

Jin MURATA*: *Arisaema taiwanense* J. Murata (Araceae),
a new species from Taiwan**

邑田 仁*: 台湾産テンナンショウ属の1新種

As a member of the overseas project on the flora of Taiwan carried out in 1982 and 1984 (organized by Dr. H. Ohashi), the author had opportunities to visit Taiwan where he observed many populations of *Arisaema* in various localities. Through the field research, living and dried material of the genus was obtained and has been studied at the Botanical Gardens, The University of Tokyo. For further examination, in March 1985, flowering populations of *Arisaema* were observed on Mt. Alishan, Taiwan. As a result of these studies, a new species, *Arisaema taiwanense* J. Murata (Sect. *Sinarisaema*) consisting of two varieties, var. *taiwanense* and var. *brevipedunculatum* J. Murata, is described here.

Arisaema taiwanense J. Murata, sp. nov. (Figs. 1, 2, 3)

A. consanguineum sensu Hayata non Schott, Icon. Plant. Formos. 5: 241 (1915) p. p.

Tuber subglobose, intus et extus subviride. Folium solitium, pedati (7-)9-13-foliolatum; foliola oblanceolata, in caudam filiformem usque ad 20 cm longam contracta. Spatha apice acuta vel acuminata, in caudam pendentem filiformem usque ad 40 cm longam angustata. Spadicis appendix supra albidus, plerumque distincte rugosus, basin floribus abortivis subulatis obtectus. Typus: Taiwan, J. Murata 17248 (holotypus TUS, isotypi KYO, TAI, TI).

Paradioecious unisexual¹⁾. Tuber depressed globose, 2-6 cm in diameter, greenish inside and outside. Pseudostem 2-30 cm long, light green, mottled with purple-brown marks or not. Cataphylls greenish to reddish with or without purple-brown marks. Leaf 1, radiately (7-)9-13-foliolate; leaflets oblanceo-

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¹⁾ For the definition of this term, see J. Murata 1984.



Fig. 1. *Arisaema taiwanense* var. *taiwanense* on Mt. Alishan (J. Murata 17511).

late, filiform-caudate, with a thread-like pendulous tail attaining 20 cm in length, green above, glaucous beneath; petiole usually longer than the pseudostem, 10–40 cm long. Peduncle distinctly shorter than the petiole, 1–15 cm long, recurved in fruit. Spathe dark purple with fine green marks between veins outside; tube white to pale yellowish green inside, tinged with purple in the lower part, thick cylindrical, sometimes gradually opening to the mouth, 2–5 cm long, 3.7–8 cm wide when opened; blade dark purple inside without distinct stripes, ovate to widely ovate 3–7 cm long, 3.5–7 cm wide, acute to acuminate in the upper part and prolonged as a filiform tail to 40 cm long. Spadix 3.5–7 cm long including the appendage; appendage sessile to stipitate, thick cylindrical, 1.8–4.5 cm long, 4–13 mm wide, whitish in the upper part, strongly or weakly rugose at the apex, with fine bristly projections in the lower part, usually in the female spadix, but occasionally in the male.

Distribution: Endemic to Taiwan.

var. **taiwanense** (Figs. 1, 2, 3B)

Pseudostem 5–30 cm long. Pseudostem and cataphylls mottled with purple-brown marks. Peduncle 5–15 cm long. Spathe-tube 3.8–5 cm long, 5–8 cm wide when opened; the blade weakly concaved and arched, 5–7 cm long excepting the thread-like tip, 4–6.5 cm wide. Spadix appendage 18–45 mm long, 4–13 mm in diameter.

Chromosome number: $2n=28$ (J. Murata 17248, 17249, 17250, 17251).

Specimens examined: Taiwan. Ilan Co.: Taipingshan, B. Hayata? s.n., May 8, 1917 (TI); S. Suzuki 187, Jul. 14, 1929 (TAI). Miaoli Co.: Mt. Anmashan, T. C. Huang 8070, 8114, 8115, Apr. 7, 1978 (TAI). Taichung Co.: Seizan 1300 m, K. Nakagawa 55, Mar. 22, 1982 (KYO); West side of Mt. Chungshuehshan, alt. 2000–2200 m, Y. Tateishi, Y. Endo, T. Nemoto & H. Sakai 21159, Sept. 28, 1984 (TUS); (cult. in greenhouse of Tohoku Univ., Sendai), T. Nemoto 2393, Jan. 27, 1985 (TUS); Mt. Nanhutashan, the base — Yunlengshanchuang, alt. 1950–2450 m (cult. in Bot. Gard. Univ. Tokyo), J. Murata 17251, May 4, 1985 (TUS, TI). Hualien Co.: T. Shimizu 1788, Mar. 30, 1961 (TI); around Mt. Chinsui 600–1400 m, T. Shimizu & M. T. Kao 11788, Mar. 30, 1961 (KYO); near Sakadan, Kwaren-gun, M. Tagawa 3725, Mar. 24, 1940 (KYO); Tienshan (cult. in Bot. Gard. Univ. Tokyo), J. Murata 17500, Apr. 20, 1985 (TI). Nantou Co.: Chi-fi, near Chi-tou, alt. ca. 1600 m, C. C. Hsu 9166, Apr. 2, 1969 (TAI); Zhiyuanshuang, Jenai-village (cult. in greenhouse of Tohoku Univ.

