

## ROSEリポジトリいばらき（茨城大学学術情報リポジトリ）

Title	Biosystematic studies on Macroclinidium(Compositae-Mutisieae)-1-Geographical distribution and ecology
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Citation	茨城大学教育学部紀要(20): 233-259
Issue Date	1970
URL	<a href="http://hdl.handle.net/10109/10740">http://hdl.handle.net/10109/10740</a>
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# Biosystematic Studies on *Macroclinidium* (Compositae–Mutisieae) I. Geographical Distribution and Ecology

by Masatomo SUZUKI\*

## Introduction

*Macroclinidium* is an endemic Compositous genus of Japan. In C. J. Maximowicz's Bulletin de l'Académie Impériale des Sciences de St. — Pétersbourg XV (1871), the genus *Macroclinidium* included one species, *M. robustum*, but later species were added only from Japan by the mid-twentieth century, many eminent botanists made critical studies of the genus; T. Makino described two species of *M. rigidulum*<sup>1)</sup> and *M. trilobum*<sup>2)</sup>, T. Nakai published an elaborate description of the genus with illustration<sup>3)</sup> and S. Kitamura also described one species of *M. Suzukii*<sup>4)</sup> from Shirakawa city in Fukushima Prefecture. I have been interested in the genus for more than ten years, and having carefully examined there material in the field and in many specimens. I revised the Phytogeographical studies in Northern Kanto and Southern Tohoku Districts, Japan III (1960)<sup>5)</sup>, recognizing distribution of *Macroclinidium* species. Ever since I have been paying special attention to the genus, and have had the advantage of examining the much richer collections in Tohoku district.

In my separate reports, somatic chromosome number and morphology, ecology, ecological aspects and gross morphological variations of *Macroclinidium* species were illustrated.

This paper in the present series of investigations is an attempt to examine geographical distribution and critically the population structure of the plants of *Macroclinidium*.

## Material and Methods

Several dried specimens preserved in the following herbaria indicated below were

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examined, i. e., Herbarium of the Department of Botany, College of Science, Kyoto University, Kyoto, Herbarium of the Department of Botany, College of Science, University of Tokyo, Tokyo, Herbarium of the National Science Museum, Tokyo, Herbarium of the Department of Biology, College of Science, Tohoku University, Sendai, Herbarium of the Department of Biology, College of Science, Kanazawa University, Kanazawa and Herbarium of the Biology Laboratory, College of Education, Ibaraki University, Mito. Observation on the ecology of *Macroclididium* habitats were made during the last seven years from 1964 to 1970.

### Description and Geographical Distribution

(1) ***Macroclididium rigidulum*** Makino in B. M. T. 12: 80 & (194) (1898). Nakai in B. M. T. 26: 250 (1912). Matsumura, Index Pl. Jap. 2: 658 (1912). Hara, Sperm. Jap. 2: 230 (1952).

*Macroclididium verticulatum* Franch. et Sav., Enum. Pl. Jap. 1: 265 (1875). *Pertya rigidula* (Miq.) Makino in B. M. T. 14: 144 (1900). Makino et Nemoto, Fl. Jap.: 1253 (1931). Kitamura in J. J. B. 14: 383 (1938), Compos. Jap. 2: 301 (1940). Ohwi, Fl. Jap.: 1305 (1965). *Eupatorium rigidulum* Miquel, Ann. Mus. Lugd. —Bat. II, 167 (1866).

Nom. Jap. kurumaba-haguma

Rhizoma breve repens nodulosum fibras numerosas validas emittens. Caulis 50-90 cm altus erectus glabratus inferne simplex. Folia in media parte caulis conferta 7-12 quasi verticillatim disposita, sessilia oblanceolato-oblonga vel obovato-oblonga 10-30 cm longa 4-12 cm lata. Capitula paniculatim, Flosculus 6-8, corolla 19 mm longa, primum albescens denique leviter rosascens.

Specim. repres. Ugo: Tegatayama Akita city (S. Muramatsu Sept. 20 1930-KYO. 1931. Sept. 1931-TNS) Taiheizan (K. Kuwayama & R. Mochizuki) IWASHIRO: Aizu Komatatôge (G. Nakahara Aug. 18 1904-TNS) Minamiaizu-gun Tajima town (M. Suzuki July 17 1960, Aug. 5 1967, Oct. 20, 1968-MITO) Ozenuma (G. Nakahara Aug. 1904-TNS) Mt. Aizu-kamagatake (M. Suzuki, T. Ami et R. Aizawa Sept. 28 1963-MITO) Komadome-tôge (M. Suzuki July 30 1963-MITO) Mt. Taishiyaku (M. Suzuki July 20 1966-MITO) Mt. Asakusa (M. Suzuki July 20 1965-MITO) Mt. Hakase (M.

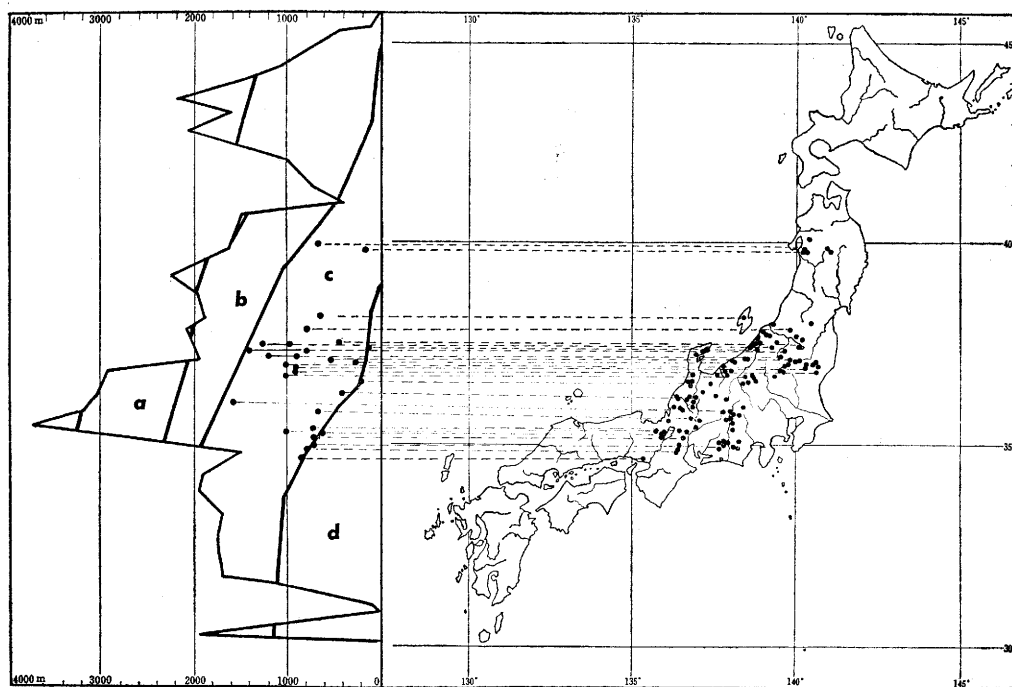


Fig. 1. Map showing the vertical distribution of *Macroclinidium rigidulum* at the localities surveyed.

a: the alpine zone; b: the zone of boreal, coniferous forests composed of *Abies sachalinensis*, *Picea yezoensis*, and *Picea Glehni* in Hokkaido, the zone of boreal, in Honshu coniferous forests composed of *Abies Maresii*, *Tsuga diversifolia*, *Picea polita*, *Chamaecyparis obtusa*, *Tsuga Sieboldii*, *Abies homolepis* and *Abies Veitchii*; c: the zone of temperate, deciduous broad-leaved forests, composed of *Fagus crenata*, *Acer Mono*, *Quercus mongolica* v. *grosseserrata*, *Carpinus laxiflora*, etc.; d: the zone of warm-temperate, evergreen broad-leaved forests. It can be readily seen from this map *M. rigidulum* is confined to the boreal coniferous, or temperate summer-green forests.

Suzuki Aug. 12, 1969-MITO) Mt. Asahi (M. Hagiwara June 7 1970-MITO). IWAKI Mt. Kashi (K. Someno Aug. 25 1953-TNS. K. Shoma Ang. 9. 1967-TUS) Shirakawa city Kinsyoji (Oct. 11 1959-MITO) Ishikawa-gun Asakawa town (A. Igarashi Oct. 7 1964-MITO) Higashishirakawagun Tanagura town Tonoyama (M. Suzuki et E. Furuuchi Oct. 22 1957, Oct. 21 1959-MITO) Takano (M. Suzuki Oct. 22 1959-MITO) Hanawa town Tashiro (M. Suzuki June 19 1957-MITO) HITACHI: Mt. Yamizo (M. Suzuki Oct. 22 1957-MITO, M. Yasu Aug. 25 1963-MITO. H. Sekimoto Aug. 22 1933-KYO) Mt.

Hanazono (M. Suzuki Oct. 1, 1967, H. Fujita Nov. 5 1966, N. Ueda Aug. 20 1967-MITO) SHIMOTSUKE: Nasugun Shiobara town (T. Nakai Oct. 16 1933-TI, C. Kimura May 23, 1967-TUS) Itamuro santo-goya (Aug. 14 1948-TI) Tonegun Mikuni-tôge F. Maekawa Oct. 16 1935-TI, S. Kurosawa June 20, 1959, Hara June 20 1959-TI) ECHIGO: Kita-kanbaragun Ijimino (Y. Ikegami 1960) Higashi-kanbara-gun tsugawa town (T. Yamazaki Aug. 24 1946-TI) Tt. Kirin (Nakai et Maruyama May 26 1933-TNS) Minami-kanbaragun Tagami (Y. Ikegami 1960) Mori-machi (Y. Ikegami 1960) Mt. Naeba (Teramoto Aug. 12 1938-TI, S. Sugaya July 20 1936-TUS, S. Okuyama July 1 1936-TNS) Mt. Sumon (K. Fujita July 22 1965-MITO) Minamiuonumagun Yuzawa (Y. Ikegami 1960) Nagaoka city (Y. Ikegami 1960) Mishima-gun Ohkawazu (Y. Ikegami 1960) Naka-uonuma-gun Kiyotu-kei (Y. Ikegami 1960) Nishi-gubiki-gun Kotaki Myojosan (Y. Ikegami 1960) Ichifuri village (Z. Tashiro Oct. 11 1936-KYO) Kurokawayama (Z. Tashiro July 9 1927-KYO) Hishiga-dake (T. Watanabe Aug. 24 1946-MITO) ETOHU; Uozu city Thsubon (S. Nagai July 9 1927-TI) Yatsuo town (S. Kirino & M. Togashi July 27 1957-TUS) KAGA: Mt. Kuragatake (H. Hara Oct. 13 1953-TI) Riosen (S. Miki 1921-KYO) Tani-tôge (H. Sakurai Aug. 8, 1903-TNS) Udatsu-yama Kanazawa city (S. Matsuda-KAN) Noro; Anamizu (S. Kitamura Oct. 15 1929-KYO) ECHIZEN: Ohno-gun Hiya village (S. Nakai Aug. 12 1909-TNS) Shihiya village Atago-san (T. Sawada Oct. 13 1935-TI) Mt. Yashyadake (Z. Tashiro Oct. 7 1927, A. Furuhashi Oct. 7, 1909-KYO) Mimano village (Z. Tashiro Oct. 4 1936-KYO) Ati-san (M. Mizushima-TI) Sakaigun Daianji (K. Sohma May 23 1967-TUS) HIDA: Norikura (U. Faurie July 1905-KYO) SHINANO: Kokuzôsan Iida city (H. Ito Aug. 10 1955-TNS) Mt. Iwasuge (Y. Nakajima July 28 1913-TUS) MINO: Mt. Ena-yama (H. Sakurai July 3 1903, T. Takei Aug. 10 1956-TNS) Mt. Yôrô (S. Kitamura Sept. 19 1942-KYO) Mt. Hyo-dake (Z. Tashiro Oct. 2 1938-KYO) Gojôhachiman (S. Kitamura Nov. 8, 1930-KYO) TOTOMI: Mt. Akiba (Y. Kurosawa Sept. 15 1929, S. Kitamura Oct. 13 1931-KYO) G. Hashimoto Oct. 1 1933-TNS) Haibara-gun Tonakagawa Kuroba-tôge (H. Matsuda June 16 1956-TI) Senzu Kami-kanzo (T. Koyama Oct. 12 1954-KYO) MIKAWA: Mt. Dando-san (Y. Kato Aug. 21 1934-TNS, G. Murata Sept. 20 1953-KYO) Miwa village Kawai (K. Torii Oct. 27 1940-KYO) ISE: Gozaisyo-yama (Z. Tashiro Oct. 13 1927-KYO) Mt. Fujiwara-dake (S. Matsuda Aug. 20 1927-KYO) Komono (H. Sakurai June 1888-TNS) OHMI: Mt. Hieizan Yokokawa (I. Sono June 21 1907-TNS) Takashimagun Nishishyo

