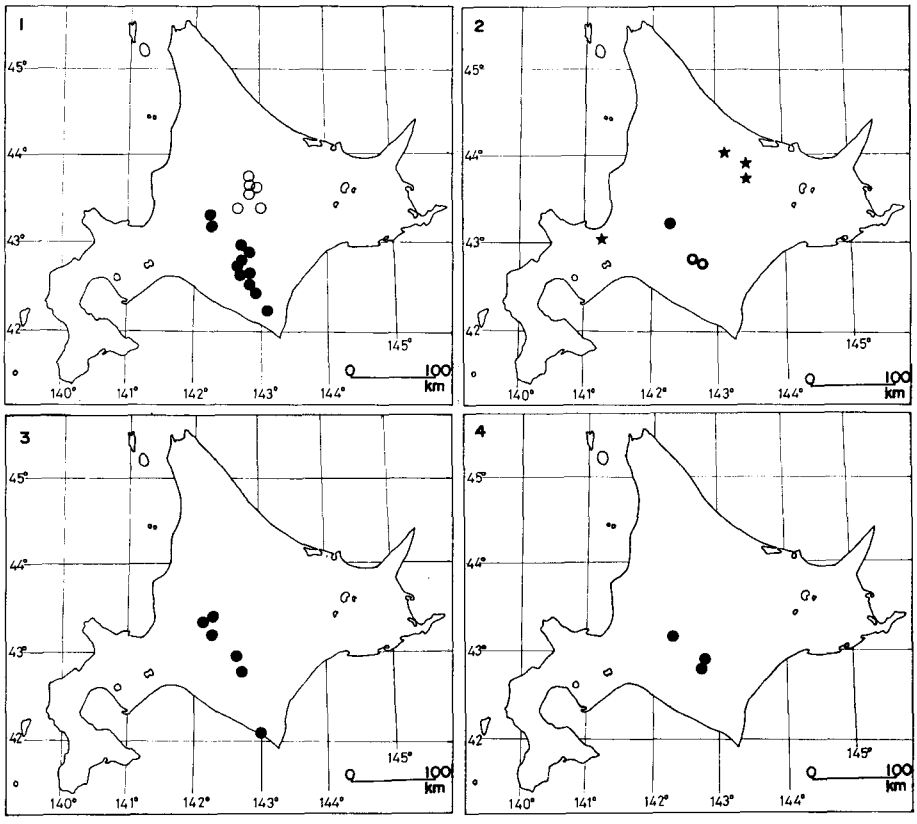

Fig. 16. The Yûpari-Hidaka montane-alpine elements.

1. Distribution of *Stellaria nipponica* OHWI var. *yezoensis* HARA (solid circle), together with that of *S. pterosperma* OHWI (open circle, endemic to Taisetsu Mts.).
2. Distribution of *Sedum pluricaule* KUDO in Hokkaidô.
   ★: *Sedum pluricaule* subsp. *pluricaule* var. *yezoense*.
   ●: *S. pluricaule* subsp. *ezawae* (var. *ezawae*).
   ○: *S. pluricaule* subsp. *ezawae* var. *hidakanum*.
3. Distribution of *Rhamnus ishidae* MIYABE et KUDO.
4. Distribution of *Saussurea chionophylla* TAKEDA.

in the geologically old-aged areas as well as *Alchemilla japonica* by means of escaping into the glacial refugia during last glaciation. So, the author likes to treat the plants which are strictly distributed only within the Yûpari Mountain Range and the Hidaka Mountain Range, having characters apparently separable from allied plants, as 'Yûpari-Hidaka montane-alpine elements'.

In the mean time, the author intends to treat the following plants as those belonging to 'Yûpari-Hidaka montane-alpine elements': *Stellaria nipponica* var. *yezoensis* (Fig. 16–1), *Sedum pluricaule* subsp. *ezawae* (Fig. 16–2, incl. var. *hidakanum*), *Rhamnus ishidae* (Fig. 16–3) and *Saussurea chionophylla* (Fig. 16–4).