Sendai), Y. Tateishi & T. Nemoto s. n., June 2, 1984 (TUS); Mt. Nankao-shan, Yunhai — Weishang, alt. 2050-2350 m, Y. Tateishi, J. Murata & T. Nemoto 18240, Aug. 26, 1984 (TUS); Mt. Luandashan (cult. in Bot. Gard. Univ. Tokyo) J. Murata 17253, Apr. 19, 1985 (TI). Chiayi Co.: Alishan, Chuang & Kao s. n., Mar. 15, 1961 (TAI), C. C. Hsu & Kuo 6722, Mar. 26, 1970 (TAI), K. Ishizaki s. n., Mar. 24, 1931 (TAI), R. L. Wang 2303, Mar. 20, 1961 (TAI); Alishan, Erhwanping (Nimandaira), B. Hayata s. n., Apr. 1, 1914 (TI), alt. ca. 2000 m, Y. Tateishi, J. Murata & T. Nemoto 17901, Aug. 19, 1984 (TUS), J. Murata & F. S. Huang 17667, Mar. 21, 1985 (KYO, TAI, TI, TUS), (cult. in Bot. Gard. Univ. Tokyo), J. Murata 17248, Apr. 19, 1985 (**Type**), J. Murata 17249, 17250, May 5, 1985 (TI); Alishan, Heishana — Nimandaira, B. Hayata ? s. n., Apr. 3, 1914 (TI). Kaoshiung Co.: Kizan-gun, Miharashi — Hiyama-chuzaisho, Y. Yamamoto & K. Mori 601, Aug. 12, 1937 (TAI); Keinanzan, S. Okamoto s. n., May 10, 1939 (KYO). Taitung Co.: Izumo — Shukai, Y. Yamamoto & K. Mori 492, Aug. 10, 1937 (TAI).

var. **brevipedunculatum** J. Murata, var. nov. (Fig. 3A)

Pseudocaulis 2-10(-15) cm longa, haud maculata. Cataphyllus haud maculatus. Pedunculus 1-5 cm longus. Spatha tubo 2-4 cm longo, 3.7-6 cm lato in planato, limbo concavo fornicato, plaeter caudam filiformem 3-5 cm longo, 3.5-7 cm lato. Spadicis appendix 18-25(-35) mm longus, 4-8(-15) mm diametro. Typus: Taiwan, J. Murata 17252 (Holotypus TUS, isotypi TAI, TI).

Pseudostem 2-10 cm long, greenish, without coloured marks. Cataphylls greenish pale brown, without coloured marks. Peduncle 1-5 cm long. Spathe-tube 2-4 cm long, 3.7-6 cm wide when opened; the blade concaved and arched, 3-5 cm long excepting the thread-like tip, 3.5-7 cm wide. Spadix-appendage 18-25(-35) mm long, 4-8 mm wide.

Chromosome number: $2n=28$ (J. Murata 17252)

Specimens examined: Taiwan. Pingtung Co.: Mt. Daibusan 1480-2000 m, T. Namba, M. Mizuno, A. Kato, I. Okuno, M. Kubo, K. Yoneda & Tani 744, Jul. 17, 1968 (TI); Mt. Peitawu-shan, Kuaiku-shanchuang — the base, alt. 1550-2100 m, Y. Tateishi, T. Nemoto, Y. Endo, H. Sakai & H. Iketani 19562, 19564, Sept. 21, 1984 (TUS), (cult. in Bot. Gard. Univ. Tokyo) J. Murata 17252, May 5, 1985 (**Type**), J. Murata 17512, May 17, 1985 (TI); Kuaiku-shanchuang — the top, alt. 2100-3090 m, Y. Tateishi, T. Nemoto, Y. Endo, H. Sakai & H. Iketani 19359, Sept. 20, 1984 (TUS).