village Mikuni-san (Z. Tashiro Oct. 13 1927, G. Koizumi Oct. 30 1927-KYO) Mt. Hira (S. Kitamura Nov. 14 1930-KYO) Mt. Ibuki (Aug. 4 1909-KYO) TANNBA : Ashiu (S. Okamoto 19 10 1940-KYO) Shii Village (G. Koizumi Aug. 1921-KYO).

This species is found on dry places generally from 200m to 1500m in elevation in the *Fagus* zone of northwest and central Honshu, Japan. It is almost exclusively confined to the temperate, summergreen broad-leaved or boreal, coniferous forests (cf. Fig. 1 Map).

(2) **Macroclidium robustum** Maximowicz in Bull. Acad. St. — Pet. 15, 376 (1871) Makino in B. M. T. 12, (194) (1898) Franchet in Mem. Herb. Boiss. 14, 3 (1900) Matsumura Ind. II-2, 658 (1912) Nakai in B. M. T. 26, 250 (1912) Hara Sperm. Jap. 2; 230 (1952).

*Pertya Macroclidium* Makino in B. M. T. 14, 144 (1900).

*P. robusta* (Maxim.) Makino in B. M. T. 20, 29 in nota (1906) Okuyama in J. J. B. 19, 133 (1943)

*P. robusta* (Maxim.) Beauverd in Bull. Soc. Bot. Geneve ser. 2, I, 387 (1909) Kitamura in J. J. B. 14, 382 (1938); Compos. Jap. II, 302 (1940).

Nom. Jap. kashiwaba-hagma

Rhizoma repens nodulosum crebro valide fibrosum, fibris crassiusculis elongatis. Caulis erectus simplex rigidiusculus circ 80 cm altus inferne glabratus. Folia in media parte caulis conferta ampla petiolata, petiolis usque ad 12 cm longis, lamina ovato-oblonga, ovata vel rarius obovata 10–20 cm longa 7–12 cm lata apice fere acuta basi rotundata vel cuneata margine irregulariter incisa vel subregulariter dentata ciliato-pilosa, folia ad inflorescentiam seailia sursum gradatim minora ovata. Capitula spicatum vel racemosim disposita interdum binata.

Specim. repres. UZEN : Yamagata city (Faurie Sept. 10 1898-KYO) RIKUZEN : Sendai city (A. Kimura Oct. 15 1930-KYO, TUS. Faurie Oct. 14 1898-KYO) Kameoka-yama (Kimura Oct. 1948-TUS) Aoba-jyo (M. Suzuki Sept. 3 1959-MITO) IWASHIRO : Minami-aizu-gun Tajima town (M. Suzuki June 17 1960-MITO) Asaka-gun Asaka town (M. Suzuki May 22 1959-MITO). IWAKI : Kamata-yama (M. Suzuki May 2 1959-MITO) U-no-dake (M. Suzuki May 3 1959-MITO) Higashi-Shirakawa-gun Hanawa town (M. Suzuki June 9 1957-MITO) Umihari-dô-san (June 9 1957-MITO) San-nô-san (M. Suzuki

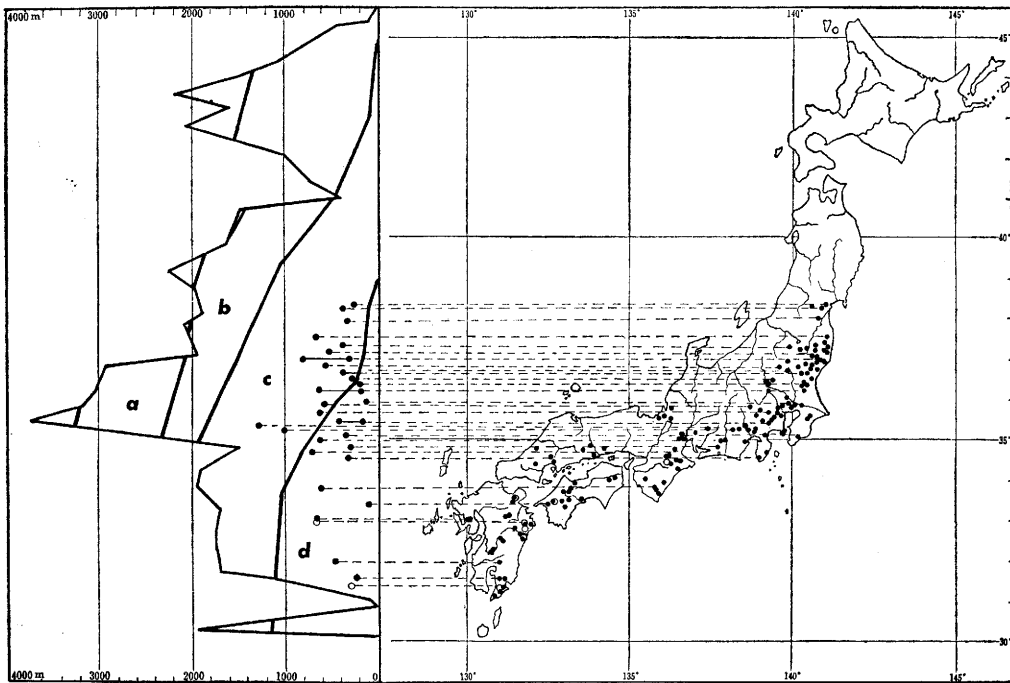


Fig. 2. Map showing the vertical distribution of *Macrocladidum robustum* at the localities surveyed.

a: the alpine zone; b: the zone of boreal, coniferous forests; c: the zone of temperate, deciduous broad-leaved forests; d: the zone of warm-temperate, evergreen broad-leaved forests. It can be readily seen from this map *M. robustum* is confined to the zone of temperate, or the zone of warm-temperate forests.

June 9 1957-MITO) Mt. Ohsasa (M. Suzuki June 8 1957-MITO) Tanagura town (M. Suzuki Oct. 20 1957-MITO) Mt. Tomo-yama (M. Suzuki Oct. 22 1957-MITO) Takano (M. Suzuki Oct. 21 1957-MITO) Nishi-shirakawa-gun Seki-san (M. Suzuki June 6 1957-MITO) Shirakawa city Kinsho-ji (M. Suzuki Oct. 20 1957-MITO) Ishikawa-gun Ishikawa town (M. Suzuki June 22 1957-MITO) Tamura-gun Mt. Hayama (M. Suzuki June 24 1957-MITO) Mt. Yadaijin (M. Suzuki June 25 1957-MITO) Mt. Mantaro (M. Suzuki June 24 1957-MITO) Mt. Hebuse (June 23 1957-MITO) Sôma-gun Mt. Ryosen (M. Suzuki April 23 1959-MITO)- HITACHI: Mt. Yamizo (M. Suzuki Oct. 6 1957, Oct. 10 1967, July 24 1969-MITO) Daigo town (M. Suzuki Aug. 19 1957-MITO) Mt. Nabeashi (M. Suzuki Sept. 6 1956-MITO) Mt. Takyû (July 5 1957-MITO) Mt. Nantai (M. Suzuki Sept. 20 1956-MITO) Mt. Nishi-kanasa (M. Suzuki May 3. 1957, Oct. 2 1969-