2. The endemic plants.

Plants occurring only in this mountain, namely, 'plants endemic to Mt. Yûpari'.

The following 5 species, 2 subspecies and 1 variety are endemic in this mountain. Plants marked with asterisk occur restrictedly on the serpentine-pebble-fields or serpentine landslips.

Endemic species: *Saxifraga nishidae*, *Saxifraga yuparensis*, **Viola yubariana*, **Primula yuparensis*, *Elymus yubaridakensis*.

Saxifraga nishidae occurs at Gama-iwa and Maëdake peaks, *Elymus yubaridakensis* occurs at Hondake peak and Gama-iwa, and *Saxifraga yuparensis* occurs only at Gama-iwa.

Endemic subspecies: **Lagotis glauca* subsp. *takedana*, *Deschampsia caespitosa* subsp. *levis*.

The former plant occurs restrictedly on the serpentine-pebble-fields. The latter plant occurs in the alpine meadow which develops on the serpentine plateau near the eastern margin of the central peat bog.

Endemic variety: *Adenophora pereskiaefolia* var. *yamadae*.

This plant occurs at Gama-iwa and Maëdake peaks.

Besides the above mentioned plants, the following plants are endemic to this mountain: viz., **Erigeron thunbergii* subsp. *glabratus* form. *haruoi*, **Saussurea riederi* var. *yezoensis* form. *yuparensis*.

These two plants are apparently serpentinomorphosed plants.

Habitats of *Adenophora pereskiaefolia* var. *yamadae* are not serpentine areas, however, after TOYOKUNI's recognition, this *Adenophora* plant is treated as an ultrabasicosaxicolous plant.

Among these 10 taxa, 2 spp., 2 subspp., 1 var. and 2 forms (70%) are ultrabasicosaxicolous plants. The special characteristics of the flora of this mountain, especially in the alpine florula, are probably due to these ultra-

basicosaxicolous plants.

Plants endemic to Hokkaidô.

The following 16 spp., 3 subspp. and 11 varieties occur only in Hokkaidô. Those which are marked with asterisk occur restrictedly on the serpentine-pebble-fields or serpentine landslips in this mountain.

Endemic species: *Salix yezoalpina, Aconitum corymbiferum, Aconitum luciduscul*um, *Aconitum yesoense, *Aconitum yuparense, Thlaspi japonicum, Filipendula yezoensis, Oxytropis rishiriensis, Rhamnus ishidae, *Angelica stenoloba, *Gentianella yuparensis, Polemonium yezoense, *Crepis gymnopus, *Saussurea chionophylla, *Taraxacum yuparense, *Hierochloe pluriflora.*

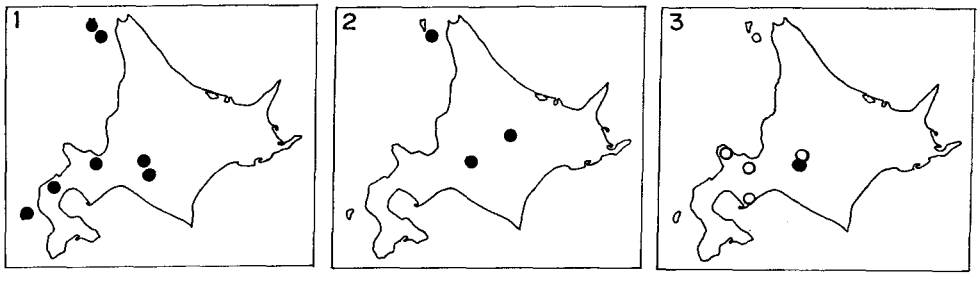

Fig. 17. Distributions of some of endemic plants in Hokkaidô.
1: *Thlaspi japonicum* BOISSIEU
The plant of Mt. Jôzankei-tengu was distinguished from the mother species as a variety by its ovate- or oblong-sagittate cauline leaves, named var. *sagittatum* MIYABE et TATEWAKI (1936).
2: *Oxytropis rishiriensis* MATSUMURA
3: *Hierochloe pluriflora* KOIDZUMI
Open circle: var. *intermedia* OHWI

In this mountain, *Rhamnus ishidae* is not always occurring in the ultrabasic rock area, but sometimes occurs on the rocky field of 'the Yûbaridake Metamorphic Group'. *Gentianella yuparensis* occurs restrictedly in the serpentine landslips in this mountain, although in other mountains it occurs in other various rock areas.