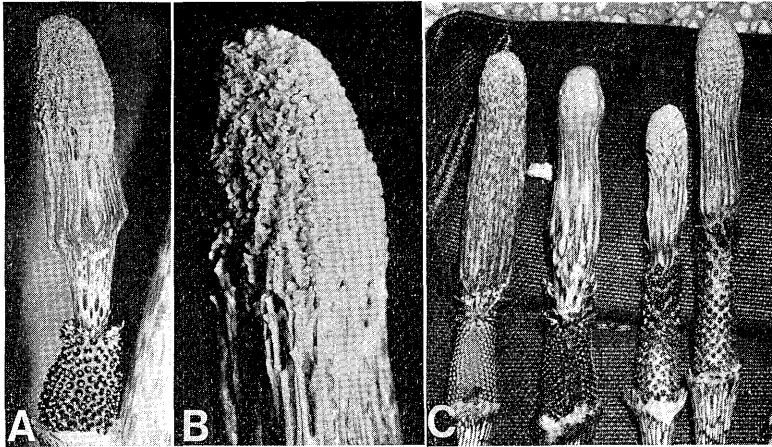


Fig. 2. Spadices of *Arisaema taiwanense* var. *taiwanense*. A, B: J. Murata 17500 (A $\times 1$, B $\times 2.3$). C: J. Murata 17511 ($\times 0.7$).

Arisaema taiwanense J. Murata is characterized, and distinguished from the known species in the section *Sinariaema*, by the greenish colour of the tuber, the extremely long thread-like tips of leaflets and spathe, and the short but thick spadix appendage. The spadix appendage of this species is typically stipitate at the base and rugose in the upper part (Fig. 2A) but not constantly so even within a population. The appendage sometimes lacks the stipe at the base and is sometimes weakly rugose in the upper part (Fig. 2B).

The plants of this species collected in Mt. Tawushan

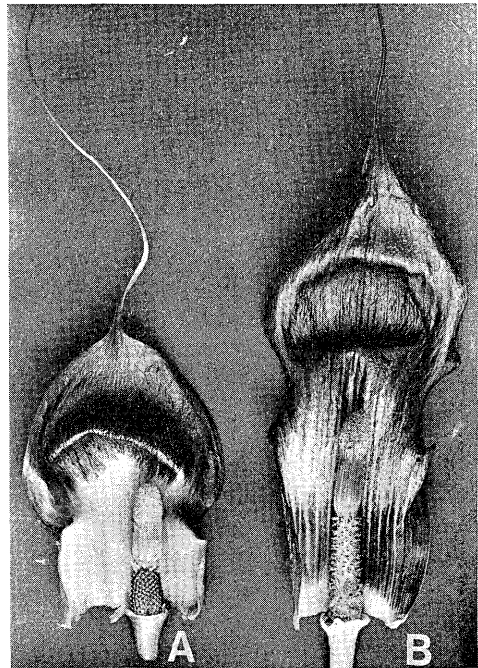


Fig. 3. Inflorescences of *Arisaema taiwanense* ($\times 0.5$). A: var. *brevipedunculatum* (J. Murata 17512). B: var. *taiwanense* (J. Murata 17513).

(Daibusan in Japanese) are distinct from the typical form of *A. taiwanense* in having the pseudostem and peduncle so short that the inflorescence is situated very near to the ground, the short and thick spathe-tube (Fig. 3A), and the cataphylls and petiole without distinct purple marks. This form is therefore recognized as variety *brevipedunculatum*.

When Hayata (1915) described *A. consanguineum* in his *Icones Plantarum Formosanarum*, he included in it not only true *A. consanguineum* Schott but also the species described in this paper. His description and the specimens cited were mixture of these two species. In Huang (1960) and Liu & Huang (1963), this new species was also included in *A. consanguineum*.

In the nature of the peduncle recurving when bearing fruits, *Arisaema taiwanense* is similar and seems to be close to *A. consanguineum* and its allies. This species group is composed of *A. taiwanense* and the following four species, i.e. *A. consanguineum* which distributes widely in India and the Himalayan region eastward through mainland China and Indo-China to Taiwan, *A. formosanum* (Hayata) Hayata of Taiwan, *A. polyphyllum* (Blanco) Merr. of Philippines and *A. echinatum* (Wall.) Schott of the eastern Himalayan and adjacent regions. Among these species, *A. echinatum* is most similar to *A. taiwanense* but differs in the characters described below.

A. echinatum has leaflets without thread-like tip, the spathe basically green but often partly dark purple inside, the tube slender, the thread-like appendage of the spathe less than 15 cm, the spadix appendage echinulate (i.e. with hairs consisting of several cells) in the apical portion, distinctly stipitate and without bristly projections in the lower part (according to Li (1975), the appendage sometimes estipitate and with projections in the lower part; this description appears to be based on plants from mainland China), and the ovary bottle shaped with 8-lobed thickening on the shoulder (Hara 1971).