MITO) Yamagata town (M. Suzuki Oct. 10 1969-MITO) Morozawa (M. Suzuki (Oct. 10 1956- MITO) Naka town (M. Suzuki Oct. 11 1970-MITO) Hitachi-ohta city Zuiryu (M. Suzuki Oct. 1 1955-MITO, M. Hagiya June 7 1957-MITO) HITACHI: Higashi-ibaraki-gun Gozenyama (S. Ohtsu Aug. 21 1955, M. Suzuki Sept. 2 1968-MITO) Ibaraki town Nakaishizaki (M. Suzuki Oct. 27 1957-MITO) Nishi-ibaraki-gun Bukkokuji (M. Suzuki July 14 1957, Oct. 11 1970-MITO) Mt. Atago (E. Sugiyama Oct. 3 1958-MITO) Waganisan (E. Sugiyama Aug. 31 1958-MITO) Nandai-san (E. Sugiyama Oct. 3 1958-MITO) Kasama city (M. Suzuki July 3 1969-MITO, T. Ami Oct. 1967-MITO, K. Osamoto Sept. 17 1955-MITO) Buchosan (M. Suzuki Aug. 5 1970, Oct. 3 1970-MITO) Niihari-gun Yasato town Mt. Minedera M. Suzuki June 13, 1957-MITO) Ishioka city Ryujin-san (M. Suzuki May 3 1956-MITO) Mt. Kaba (H. Mitsuhana Nov. 3 1955, M. Suzuki Sept. 23 1967-MITO) Mt. Tsukuba (M. Suzuki et Y. Kimura July 20 1957-MITO, Nov. 8 1957-MITO, June 5 1958-MITO, M. Honda May 3 1925-TI) SHIMOTSUKE: Nikko city (Matsuda Oct. 25 1927-TI) Nasu-gun Mt. Torinoko (M. Suzuki Oct. 14 1959-MITO) Mt. Kogashi (M. Suzuki Sept. 28 1958-MITO) Shioya-gun Funuu (M. Suzuki Sept. 29 1958-MITO) Kanuma city (M. Suzuki Sept. 27 1958-MITO) Mt. Ozaku (M. Suzuki May 4 1960-MITO) Mashiko town Takadate-yama (M. Suzuki Aug. 6 1858-MITO) Sano city Karasawa-san (M. Suzuki Aug. 14 1958-MITO) Tochigi city Ohhira-san M. Suzuki Aug. 15 1958-MITO) Izuru-san (M. Suzuki Aug. 15 1958-MITO) Mt. Nabe-yama (M. Suzuki May 3 1960-MITO) Motegi town (M. Suzuki Oct. 28 1958-MITO) Aso-gun Kuzuu town (M. Tagawa et K. Iwatsuki Oct. 15 1957-KYO) KOZUKE: Usui-gun Haraichi town (Nakajima Sept. 26 1934-TNS) Tano-gun Mt. Kanô-yama (T. Yamazaki June 13 1953-TI) Hamadaira (T. Yamazaki Aug. 3 1953-TI) Mt. Myogi (K. Sato May 28 1954-TI, Faurie Oct. 22 1912-KYO). MUSASHI: Mt. Takao (Kyôgogu Aug. 10 1957-TUS, Matsuda Nov. 12 1890-TNS, M. Mizushima Sept. 29 1950-TI) Izu-dake (S. Okuyama Oct. 20 1953-TNS) Ohji city Asuka (T. Nagasawa 1985-TI) Hannô city (M. Honda Sept. 27 1925-TI) Nishi-tama-gun Mt. Atago (M. Mizushima Nov. 10 1950-TI) Sekito-Takahata (M. Mizushima June 23 1946-TI) Mt. Kari-yori (K. Teramoto Oct. 14 1945-TI) Mt. Ontake (K. Teramoto (Oct. 1938-TI) Mt. Ohmi (T. Nakai Sept. 23 1932-TI) Inada village (M. Honda Oct. 13 1929-TI) KAZUSA: Mt. Kiyosumi (M. Suzuki June 3 1959-MITO) SHIMOUSA: Matsudo city (S. Okuyama Oct. 6 1953-TNS) SAGAMI: Jinmu-ji (S. Kitamura Nov. 3 1953-KYO, Oct.



12 1948-TI) Kamakura (K. Teramoto Nov. 14 1945-TI) KAI: Mitsu-tôge (S. Kitamura Oct. 8 1931-KYO, S. Sugaya Sept. 13 1938-TUS) Mt. Komagatake (S. Matsuda Aug. 28 1921-TI) Mt. Akaishi (T. Yamazaki Aug. 6 1954) Mt. Shichimen-san (H. Uematsu-TI) SHINAMO: Kyowa village (K. Chino 1921-TI) SURUGA: Shizuoka city (J. Sugimoto Sept. 20 1953-TNS) IZU: Minami-izu-gun Aono (M. Suzuki April 20 1960-MITO) TOTOMI: Shito Goryo-rin (S. Kitamura Sept. 1943-KYO) Mizukubo-yama (J. Sugimoto June 23 1952-TNS) MIKAWA: Hôrai-ji-san M. Suzuki Aug. 10 1957-MITO, H. Kanai Oct. 11 1962-TI) ISE: Ayama-gun Awamura (M. Tagawa Nov. 1 1951-KYO) OHMI: Mt. Watamuki (S. Kitamura Sept. 15 1931-KYO) Mt. Hieisan (H. Sakurai Sept. 26 1908-TNS, S. Kitamura Sept. 1943-KYO, S. Fushimi Oct. 1920-KYO) YAMASHIRO: Kyoto (G. Koizumi Nov. 16 1929-KYO) SETTU: Miwa (T. Kobayakawa Aug. 1936-TI) YAMATO: Yoshino-gun Dorogawa (M. Suzuki Aug. 4 1958-MITO) KII: Nishi-muro-gun Kamikawa village (T. Koide Aug. 24 1928-KYO) Nonaka-tôge (June 25 1983-TI) Yamura (S. Mitamura Sept. 30 1942-KYO) Higashimuro-gun Tamura (S. Kitashima Aug. 1927-TI) BITTU: Mt. Nagi-no-sen (S. Kajitani Aug. 24 1928-TNS) SUWO: Kuga-gun Takane village (S. Nikai Oct. 16 1919-TNS) AWA: Ken-san (S. Nikai Aug. 13 1904-TNS) IYO: Mt. Iwaya (Yamamoto Aug. 22 1914-TNS) Yawatahama city oshikokuyama (M. Suzuki April 7 1958-MITO) TOSA: Kôchi city Fukui Takenoshita (T. Yoshinaga-TNS) Takaoka-gun Higashi-Kado-yama village (M. Tagawa Sept. 4 1939-KYO) Kuroiwa village (T. Yoshinaga Oct. 22 1938-TNS) HIZEN: Mt. Tara-dake (S. Toyama Oct. 20 1940-TI) BUNGO: Ohira (Z. Tashiro Aug. 25 1911-KYO) Mt. Tafu-dake (Z. Tashiro Aug. 25 1915-KYO) HIGO: Kuma-gun Mt. Eboshi-dake (Z. Tashiro Oct. 3 1915-KYO) Nasu-goe (Z. Tashiro Aug. 18 1915-KYO) HYUGA: Nishi-usuki-gun Iwato village (M. Ogata Sept. 26 1915-TNS) Ohsumi Kirishima (Y. Nakabe et T. Fukaya Oct. 11 1911-TI) Shibushi town (Aug. 23 1928-TNS) Mt. Inao-dake (Z. Tashiro July 29 1928-KYO) Kimotsuki-gun Takayama Mt. Takakuma (M. Kusaka July 8 1935-TI) SATSUMA: Ohguchi town (Doi Aug. 28 1936-TNS).

This plant occurs in the zone of warm temperate, evergreen broad-leaved forest, composed of *Castanopsis cuspidata* var. *Sieboldii*, *Cyclobalanopsis acuta*, *C. glauca*, *C. myrsinaefolia*, *Cleyra japonica* and *Eurya japonica* etc. and in the zone of temperate, deciduous broad leaved forest, such as *Quercus acutissima*, *Q. mongolica* var. *grosseserrata*, *Q. serrata*, *Carpinus laxiflora* *C. Tschonoskii*, *Acanthopanax sciadophylloides*, *Prunus Jama-*

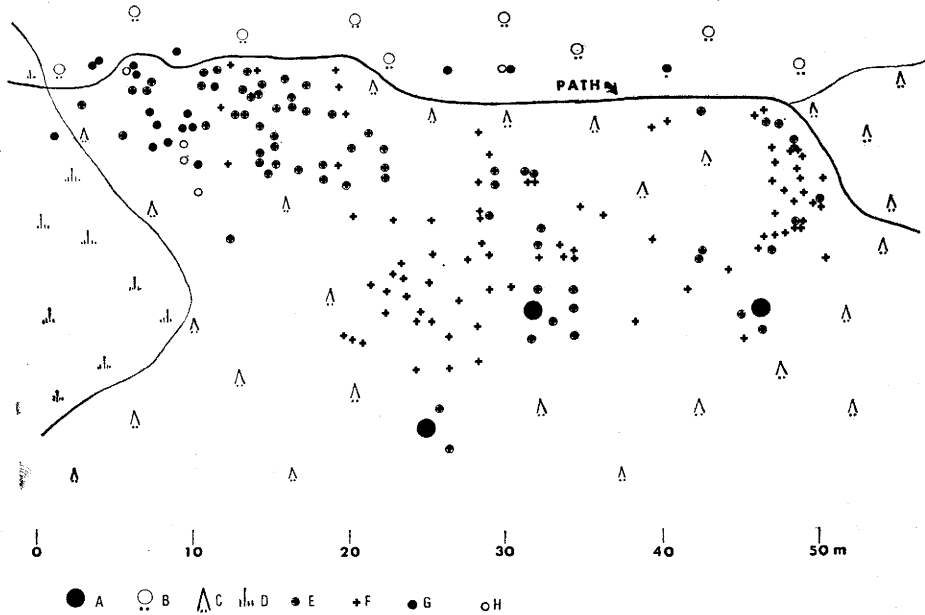


Fig. 3. Mt. Yamizo ca. 500 m above sea level in Ibaraki Prefecture. the area where *Macroclinidium robustum* predominated is covered by the forest of planted *Cryptomeria japonica*. In the shrubby layer, *Rhus trichocarpa*, *Viburnum dilatatum*, *Lespedeza bicolor* form. *acutifolia*, *Illicium anisatum* *Stephanandra incisa*, *Rubus palmatus* var. *coctophyllus*, *Sasa nikkoensis* and etc. occur. The forest floor has no doubt been distribed by some artificial means.

A: felling site of *Cryptomeria japonica*; B: Summergreen forest; C: *Cryptomeria japonica* forest; D: growing the *Miscanthes sinensis*; E. *Macroclinidium robustum* (fl.); F: *M. robustum* (steril); G: *M. trilobum* (fl.); H: *M. trilobum* (steril).

*sakura* and *Acer palmatum* subsp. *amoenum* etc. It can be readily seen from the map (fig. 2) that *M. robustum* are evergreen broad-leaved forests or temperate summergreen forests.

var. **kiushianum** (Kitamura) Honda Nom. Pl. Jap. 364 & 510 (1939). Hara Sperm. Jap. 2: 231 (1952).

*Macroclinidium* sp. ex Hisauchi in J. J. B. 12. 526 (1936)

*Pertya robusta* var. *kiushianum* Kitamura in J. J. B. 14, 383 (1938): Compos. Jap. 2, 303 (1940).

Nom. jap. Tsukushi-kashiwaba-haguma

Capitula saepe breviter pedunculata, involucri squamae dorso densiuscule pulverulento-puberulae, folia saepe latiora.

Specim. repres. ISE: Iinan-gun miyama-kokuyûrin (Z. Tashiro Aug. 4 1934-TNS) IYO: Mt. Iwaya (H. Yamamoto Aug. 22 1915-TNS) HYUGA: Nishiisu-gun Iwato village (M. Ogata Sept. 26 1915-KYO, Z. Tashiro Aug. 23 1915-TNS) Higashi-usu-gun Kitagawa village Mt. Oni-no-me (K. Yoshizawa Aug. 4 1936-TI) OHSUMI: Mt. Inado-dake (Z. Tashiro July 29 1928-KYO) Kimotsuki-gun Takayama town Mt. Takakuma (M. Kusaka July 8 1935-TI, KYO) Shibushi town (Y. Doi Aug. 23 1928-KYO) SATSUMA: Oguchi town (Y. Doi Aug. 28 1936-KYO) BUNGO: Ohira (Z. Tashiro Aug. 25 1911-KYO) Mt. Yufu-dake (Z. Tashiro Aug. 25 1916-TNS).

This variety usually occurs in the south-eastern part of Japan. At the several localities in Kyushu however, both varieties, i. e., *M. robustum* var. *kiushianum* and *M. robustum* var. *robustum*, were found growing sympatric sites.

form. **rotundatum** Hayashi in Bulletin of the Government forest Experiment Station No. 125. 76 (1960).