Endemic subspecies: *Sedum pluricaule* subsp. *ezawae* (incl. var. *hidakanum*), *Spiraea betulifolia* subsp. *aemiliana* (incl. var. *glabra*), *Hosta rectifolia* subsp. *atropurpurea.*

Endemic varieties: *Stellaria nipponica* var. *yezoensis, Thalictrum foetidum* var. *glabrescens, Potentilla matsumurae* var. *yuparensis, Viola brevistipulata* subsp. *hidakana* var. *ciliata* (incl. form. *incisa*), **Viola sacchalinensis* var. *alpina, Cortusa matthioli* subsp. *pekinensis* var. *yezoensis, Mertensia pterocarpa* var. *yezoensis, *Veronica schmidtiana* var. *yazoalpina, Adenophora*

pereskiaefolia var. *heterotricha*, *Tofieldia coccinea* var. *fusca*.

Besides the above mentioned plants, the followings are endemic to Hokkaidô: *Ranunculus acris* var. *nipponicus* form. *yuparensis*, *Hypericum kamtschaticum* var. *hidakanum*, *Geranium eriostemon* form. *onoei*, *Phyllodoce caerulea* form. *takedana*, *Phyllodoce nipponica* var. *oblongo-ovata* form. *viridiflora*, *Vaccinium ovalifolium* var. *subcoriaceum*.

Endemic plants mentioned above are almost subalpine or alpine plants, including 9 spp., 2 subspp. and 2 varr. of ultrabasicosaxicolous plants.

3. Plants of disjunctive distribution.

Certain plants which show striking disjunctive or discontinuous distribution in Japan are pointed out from the alpine plants in the mountain.

Most of these plants may be epibiotic, the occurrence of which suggests that the alpine florula of the mountain represents the incoming of certain number of arctic plants in the glacial age. Some of them are apparently ultrabasicosaxophytes. A list of plants showing disjunctive distribution is given below. Geographical designations show the habitats of respective plants.

1. *Arenaria katoana* MAKINO. Hokkaidô: Hidaka Mts. (Mt. Tottabetsu, Mt. Apoi). Honshû: Mt. Hayachine, Mt. Shibutsu etc. The plant of Mt. Apoi is distinguished as a variety, var. *lanceolata* TATEWAKI.

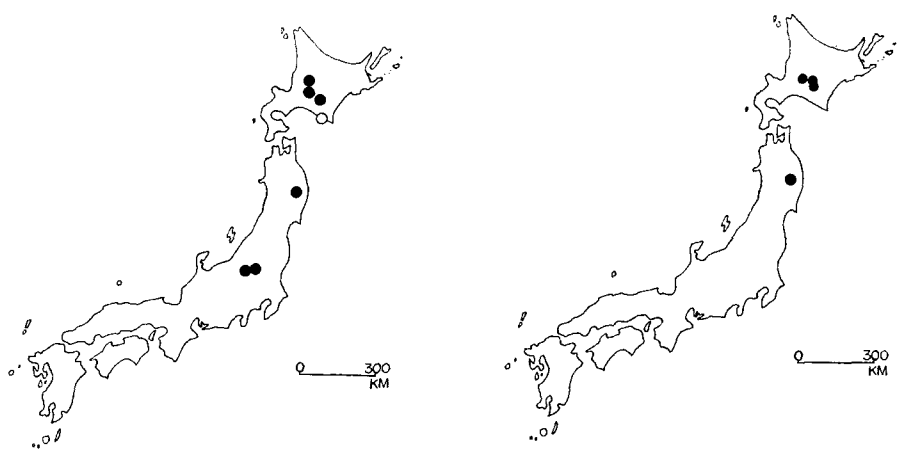

Fig. 18. 1: Distribution of *Arenaria katoana* MAKINO.
Open circle: var. *lanceolata* TATEWAKI.
2: Distribution of *Draba japonica* MAXIMOWICZ

Endemic to Japan, ultrabasicosaxicolous relic. Fig. 18–1.