In Taiwan there are two additional species of section *Sinarisaema*, *A. consanguineum* (= *A. kelung-insularis* Hayata, *A. biradiatifoliatum* Kitamura) and *A. formosanum*. They are widely distributed in Taiwan from the lowlands to over 2500 m; *A. taiwanense* is confined to the mountains between 1000 and 2300 m. In August, 1984, the author found both *A. taiwanense* and *A. consanguineum* to be abundant on Mt. Alishan between 1900 and 2200 m, but on March 21, 1985, only one individual of *A. consanguineum*, not yet flowering, was found there among many flowering individuals of *A. taiwanense*. At the same

time, however, between 1500 and 1900 m there were many flowering individuals of *A. consanguineum*, and between 1000 and 1500 m many flowering individuals of *A. formosanum*. In such a way these species may be isolated seasonally and/or geographically.

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1982年および1984年に行われた台湾産のマメ科植物調査(代表者 大橋広好東北大学教授)に参加する機会を得、テンナンショウ属植物を観察し、生材料及と腊葉標本を採集することができた。また1985年3月に、阿里山で現地調査を行った。これらの調査と、試料の比較検討により、台湾にテンナンショウ属の新種があることを確認したので、*Arisaema taiwanense* J. Murata と命名し発表する。早田 (1915) は *A. consanguineum* Schott の名のもとに台湾産の1種を記載したが、これには形態上真の *A. consanguineum* にあたるものと本種とが含まれている。早田が名付けたナガヒゲウランマソウという和名はむしろ本種の特徴をよく示すものであるので、本種の和名にこれを適用したい。なお、京都大学理学部のハーバリウムには、堀田満氏により *A. echinatum* (Wall.) Schott var. *insulare* M. Hotta と記された本種の標本があるが、この学名は

正式に発表されてはいない。

本種は *Sinarisaema* 節に属するもので、球茎の内部および外部が淡緑色であること、小葉および仏炎苞の先が長く糸状に伸びて垂下すること、花序の付属体が太く短く、しばしば有柄となり先端部に通常著しい（時にはやや不明な）しわ状の凹凸があることなどの特徴がある (Figs. 1, 2, 3)。本種のうち、大武山で採集された植物はいずれも偽茎および花柄が著しく短くて斑がなく、また仏炎苞の筒部が太く短かいという点でよくまとまっており、他地域のものとは異なっている。そこでこれを変種と認め *var. brevipedunculatum* J. Murata と命名した。

A. taiwanense は花後に花柄が下向きに曲るという特徴をもつ点で、アジア大陸の東南部および台湾に広く分布する *A. consanguineum* や、東部ヒマラヤおよび隣接地域に分布する *A. echinatum*, 台湾産の *A. formosanum* およびフィリピン産の *A. polyphyllum* と共通で、これらと共に近縁な一群をなすものと考えられる。

□ New York Botanical Garden: Index to specimens filed in the New York Botanical Garden vascular plant type herbarium 587 pp. 1985. Meckler Pub., Westport. 1982年に製作頒布されたニューヨーク植物園のタイプ標本マイクロフィッシュの索引で、P.K. Holmgren ほか6人の編集になる。植物名は科ごとにまとめられ、その中は属名のABC順、属内は地域別にまとめられている。この地域別は不便で、全部ABC順の方がよかった。それぞれの学名には著者名、原産地、フィッシュ番号が示されている。科の配列は同植物園の分類順で、その索引は巻頭1〜8頁にある。本書はさきのマイクロフィッシュ購入先に配布されている。この企画は1981年にはじまり、73,000の植物名を取捨検討のうえ5年を費やして出版に至っているが、その間の労働量が序文に示されていて興味深い。1982年7月に1人のパートタイマーがワープロによる入力作業にかかり、9月には2人のスタッフがフィッシュナンバーの記入にかかったが、手にあまったため11月にはさらに2人のスタッフが動員された。それでも間に合わず、さらに4人のフルタイムを4ヶ月やとった。7人の編集者の費やした時間は5781時間(165週)である。記録作業のための労働時間はわかっていないが、ある1人は2年にわたって週20時間働き、他の1人は10ヶ月間週15時間働いたことがのべられている。われわれの頭では週20時間という労働が記録に値するかどうかわからないが、彼等にとって非常なアルバイトであったのだろう。わが国ではこのような作業は研究の合間にやることで、「こんなに働いた」と公表することはむしろはしたないことといわれかねない。しかし、こういう仕事は思いのほか手間も暇も、当然金もかかるということは、もっと広く認識されるべきだろう。(金井弘夫)