Nom. jap. Maruba-no-kashiwaba-haguma

Folia subrotunda vel ovata, 4.5-7.0 cm longa, 3.0-5.5 cm lata.

Specim. repres. Musashi: Mt. Takao (Y. Hayashi Sept. 30 1958-Herb. Gov. For. Exp. Sta.)

The leaves of this form are often found in the hill or Mountain foot in Kanto district, but the leaves are very variable.

(3) **Macroclinidium Suzukii** Kitamura in J. J. B. 14, 383 (1938); Compos. Jap. 2, 303 (1940) Hara Sperm. Jap. 2: 231 (1952).

*Pertya Suzukii* Kitamura, l. c. fig. 1 (1938); Compos. Jap. 2, 303 (1940)

*Macroclinidium rigidulum* × *M. trilobum*.

Nom. jap. Iwaki-haguma

Rhizoma breve repens nodulosum fibras numerosas validas emittens. Caulis simplex robustus erectus 30-70 cm altus superne paniculatim ramosus, ramis erecto-patentibus. Folia radicalia et inferiora squamiformia remote disposita, caulina media approximativim disposita ampla obovata 17-22 cm longa 8-10 cm lata apice cuspidata basi subitocuneata alato-petiolata, alis basin versus angustatis, margine irregulariter dentata, supra viridia

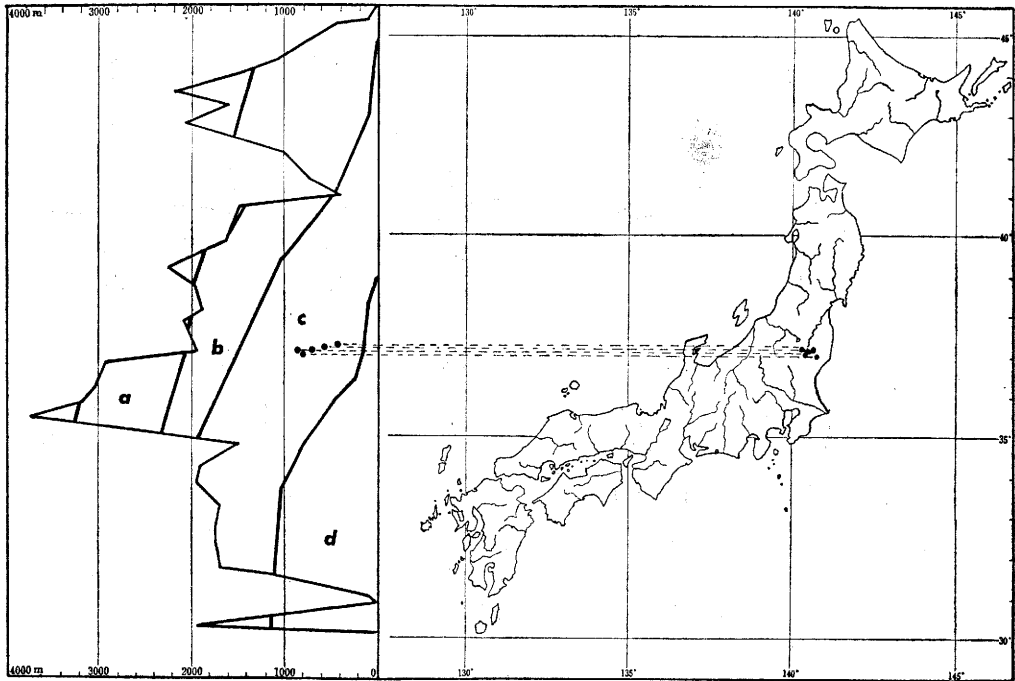


Fig. 4. Map showing the vertical distribution of *Macrocladinium Suzukii* at the localities surveyed.

a: the alpine zone; b: the zone of boreal, coniferous forests; c: the zone of temperate, deciduous broad-leaved forests; d: the zone of warm-temperate, evergreen broad-leaved forests. It can be readily seen from this map *M. Suzukii* is confined to the zone of temperate, deciduous broad-leaved forests.

glabra subtus pallida secus nervos puberula, reticulato-nervosa, textura chartacea, folia superora sessilia ovata sursum gradatim minora. Capitula numerosa paniculatim disposita ad apices ramulorum saepe 2-3, pedicellis 3-9 mm longis praedita.

Specim. repres. IWAKI: Shirakawa city Kinshoji (S. Suzuki Sept. 23, 1930-KYO, -TNS, Sept. 23, 1954-TNS, Z. Tashiro Sept. 24 1930-KYO, M. Suzuki Oct. 20 1957-TI, -MITO, Sept. 20 1959-MITO) Higashi-shirakawa-gun Tanagura town Mt. Tonoyama (M. Suzuki Oct. 21 1959-MITO Hanawa town Mt. chasen-funa-yama (M. Suzuki June 9 1957-MITO) Mt. Ohsasa (M. Suzuki June 8 1957-MITO) HITACHI: Mt. Yamizo (Z. Tashiro Aug. 4 1930-KYO, H. Sekimoto Aug. 22 1933-TNS, -KYO. M. Suzuki Oct. 22 1956-MITO, Oct. 8 1957-MITO, Oct. 30 1970-MITO) Mt. Hanazono (M. Suzuki Oct. 10 1965-MITO, Sept. 17 1967-MITO)

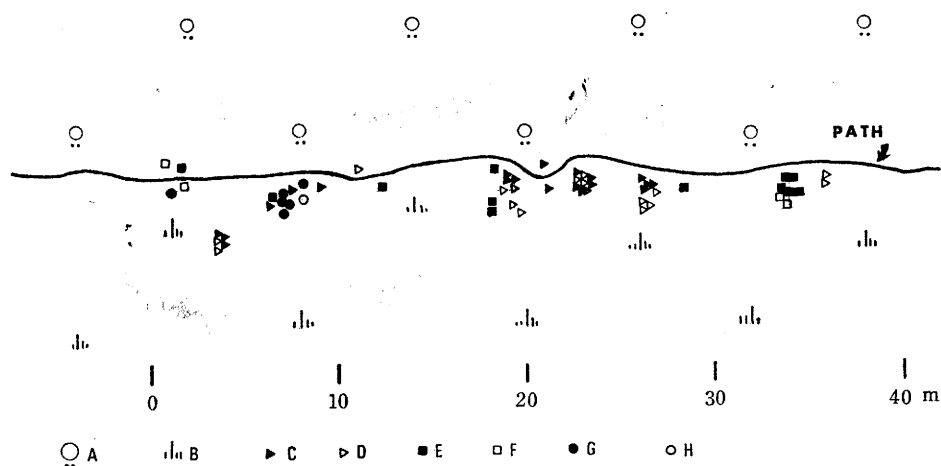


Fig. 5. Mt. Yamizo ca. 850 m above sea level in Ibaraki Prefecture. Showing the distribution of *Macroclinidium Suzukii* at the localities surveyed. Three species of *M. Suzukii*, *M. rigidulum* and *M. trilobum* were found growing sympatric here.

A: summergreen forest; B: *Miscanthus sinensis*; C: *M. Suzukii* (fl.)  
 D: *M. Suzukii* (steril) E: *M. rigidulum* (fl.); F: *M. rigidulum* (steril)  
 G: *M. trilobum* (fl.); H: *M. trilobum* (steril).

This plant is distributed in narrow range, found only in the middle of southern Fukushima and Northern Ibaraki Prefecture (fig. 4 map). On Kinshoji Shirakawa city, this plant is found in shady places under the *Cryptomeria japonica* plantation forest, and other habitats are almost the shrubby secondary community of the beechoak forests.

On both localities Mt. Yamizo and Hanazono, *M. Suzukii* grows in the thickets of shrubs such as *Quercus mongolica* var. *grosseserrata*, *Clethra barbinervis*, *Hydrangea paniculata*, *Alnus firma*, *Castanea crenata*, *Callicarpa japonica*, *Weigela decora* form. *unicolor*, *Acer palmatum* subsp. *amoenum*, *Rubus ralmatus* var. *coptophyllus*, *Pertya glabrescens*, *Hydrangea hirta*, *Vaccinium Oldhami*, *Miscanthus sinensis*, *Astilbe Thunbergii*, *Lysimachia chlethroides*, *Sasa nikkoensis*. This particular site was, no doubt once covered by the forests composed of *Fagus crenata*, *Quercus mongolica* var. *grosseserrata*, *Alnus firma*, *Carpinus cordata*, *Carpinus laxiflora*, etc. The compositions of forest communities in the adjacent areas clearly exhibit that this particular stand under consideration represents a young secondary community of the beech-oak forests. At the peripheral zone of this habitats *M. Suzukii* also grows mixed with *M. rigidulum* and *M. trilobum* side by side