2. *Draba japonica* MAXIMOWICZ. Hokkaidô: Mt. Tottabetsu, Mt. Kita-

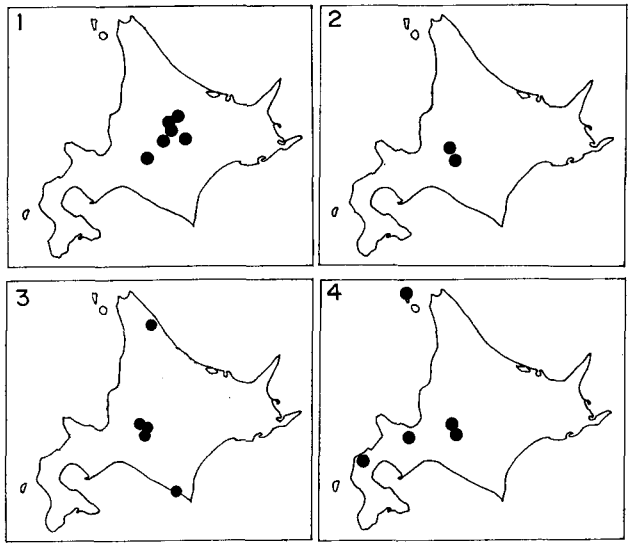

Fig. 19. Distribution of *Saxifraga laciniata* NAKAI et TAKEDA (1), *Alchemilla japonica* NAKAI et HARA (2), *Potentilla fruticosa* LINNAEUS (3) and *Potentilla nivea* LINNAEUS (4) in Hokkaidô. *Potentilla nivea* of Mt. Yûpari and of Mt. Jôzankei-tengu is referable to var. *yuparensis* MIYABE et TATEWAKI.

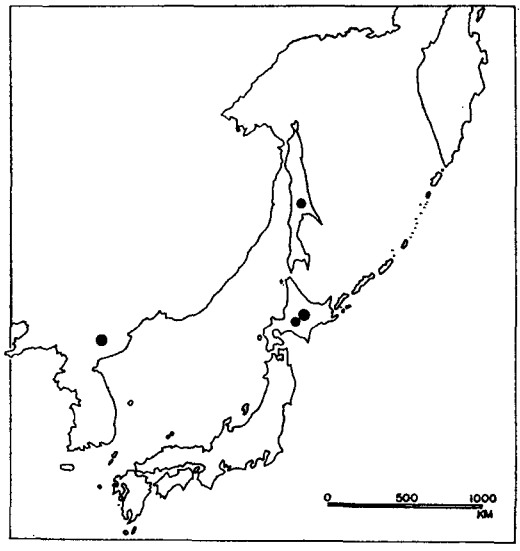

Fig. 20. Distribution of *Saxifraga laciniata* NAKAI et TAKEDA.

tottabetsu. Honshû: Mt. Hayachine. Endemic to Japan, ultrabasic-osaxicolous relic. Fig. 18–2.

3. *Saxifraga laciniata* NAKAI et TAKEDA. Hokkaidô: Taisetsu Mts. (Mt. Hira-ga-take, Mt. Hokuchin, Mt. Hokkai, Mt. Hakuun, Mt. Koidzumi, Mt. Niseikaushuppe etc.), Mt. Nipesotsu. N. Korea and Saghalien. Fig. 19–1 & Fig. 20.
4. *Alchemilla japonica* NAKAI et HARA. Hokkaidô: Mt. Kirigishi. Honshû: Mt. Shirouma, Mt. Arakawa, Mt. Kita-dake, Mt. Akaishi etc. Seemingly an epibiotic species. Fig. 19–2 & Fig. 21.