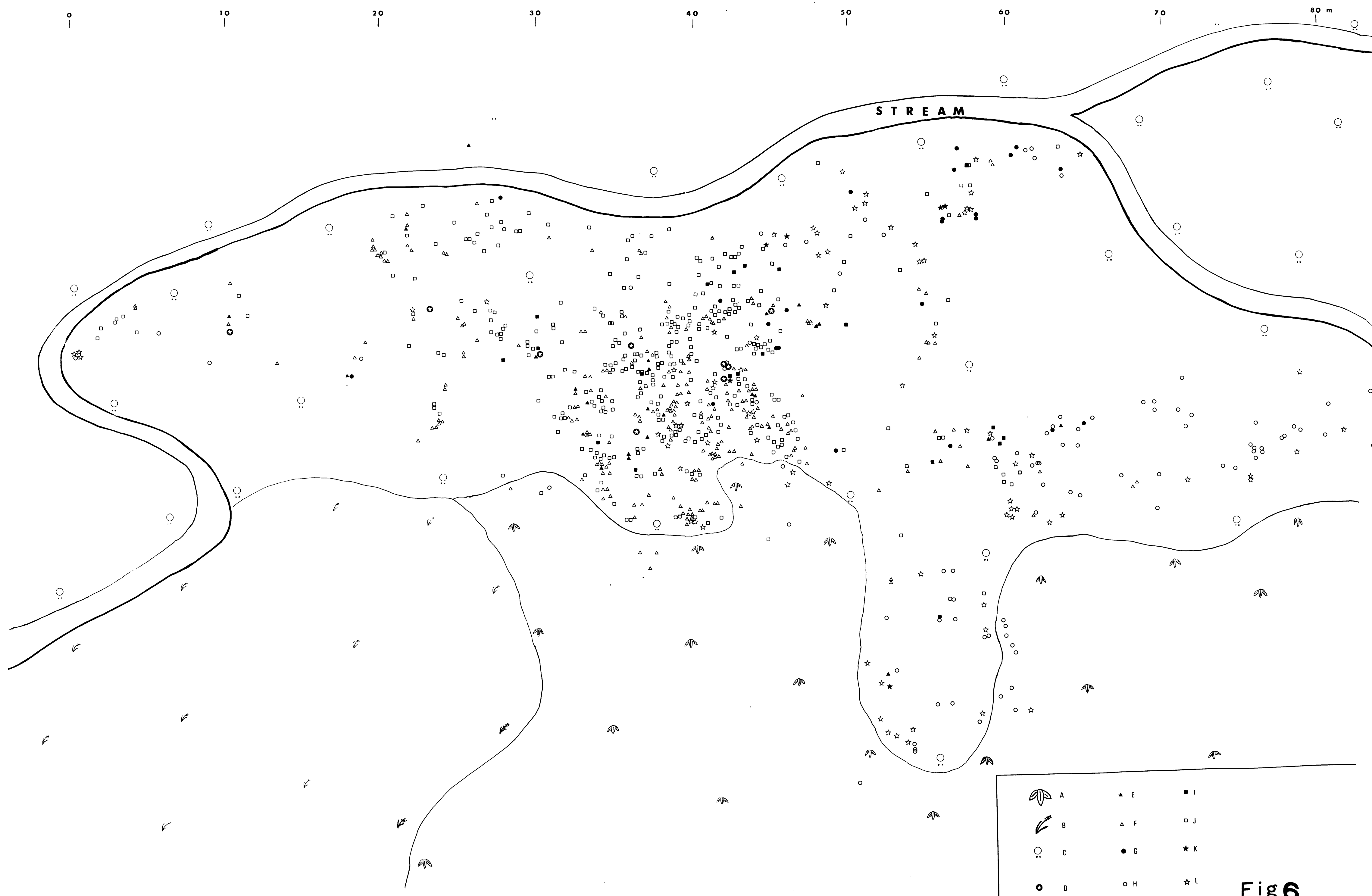


Fig 6

Fig. 6. Showing the distribution of four species of *Macroclinidium*, *M. Suzukii*, *M. trilobum*, *M. Koribanum* and *M. rigidulum* at the localities surveyed. The area, Mt. Hanazono ca. 820 m above sea level in Ibaraki Pref. where four species occurs are dominated by the forests composed of *Quercus mongolica* v. *grosseserrata*, *Acer Mono*, *Acer palmatum* etc.

A: *Sasa nikkoensis*; B: *Miscanthes sinensis*; C: Summergreen forest; D: *M. Suzukii* v. *yamizoanum*; E: *M. Suzukii* (fl.); F: *M. Suzukii* (steril); G: *M. trilobum* (fl.); H: *M. trilobum* (steril); I: *M. rigidulum* (steril); K: *M. Koribanum* (fl.); L: *M. Koribanum* (steril).

(fig. 5 and 6).

var. **yamizoanum** M. Suzuki in Bull. Coll. of Education, Ibaraki Univ. 16, 207 (1966) M. Suzuki Ibaraki no Shokubutsu 445 (1970).

Caulis 40-50 cm simplex erectus. Folia radicalia et inferiora squamiformia remote

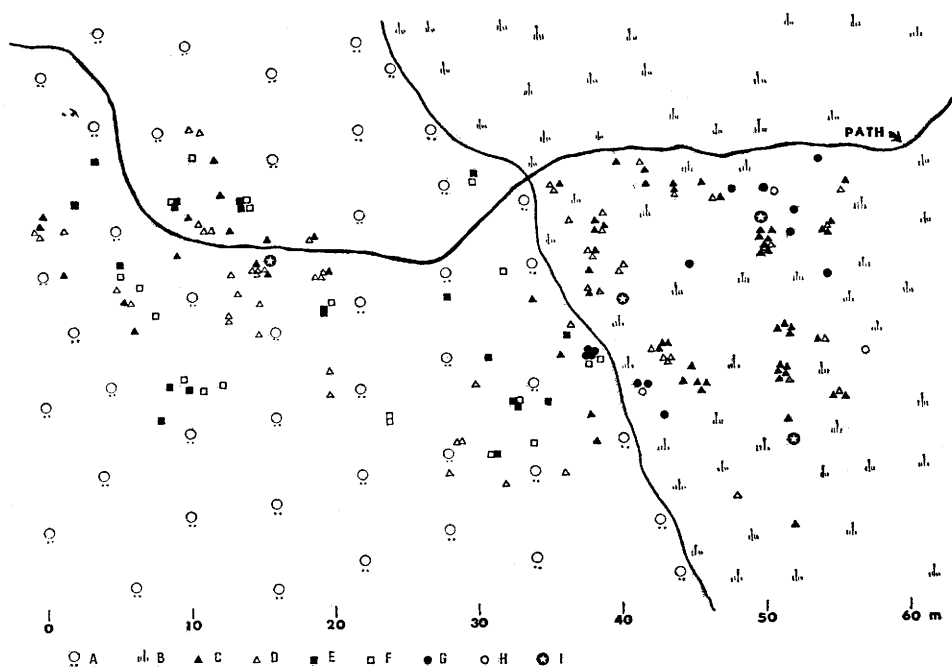


Fig. 7. Mt. Yamizo ca. 870 m above sea level in Ibaraki Prefecture. Several species of *Macroclinidium* were found growing sympatric, and often at such sympatric sites. I discovered morphologically interconnecting forms which may represent hybrids or its variety.

A: summergreen forest; B: *Miscanthes sinensis* and shrubby trees; C: *M. Suzukii* (fl.) D: *M. Suzukii* (steril); E: *M. rigidulum* (fl.); F: *M. rigidulum* (steril); G: *M. trilobum* (fl.); H: *M. trilobum* (steril); I: *M. Suzukii* var. *yamizoanum*.

disposita. Caulina media approximativ disposita, lamina 10-14 cm longa 5-8 cm lata trilobata, basi subito-cuneata alato-petiolata, alis basin versus angustatis, margine irregulariter dentata, supra viridia glabra subtus pallida secus nervos puberula, reticulato-nervosa, textura coriacea.

Affinis *Macrocliniidium Suzukii* Kitamura sed foliis caulinis mediis trilobatis exqua diddert.

Nom. Jap. Yamizo-haguma

Specim. repres. Hitachi Mt. Yamizo (M. Suzuki Oct. 8 1957-MITO) Mt. Hanazono (M. Suzuki Sept. 16 1966-MITO).

Both localities Mt. Yamizo and Mt. Hanazono, in Ibaraki Prefecture, these plant, *M. Suzukii*, *M. rigidulum* and *M. trilobum* are found growing sympatric habitats.

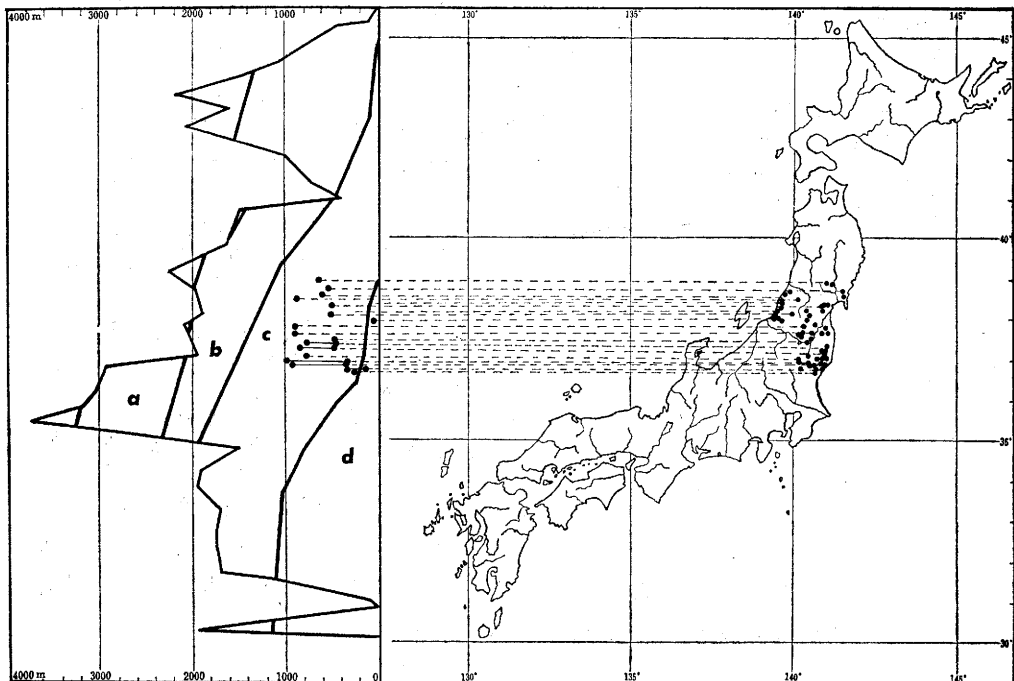


Fig. 8. Map showing the vertical distribution of *Macrocliniidium trilobum* at the localities surveyed.

a: the alpine zone; b: the zone of boreal, coniferous forests; c: the zone of temperate, deciduous broad-leaved forests; d: the warm-temperate forests.

It can be readily seen from this map *M. trilobum* is confined to the boreal coniferous, or temperate summer-green forests.



(4) **Macrocladium trilobum** Makino in B. M. T. 12, 78 (1898); Phan. et Pter. Jap. 3. I, t. 41 (1900) Nakai in B. M. T. 26, 250 (1912).

*Ainsliaea triloba* Makino in B. M. T. 6, 55 (1892), nom. nud. *Macrocladium trilobatum* Makino in B. M. T. 8, (302) (1894), nom. seminud.: 12. (194) (1898) Matsumura Ind. II-2, 658 (1912). Hara Sperm. Jap. 2:231 (1952).

*Pertya triloba* Makino in B. M. T. 14 144 (1900) Beauverd in Bull. Soc. Bot. Geneve ser. 2, I, 388 (1909) Kitamura in J. J. B. 14, 384 (1938); Compos. Jap. 2, 300 (1940).

*P. Fauriei* Franchet in Mem. Herb. Boiss. 14; 2, t. 1 (1900).

*P. triloba* (Makino) Matsumura in B. M. T. 16, 18 (1902).

Nom. jap. Oyari-haguma

Specim. repres. UZEN: Nishi-tagawa-gun Mt. Atsumi (S. Murai Oct. 15 1933-TNS) Mt. Kinppo (Z. Tashiro July 23 1933-KYO, -TNS, F. Maekawa July 13 1937-TI, M. Suzuki July 15 1955-MITO) Mt. Gassan (F. Maekawa July 12 1960-TI, M. Suzuki July 16 1955-MITO) Mt. Azuma (K. Matsushima Aug. 15 1902-KYO, H. Sugimoto Sept. 19 1934-TNS) Higashi-Azuma Ubayu (M. Suzuki June 16 1960-MITO). Yamadera (T. Kaneko Oct. 2 1957-TUS), Okuyamadera (H. Ohashi Oct. 6 1963-TUS). RIKUCHU; Ichinoseki city Miyasawa (Y. Senda Aug. 17 1914-TNS) RIKUZEN: Mt. Kurikoma (S. Sugaya, C. Kimura et K. Sugawara-TUS, Kimio Sugawara July 1 1966-MITO) Sendai city (T. Okazaki Oct. 1909-KYO, A. Kimura Oct. 15 1930-TUS H. Tachibana Oct. 15 1964-TUS) Mukô-yama (U. Ogura Sept. 23 1914-TI, A. Kimura Oct. 12 1928-TNS) Gongenmori (A. Kimura Oct. 14 1935-TNS, -TUS) Dainenji-san (A. Kimura Oct. 2 1928-TUS) Aoba-jo (S. Oku-yama Aug. 8 1950-TNS M. Suzuki Sept. 3 1959-MITO) Nanakita (M. Suzuki June 10 1960-MITO) Kunimi-tôge (A. Kimura & S. Sugaya Oct. 17 1938-TNS) Aone (A. Kimura et S. Sugaya July 3. 1950-TNS) Matsushima (S. Kitamura Oct. 4. 1930-KYO) Daitodake (T. Kikuchi Aug. 9 1967-TUS) Onoriyama (T. Kikuchi June 1 1967-TUS) Motoyoshi-gun Ohban-daira-tôge (Y. Yabe Aug. 9 1899-TI) Kawatabi (K. Sugawara Aug. 30 1957-TSU). ECHIGO: Arakawa town Zao-san M. Togashi Aug. 24 1956-TNS, TUS, KYO T. Yamazaki July 20 1965-TI) Murakami city Murakami (Y. Hayashi Nov. 19 1901-KYO) Senami (Y. Ikegami) Kitakanbara-gun Otsu village (Y. Hayashi Oct. 21 1941-TNS) Kanazuka villege (Y. Ikegami) Mt. Torisaka (Y. Ikegami) Iwafune-gun Sekikawa-gun Takanosu (Y. Ikegami) Asahi village (Y.

Ikegami) Kitayama village (Y. Ikegami) Sekikawa village (Y. Ikegami) IWASHIRO: Mt. Azuma (K. Matsushima Aug. 15 19 -TNS J. Sugimoto Sept. 12 1934-TNS, -KYO) Fukushima city Shimobu-yama (M. Matsuda June 1921 KYO, K. Nemoto Sept. 23. 1898-TNS) Asaka-gun Mt. Asaka (M. Suzuki May 21 1959-MITO) IWAKI: Moniwa village (T. Makino Aug. 1890-TNS) Iwaki city Mt. Akai-dake (Aug. 30 1933-KYO, M. Suzuki Sept. 3 1966-MITO) Uchigô Mt. Uodake (M. Suzuki May 3 1959-MITO, H. Ishikawa Oct. 9 1956-MITO) Kawabe (Y. Hayashi Oct. 12 1948-TNS) Higashi-shirakawa-gun Mt. Ohsasa (M. Suzuki June 8, 1957-MITO) Hanawa town Chasen-funa-yama (M. Suzuki June 9 1957-MITO) Mt. Yumiharido-san (M. Suzuki June 9 1957-MITO) Tanagura town (M. Suzuki Oct. 21 1959-MITO) Mt. Tomoyama (M. Suzuki Oct. 21 1959-MITO) Takano (M. Suzuki Oct. 21 1959-MITO) Mt. Yamatsuri (M. Suzuki Sept. 23 1964-MITO) Shirakawa city Kinshoji (M. Suzuki Oct. 20 1959-MITO) Nishi-shirakawa-gun Kanayama village (T. Suzuki Aug. 24 1951-KYO, M. Suzuki Oct. 20 1959-MITO) Seki-san (M. Suzuki May 13 1958-MITO) Saigo village (M. Suzuki Oct. 20 1959-MITO) Ishikawa-gun Ishikawa town (M. Suzuki June 22 1957-MITO) Tamura-gun Mt. Yadaijin (M. Suzuki June 25 1957-MITO) Mt. Mantaro (M. Suzuki June 24 1957-MITO) Mt. Hayama (M. Suzuki June 24 1957-MITO) Mt. Sannô (M. Suzuki June 9 1957-MITO) Futaba-gun Mt. Hebuse-yama (M. Suzuki June 23 1957-MITO) Mt. Ootakine (M. Suzuki May 30 1950-MITO) Sôma-gun Ryosen (M. Suzuki April 22 1958-MITO) SHIMOTSUKE: Kurobane town Onganji Oct. 10 1965-TNS) HITACHI: Mt. Yamizo (H. Sekimoto Aug 22 1933-KYO, M. Suzuki Oct. 16 1957-MITO M. Suzuki et T. Ami May 4 1963-MITO, T. Ami June 15 1963-MITO, M. Yasu Sept. 9 1963-MITO, Hct. 18 1963-MITO) Satomi village Mt. Sankomuro (S. Masuko Oct. 10 1956-MITO) Mt. Nabeashi (M. Suzuki Oct. 6 1958-MITO) Daigo town Kitatake (K. Komuro Oct. 4 1966-MITO) Ikeda (M. Suzuki Oct. 4 1966-MITO) Mt. Takasasa (M. Suzuki Oct. 10 1957-MITO, Oct. 20 1963-MITO) Mt. Shakujo (M. Suzuki Oct. 30 1955-MITO, T. Akutsu Nov. 23 1958-MITO) Suifu village Mochikata (M. Suzuki July 6 1957-MITO) Mt. Nantai (M. Suzuki Oct. 3 1957-MITO Oct. 8 1963-MITO) Mt. Chofuku (M. Suzuki July 13 1958-MITO) Mt. Takado (K. Shiota May 4 1962-MITO) Mt. Torinoko (M. Suzuki Oct. 14 1959-MITO) Nakagun Yamagata town Kita-tomida (M. Suzuki Oct. 14 1970-MITO) Mt. Aoso (M. Suzuki Oct. 17 1961-MITO) Kita-ibaraki city Mt. Oshyô (N. Uchigasaki Sept. 6 1958-MITO, M. Suzuki Oct. 17 1966-MITO) Kame-Yachi (M. Suzuki Sept. 18,

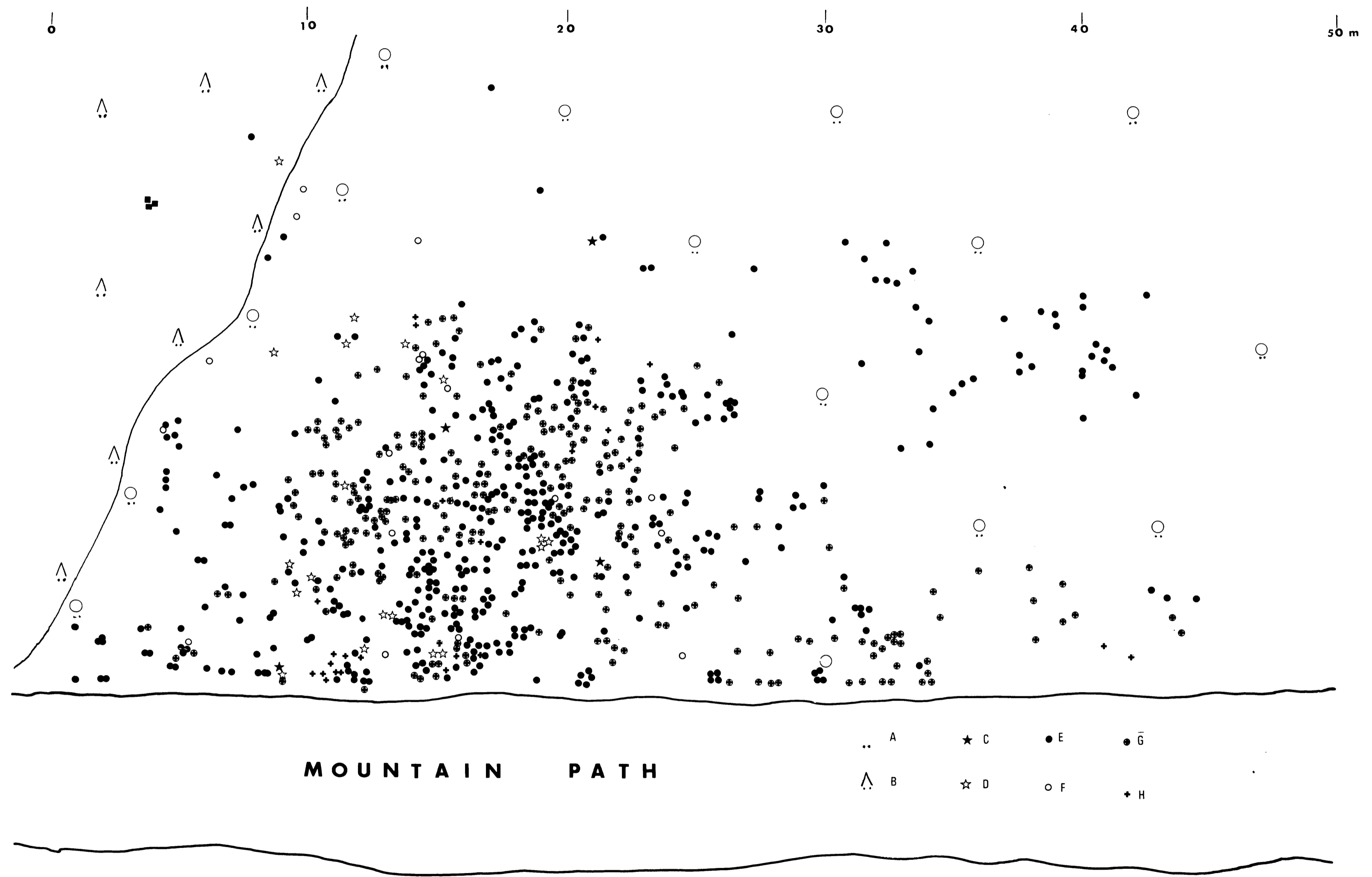


Fig 9

1966 K. Fujita Oct. 10 1966-MITO) Mt. Hanazono (M. Suzuki Oct. 1958-MITO, K. Shiota May 31 1961 Aug 16. 1966-MITO) Takahagi city Shimo-kimida (M. Suzuki Dec. 1 1958-MITO Aug. 1 1967-MITO) Mt. Tsuchi-dake (S. Yahara Nov. 12 1961-MITO, M. Niibori Oct. 4 1970-MITO) Hitachi city Mt. Takasuzu T. Toyosaki Aug. 30 1959-MITO).

This species occurs in the Southern part of the Tōhoku district of Japan (fig. 6 map). It can be readily seen from this map that *M. trilobum* are temperate summer-green forests. This plant grows under the trees such as *Fagus crenata*, *Quercus mongolica* var. *grosserrata*, *Carpinus laxiflora* *Acer palmatum* subsp. *amoenum*, *Clethra barbinervis*, *Palura chinensis* form. *pilosa*, *Rhododendron quinquefolium*, *Hydranger hirta*, *Limdera umbellata* var. *membranacea* etc.

Fig. 9. Mt. Hanazono ca. 850 m above sealevel in Ibaraki Prefecture. Showing the distribution of several *Macroclidium* species at the localities surveyed.

A: summergreen forest; B: *Cryptomeria japonica* forest; C: *M. Koribanum* (fl); D: *M. Koribanum* (steril); E: *M. trilobum* (fl.) F: *M. trilobum* (steril); G: *M. robustus* (fl.); H: *M. robustum* (steril).