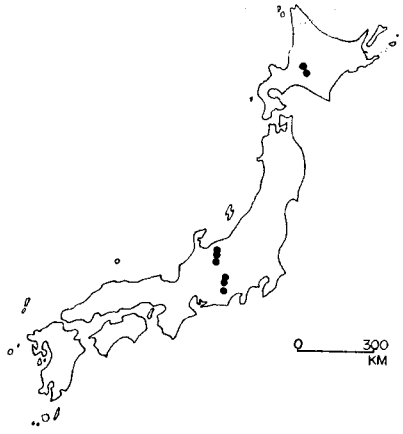

Fig. 21. Distribution of *Alchemilla japonica* NAKAI et HARA.

5. *Potentilla fruticosa* LINNAEUS. Hokkaidô: Mt. Apoi, Mt. Ashibetsu, Mt. Kirigishi, Mt. Kitami-horo-nupuri. Alpine regions in C. & N. Honshû. Holarctic-boreal or -alpine region. Fig. 19–3.
6. *Polentilla nivea* L. var. *yuparensis* MIYABE et TATEWAKI. Hokkaidô: Mt. Jôzankei-tengu. Distrib. sp.: Holarctic-alpine region. Alpine region in C. Honshû, Mt. Kirigishi, Isl. Rebum. Fig. 19–4.
7. *Eritrichium nipponicum* MAKINO. Hokkaidô: Mt. Apoi, Mt. Kirigishi, Upper Nukabira R., Isl. Rebun. Alpine region in C. Honshû. Saghalien. Fig. 22–1.
8. *Sparganium angustifolium* MICHAUX. Hokkaidô: Mt. Asahi, Taisetsu Mts. Holarctic-boreal region. Fig. 22–2.
9. *Carex capillaris* LINNAEUS. Honshû: Mt. Hayachine. N. Kuriles, Saghalien, Korea. Holarctic-alpine region. Fig. 23.
10. *Carex melanocarpa* CHAMISSO. Saghalien and E. Siberia. Fig. 22–3.

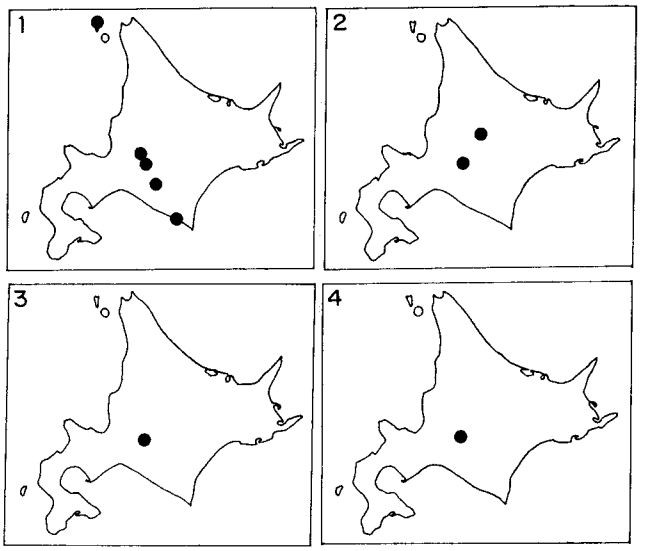

Fig. 22. Distributions of *Eritrichium nipponicum* MAKINO (1), *Sparganium angustifolium* MICHAUX (2), *Carex melanocarpa* CHAMISSO (3) and *Carex subumbellata* MEINSHAUSEN (4) in Hokkaidô.

Eritrichium nipponicum: The plants of Mt. Apoi and its neighbourings are densely covered with more rigid hairs than those of Honshû and of Saghalien. This form is distinguished from the mother species as form. *yesoense* (NAKAI) HARA. The plants of Mt. Yûpari and of Mt. Kirigishi have characters intermediate between the type and form. *yesoense*.

The only confirmed habitat of *Carex melanocarpa* and *C. subumbellata* (type) in Jpan is Mt. Yûpari.

11. *Carex subumbellata* MEINSHAUSEN. Saghalien. Fig. 22–4.
In the alpine regions in C. Honshû, var. *verecunda* OHWI occurs, while in Korea, var. *koreana* OHWI occurs.
12. *Platanthera hyperborea* LINDLEY. Taisetsu Mts.: 1,882 m peak, after KOIDZUMI (1911). Honshû: Mt. Shirouma. Kuriles, Kamchatka, N. America, Aleutian. Northern Pacific-arctic-alpine. Fig. 24.

Among the above listed plants, those which are common to the alpine region in C. Honshû are 6 (in the species rank), common to Mt. Hayachine are 2, common to N. Hidaka are 2, common to Mt. Apoi are 3, common to Mts. Taisetsu are 2, common to Isl. Rebun are 2.

This list suggests that the alpine florula of this mountain has considerable relations with those of geologically old-aged districts in Hokkaidô and in Central Honshû on one hand and relations with those on the ultrabasic

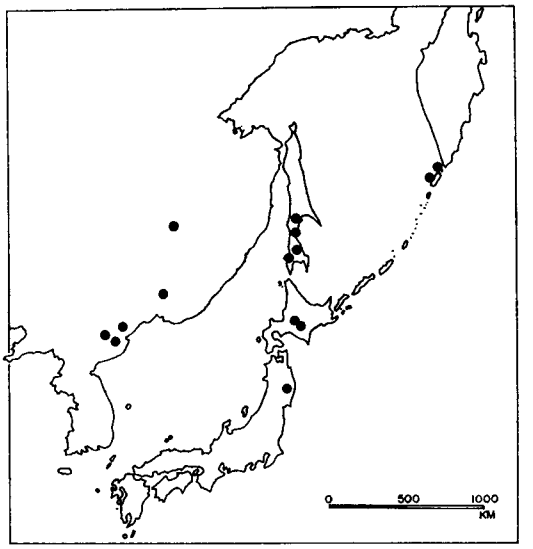

Fig. 23. Distribution of *Carex capillaris* LINNAEUS in Japan and her neighbourings.

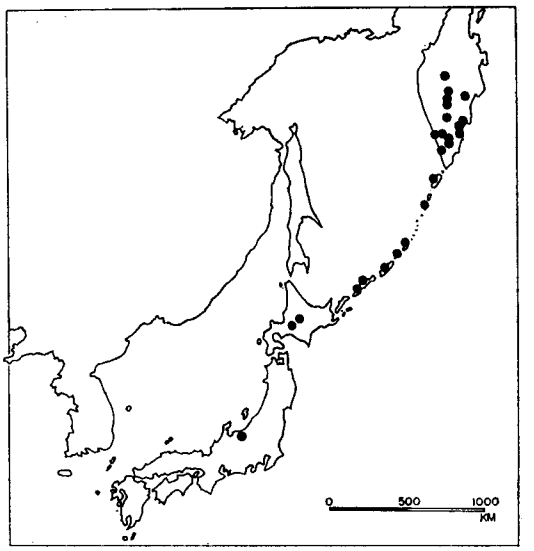

Fig. 24. Distribution of *Platanthera hyperborea* LINDLEY.

rock areas (Mt. Shirouma, C. Honshû; Mt. Apoi, prov. Hidaka and northern parts of the Hidaka mountain range).

VI. Conclusion

In this paper, 535 spp., 1 subsp., 10 varr. and 11 forms are enumerated. Among them, 78 spp., 1 subsp. and 3 varr. (including 1 new species) are added by the author to the previously presented lists. Among these 557 taxa, 347 spp. and 3 forms occur mainly in the lower mountain area (the mixed forest zone), 178 spp., 5 varr. and 5 forms occur mainly in the alpine area. The floristic speciality is represented by the plants occurring in the alpine area.