At several localities northern Ibaraki Prefecture, both species, *M. trilobum* and *M. robustum* were found growing sympatric habitats (fig. 8).

(5) **Macroclidium Koribanum** Nakai in B. M. T. 26, 249 (1912), pro sp. Hara Sperm. Jap. 2: 230 (1952).

*Pertya* × *Koribanum* (Nakai) Makino et Nemoto, Fl. Jap. ed. 1, 83 (1925)-Kitamura in J. J. B. 14, 385 (1938); Compos. Jap. 2, 304 (1940).

*Macroclidium trilobum* var. *Koribanum* (Nakai) Honda Nom. Pl. Jap. 364 & 510 (1939).

*M. robustum* × *M. trilobum*

Nom. Jap. Sendai-haguma

Caulis erectus cum inflorescentia paniculata 30-50 cm glaberrimus Folia glaberrima petiolata ovata utrinque acuminata subtrinervia, arguta remoteque serrata margine scaberrula. Lamina 6-10 cm longa 3.5-6.5 cm lata. Inflorescentia glaberrima foliacea. Flores subsessiles volsessiles.

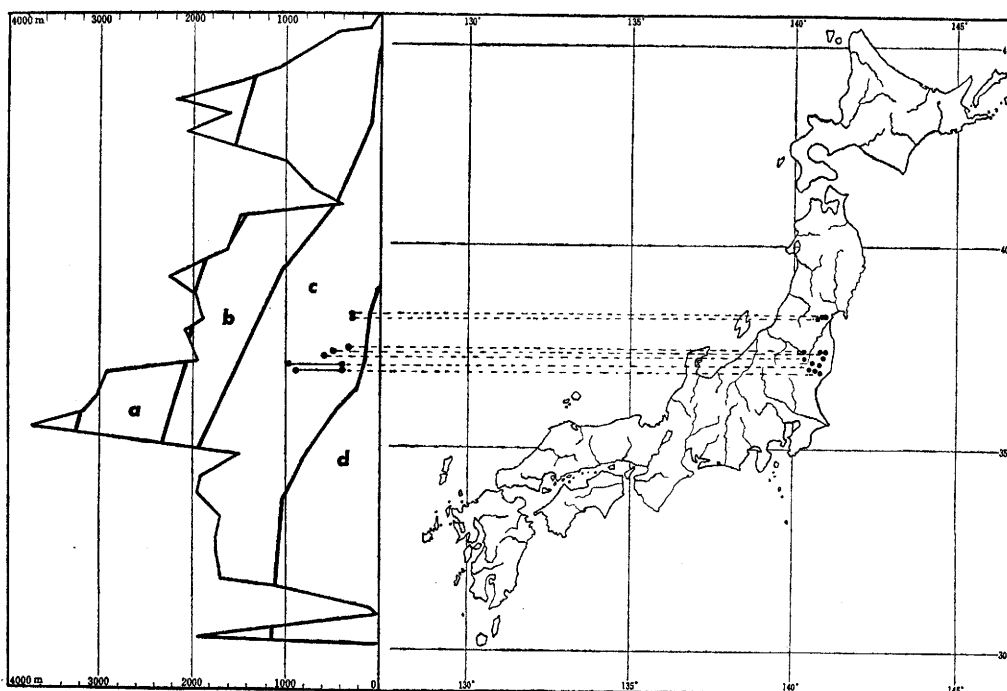


Fig. 10. Map showing the vertical distribution of *Macroclidium Koribanum* at the localities surveyed.

a: the alpine zone b: the zone of boreal, coniferous forests; c: the zone of temperate, deciduous broad-leaved forests; d: the warm-temperate forests.

It can be readily seen from this map *M. Koribanum* is confined to the boreal coniferous, or temperate summer-green forests.

Specim. repres. RIKUZEN: Mt. Taihaku-san (H. Koriba Oct. 1901-TI) Sendai city Mukai-yama (A. Kimura Oct. 26 1928-KYO) Kamega-oka Hachiman-yama (Y. Ito Aug. 14 1924-TNS) Miyagi-gun Ohsawa village (Y. Hayashi Oct. 25 1955-TNS) IWASHIRO: Asaka-gun Maru-ji village (T. Hida Aug. 4 1927-TI) IWAKI: Mt. Ohtakine (M. Suzuki June 1961-MITO) Mt. Mantaro (M. Suzuki June 27 1957-MITO) Mt. Hayama (M. Suzuki June 24 1957-MITO) Mt. Yadaijin (M. Suzuki June 25 1957-MITO) Mt. Hebuse (M. Suzuki June 23 1957-MITO) Hanawa town (M. Suzuki June 9 1957-MITO) Mt. Seki-san (M. Suzuki May 13 1958-MITO) HITACHI: Mt. Yamizo (T. Ami June 15 1963-MITO) Mt. Hanazono (M. Suzuki Sep. 16 1966-MITO).

This species seems to be the oval leaves form of *M. trilobum*, *M. Koribanum* and *M. trilobum* grow sympatrically here.

### Acknowledgements

I wish to thank curators of the herbaria who kindly gave me permission to use valuable collections of *Macrocladidium* from Japan. My grateful acknowledgements are also due to Prof. Masami Sato for his constant help during the course of the present project, to Miss. Tamako Ami for her kind support in field work in Ibaraki Prefecture. To Dr. Shoichi Kawano and Mr. Yoshinobu Ikegami for their unfailing warm encouragement.

### References

- 1) T. Makino, Plantae Japonenses novae vel minus cognitae. Bot. Mag. Tokyo **12**:80 (194) (1898).
- 2) T. Makino, Plantae Japonenses novae vel minus cognitae Bot. Mag. Tokyo **14**: 144 (1900).
- 3) T. Nakai, Notulae ad plantas Japoniae et Koreae VI. Bot. Mag. Tokyo **16**:247-250 (1912).
- 4) S. Kitamura, Les Mutisieae du Japon (II). Journ. Jap. Bot. **14**:377-388 (1938).
- 5) M. Suzuki, Phytogeographical studies in Northern Kanto and Southern Tohoku Districts, Japan III. Bull. Art & Sci. Ibaraki Univ. no. **11**:63-73 (1960).
- 6) Hara, H. and Kanai, H., Distribution Maps of Flowering Plants in Japan **2**: 190~191 (1959).

### Abstract

The Genus *Macrocladidium* Maxim., which is endemic in Japan, is a small belonging to the Compositae-Mutisieae that consists of only five species, i. e., *M. rigidulum* MAKINO, *M. robustum* MAXIM., *M. trilobum* MAKINO, *M. Koribanum* NAKAI and *M. Suzukii* KITAMURA.

The last two species are generally considered as, natural hybrid of *M. robustum* × *M. trilobum* and *M. rigidulum* × *M. trilobum* and are distributed in narrow ranges.

I have been interested in these species for more than ten years and having carefully investigated in the field.

In this paper I show the geographical ranges and vertical distribution of the five species of *Macrocladidium*.

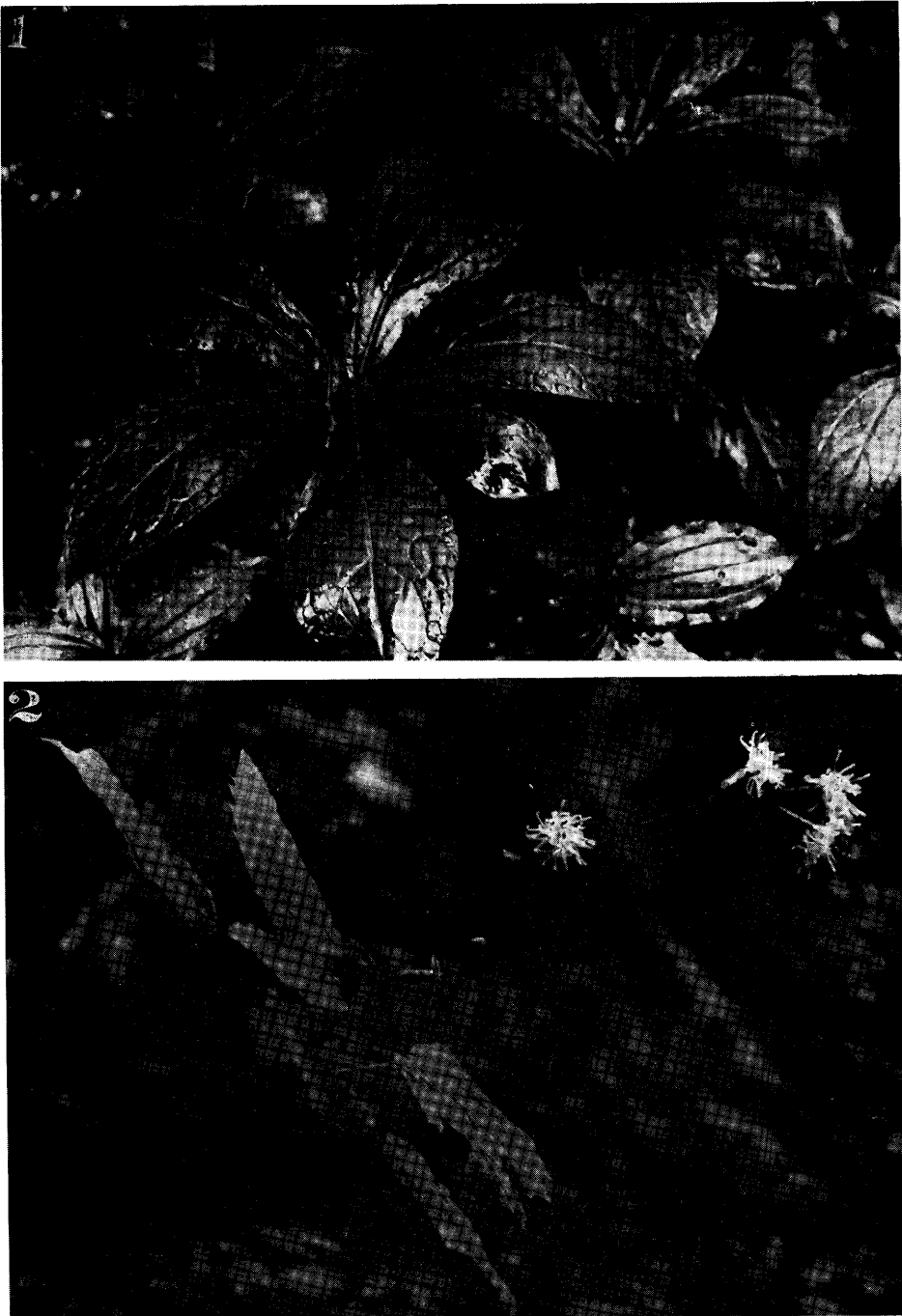


Plate 1

- 1 *Macroclinidium rigidulum* in Mt. Aizu-koma ca. 1300 m sea level in Fukushima Prefecture.
- 2 *M. robustum* in Mt. Hanazono ca. 830 m above sea level, Ibaraki Prefecture.