As were mentioned by NISHIDA (1919) and KUSAKA (1941), the floristic and vegetational features of the mixed forest of Mt. Yûpari are not so special as those of the area surroundings of the Ishikari Depression district. In the area between 600 m and 900 m in alt., the *Abies-Picea-Betula* forest develops, while, the area lower than 600 m in alt., the *Abies-Picea-Quercus* forest and the *Cercidiphyllum-Acer-Quercus* forest are complexly assembled, partially patched by the braod-leaved trees such as *Alnus*, *Ulmus*, *Tilia* etc. The forest of Mt. Yûpari district is apparently recognized as a type of those which belongs to TATEWAKI's 'Pan Mixed Forest Zone'.

Zonal distributions in this mountain are recognizable as follows: the area covered with the mixed forest (lower than 600 m in alt.), the area covered with the *Abies-Picea-Betula* forest (between 600 m and 900 m in alt.), the area covered with the *Betula ermani* forest (between 900 m and 1,300 m in alt.), and, the alpine area (higher than 1,300 m in alt.).

The *Pinus pumila* thicket covers the alpine area, but considerable extent of the area is without the *Pinus pumila* thicket. The alpine area exclusive the *Pinus pumila* thicket is topographically divided into three divisions: viz., the rocky ridge and projects, the flat or gently sloping ground and the rather steep slope along the water course. Rocky ridge and projects are composed of 'the Yûbaridake Metamorphic Group', and there occur many common alpine xerophytic herbs and shrubs, and characteristic plants which are recognizable as relics of the plants of the glacial period and endemics in this mountain. While, flat ground and steep slope are on the serpentine area. Almost of flat ground is covered with high moor vegetation, and partly (in serpentine-pebble-field) covered with the typical serpentine plant communities. Very sparse assemblages of serpentine plants cover the center of the slopes. Plants occurring on the serpentine-pebble-fields and serpentine landslips are divided into three groups. Among them, those which occur

particularly on the flat ground and those which occur particularly on the slope are typical ultrabasicosaxicolous plants.

The flora in the alpine area consists of many noticeable plants either endemic to the mountain (5 spp., 2 subspp., 1 var. and 2 forms) or discontinuously distributed in Japan. And, among the plants occurring in the alpine area, those which occur only in this mountain in the Japanese territory of today are found; i. e., *Carex melanocarpa* and *Carex subumbellata* (mother species).

Forty-one plants are noticeable mainly from the phytogeographical point of view. These plants may be grouped into two; viz., one, the group of plants occurring on the metamorphic rocks belonging to 'the Yûbaridake Metamorphic Group', and the other, that of the plants occurring on the serpentine area.

The plants belonging to the former group are as follows: *Sedum pluricaule* subsp. *ezawae*, *Saxifraga nishidae*, *S. yuparensis*, *Alchemilla japonica*, *Dryas octopetala* var. *asiatica*, *Potentilla nivea* var. *yuparensis*, *Oxytropis rishiriensis*, *Bupleurum triradiatum* var. *alpinum*, *Eritrichium nipponicum*, *Adenophora pereskiaefolia* var. *yamadae*, *Crepis hokkaidoensis*, *Elymus yubaridakensis*, *Carex subumbellata*, *Platanthera hyperborea*.

While, the plants belonging to the latter group are as follows: *Arenaria katoana*, *Aconitum yuparense*, *Ranunculus acris* var. *nipponicus* form. *yuparensis*, *Draba japonica*, *Saxifraga laciniata*, *Viola sacchalinensis* var. *alpina*, *V. yubariana*, *Angelica stenoloba*, *Primula yuparensis*, *Gentianella yuparensis*, *Lagotis glauca* subsp. *takedana*, *Veronica schmidtiana* var. *yezoalpina*, *Crepis gymnopus*, *Erigeron thunbergii* subsp. *glabratus* form. *haruoi*, *Saussurea chionophylla*, *Taraxacum yuparense*, *Deschampsia caespitosa* subsp. *levis*, *Hierochloe pluriflora*, *Carex capillaris*, *C. melanocarpa*.

Stellaria nipponica var. *yezoensis*, *Thlaspi japonicum*, *Potentilla matsumurae* var. *yuparensis* and *Rhamnus ishidae* are found both on the metamorphic rocks and in the serpentine area. *Sparganium angustifolium* must be listed, but the exact habitat of the plant collected by NISHIDA (1916) was uncertain. The 14 plants mentioned in the former group probably have been preserved on the geologically old-aged rock areas, while, those mentioned in the latter group have probably been preserved not only by the geologically old-aged but also by the characteristic chemical composition of serpentine.

In fine, the alpine flora of Mt. Yûpari is one of the most precious materials in referring to the plant distribution of northern Japan, to the floristic relations between Japan and Boreal or Arctic flora, to the relations

between the plants and their habitats and to the preservation of the plants of the glacial period.

The author hopes, the vegetation of the alpine area composed of these precious plants, will be preserved in keeping its natural state without the destruction of human agency,

Summary

1. Mt. Yûpari is famous for the characteristic plants occurring in the alpine area. This paper deals with the phanerogam flora of Mt. Yûpari together with the outlines of vegetation. The author intends to present a fully revised phanerogam flora with detailed review, to explain the whole characters of the flora.

2. The most noticeable characteristic of environment is geological speciality of this mountain. Main parts of the mountain to alpine area of this mountain are composed of the Pre-Cretaceous formation, with vast intrusion of serpentine. Characteristics of the alpine flora of this mountain are mainly caused by this geological speciality. Climatic characters show that this mountain district belongs to the mixed forest zone.

3. Zonal distributions in this mountain are recognizable as follows: the area covered with the mixed forest (lower than 600 m in alt.), the area covered with the *Abies-Picea-Betula* forest (between 600 m and 900 m in alt.), the area covered with the *Betula ermani* forest (between 900 m and 1,300 m in alt.), and the alpine area (higher than 1,300 m in alt.).

4. The alpine area exclusive the *Pinus pumila* thicket is topographically divided into three divisions: viz., the rocky ridge and projects, the flat or gently sloping ground and the rather steep slopes along the water course. Rocky ridge and projects are composed of 'the Yûbaridake Metamorphic Group', and there occur many common alpine xerophytic herbs and shrubs, and characteristic plants which are recognizable as relics of the plants of the glacial period and endemic to this mountain. While, flat ground and steep slopes are on the serpentine area. Almost all of flat ground is covered with high moor vegetation, and partly (in serpentine-pebble-field) covered with the typical serpentine plant communities. Very sparse assemblages of serpentine plants cover the center of the slopes.

5. Plants occurring on the serpentine-pebble-fields and serpentine landslips are divided into three groups. Among them, those which occur particularly on the flat ground and those which occur particularly on the slope are typical ultrabasicosaxicolous ones.

6. In this paper, 535 spp., 1 subsp., 10 varr. and 11 forms are enu-

merated. Among them, 78 spp., 1 subsp. and 3 varr. (including 1 new species) are added by the author to the previously presented lists.

7. 5 spp., 2 subspp. and 1 variety are endemic to this mountain, and the plants noticeable from phytogeographical point of view are about 50 taxa. Two-thirds of these noticeable plants are ultrabasicosaxicolous plants, others are probably relics.

8. From the view points of plant distribution, the floristic composition of alpine area is primarily related to that of Honshû, secondarily to those of Kamchatka and Siberia through the Kuriles and Saghalien.

Four plants occur restrictedly in the Hidaka Mountain Range and the Yûpari Mountain Range. These are recognizable as relics preserved restrictedly in the Hidaka and the Yûpari Mountain Ranges. The author intends to treat them as 'The Yûpari-Hidaka Montane-Alpine Elements'.

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