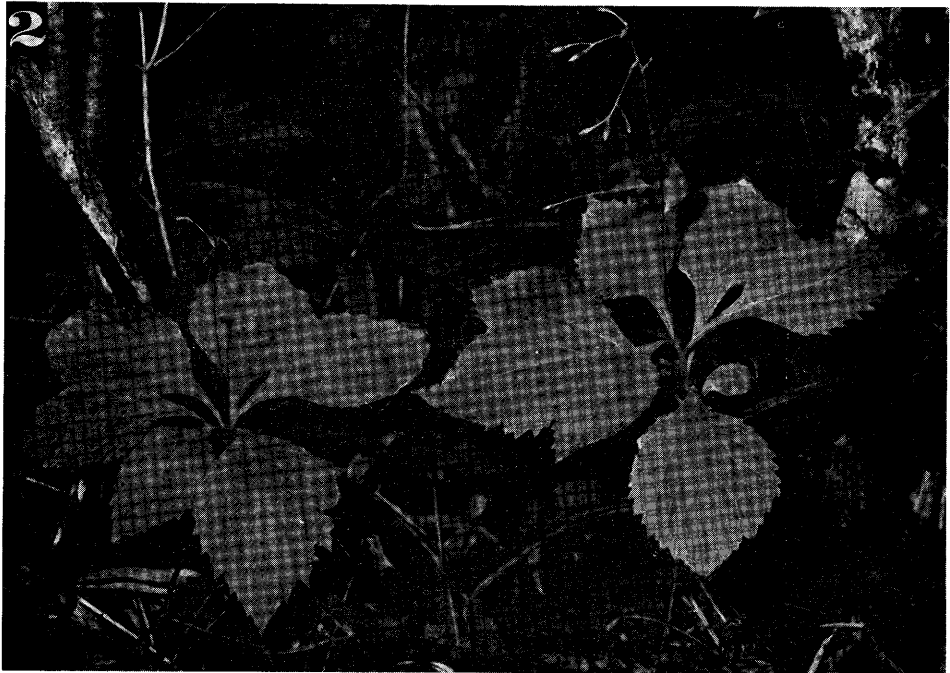
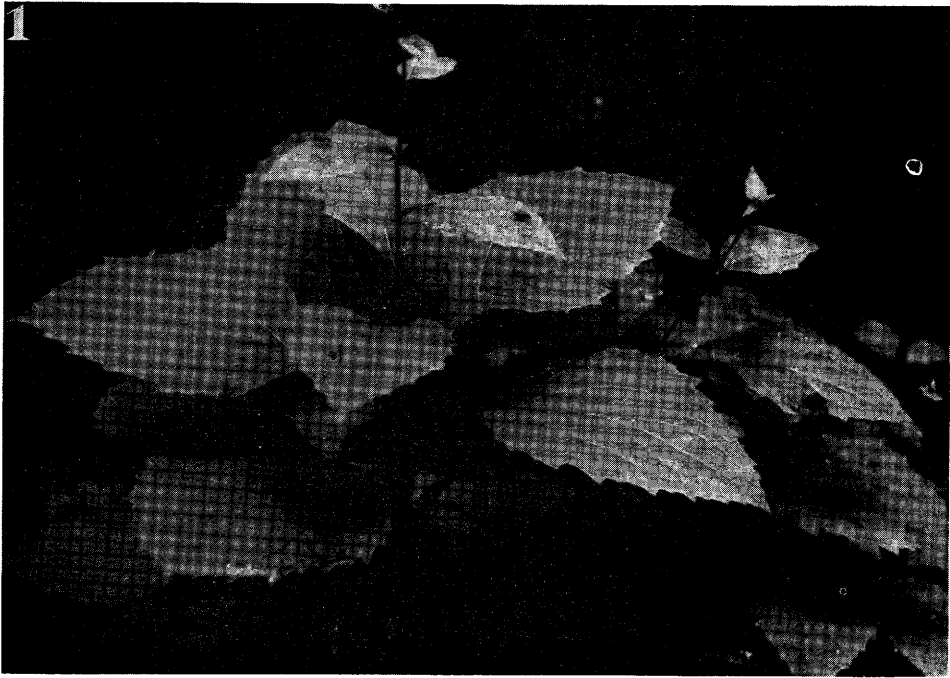


Plate 2

- 1 *M. Suzukii* in Mt. Hanazono ca. 820 m above sea level, Ibaraki Prefecture.
- 2 *M. Suzukii* in Mt. Yamizo ca. 870 m above sea level, Ibaraki Pref.



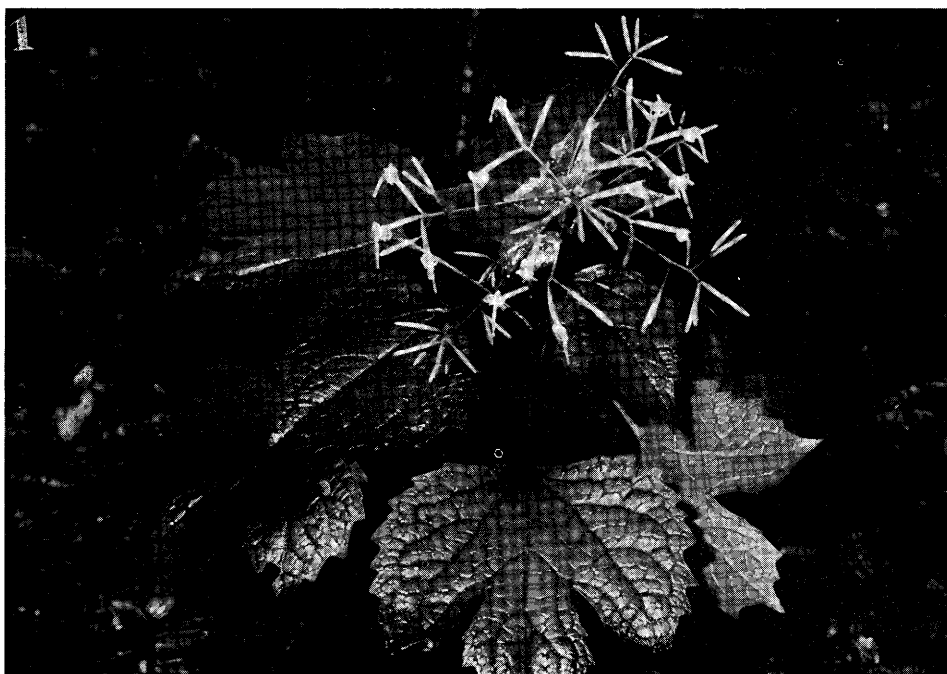
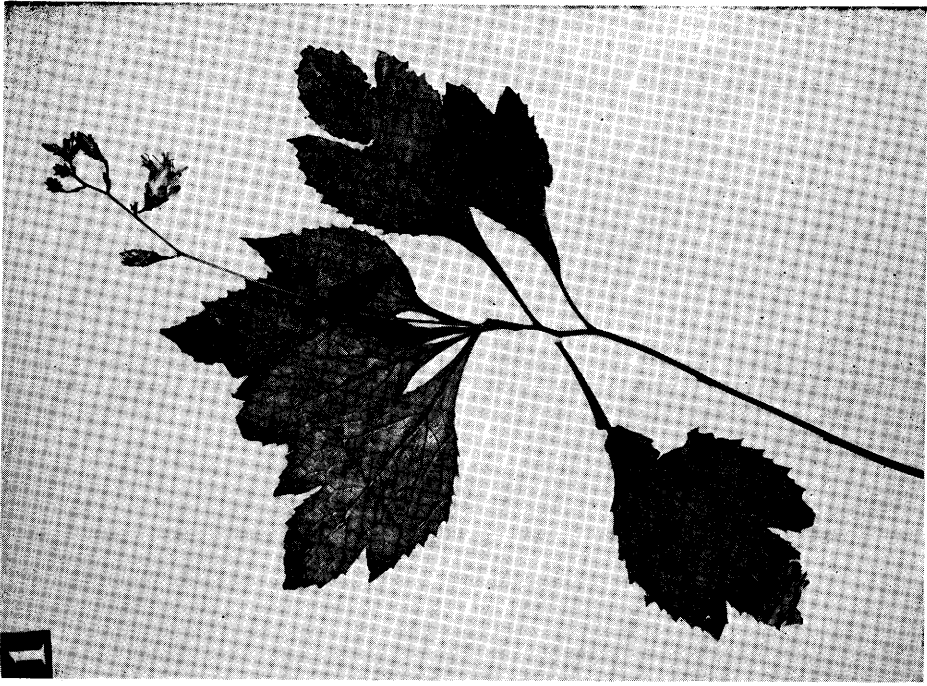
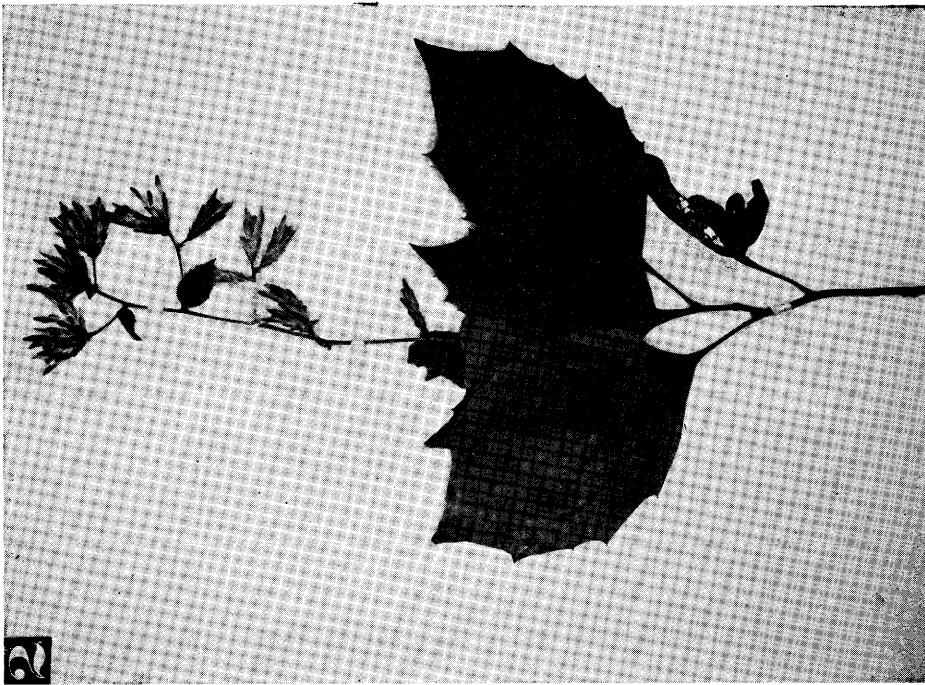


Plate 3

- 1 *M. trilobum* in Mt. Yamizo ca. 700 m above sea level, Ibaraki Pref.
- 2 *M. Koribanum* in Mt. Yamizo ca. 800 m above sea level, Ibaraki Pref.



1 *M. Suzukii* var. *yamizoanum* from Herb. of the Univ. Ibaraki, Mito.



2 Type specimen of *M. Koribanum* from Herb. the Univ. of Tokyo, Tokyo.

Plate 4