

## A New Species of *Bistorta* (Polygonaceae) from Japan

Koji YONEKURA, Junko IKETSU\* and Hiroyoshi OHASHI

Biological Institute, Faculty of Science, Tohoku University, Sendai, 980 JAPAN

(Received on September 14, 1994)

A new species of Polygonaceae, *Bistorta abukumensis* Yonekura, Iketsu et H. Ohashi (Holotype in TUS), is described. It is found in Mts. Abukuma in Fukushima and Miyagi Prefectures of northern Japan. The new species is similar to *B. tenuicaulis* and *B. suffulta*, but differs from the former in radical-leaves, flowering stems and pedicels, and from the latter in rhizomes, inflorescences and pedicels.

In Mts. Abukuma, *Bistorta tenuicaulis* and *B. suffulta* were recorded at several localities in Fukushima Prefecture (The Compilation Committee of Flora of Fukushima Prefecture 1987) and, also, they were known to occur in Miyagi Prefecture. Plants of these species are, however, not referable to the true species of the names. We have collected and examined a number of living materials of these *Bistorta* plants at various habitats in the mountains in order to know their biological nature as well as useful taxonomic characteristics with their variation ranges. Also, we have made detailed comparative studies based on herbarium specimens of *Bistorta* at several herbaria in Japan. In conclusion, the plants were entirely different from the previously recorded two species as well as any known species of the genus. We, accordingly, describe the plants as a new species. It is similar to *B. tenuicaulis* and *B. suffulta*, however, which are clearly distinguished as shown in the key below.

Key to the new species in comparison  
with the allied species of *Bistorta*

1. Flowers 2 at a node of inflorescence, hermaphrodite, flowering of the two one by one. Rhizome

- usually not elongate. Pedicels less than 2.4 mm long ..... *B. suffulta*
1. Flowers 1 (seldom 2 at the base) at a node of inflorescence, gynodioecious, but female plants rare (especially *B. tenuicaulis*). Rhizome usually elongate ..... 2
2. Radical-leaves at flowering oblong or elliptic, acute or obtuse at apex, acute or cuneate at base, decurrent to the petiole, glabrous on the nerves at basal parts of the leaves beneath. Stems at flowering almost equal to or lower than the radical-leaves, with 1–2 stem-leaves. Pedicels 1.5–3 mm long. .... *B. tenuicaulis*
2. Radical-leaves at flowering ovate or ovate-elliptic, acuminate at apex, cordate at base, never decurrent to the petiole, pubescent on the nerves at basal parts of the leaves beneath. Stems at flowering higher than the radical-leaves, with 2–4 stem-leaves. Pedicels 2–7 mm long (3–7 mm long in hermaphrodite flowers or 2–6 mm long in female flowers). .... *B. abukumensis*

***Bistorta abukumensis*** Yonekura, Iketsu et H.

Ohashi, sp. nov. (Fig. 1).

Haec species *Bistortae tenuicauli* et *B. suffultae* affinis, sed a priori caule quam foliis radicularibus altiore 2–4 foliato, foliis radicularibus laminis ovatis vel ovato-ellipticis basi cordatis in petiolum vix decurrentibus, subtus ad nervos principalium prope basin pubescentibus, et a posteriori rhizoma semper elongato sparse moniliformi, nodis inflorescentiae 1-floriferis, pedicellis plerumque longioribus (3–7 mm longis in floribus hermaphroditis) differt.

Herba perennis gynodioecia. Rhizoma elongatum in nodulis incrassatum sparse moniliforme saepe ramosum. Caules 1–4; caulis quam folia radicalia altior, 15–30 cm altus, 2–4 foliatus. Folia radicalia sub anthesi 3–5; primigena cum petiolo 3–10 cm longa, laminis ovatis, ovato-rotundatis vel rotundatis, 1.5–4 cm longis, 1.2–2.5 cm latis, apice obtusis vel subacutis basi truncatis, subtus praeter nervos atroviolaceis; sub anthesi cum petiolo 10–25 cm longis, laminis ovatis vel ovato-ellipticis, 5–12 cm longis, 3–8.5 cm latis, apice acuminatis, basi cordatis in petiolum vix decurrentibus, supra ad marginem subscaberulis subtus ad nervos principalium prope basin pubescentibus, petiolo 4–15 cm longis. Folia caulina ovata vel ovato-oblonga, praeter petiolum (1.2–) 2–6 (–9) cm longa, (1–) 1.5–4.5 cm lata, inferiora petiolata apice subobtusata basi truncata vel leviter cordata, superiora non petiolata amplexicaulia apice vulgo acuta vel acuminata. Ochlea membranacea glabra 3–15 mm longa. Inflorescentia racemosa vulgo unica terminalis et interdum axillares, 2–4 cm longa, 14–18 mm (♀) vel 11–15 mm (♂) crassa, nodis 1 (inferioribus rarissime 2)–floriferis. Bractee castaneae membranaceae anguste triangulares 3–4 mm longae apice caudato-acuminatae. Perianthia 5-fissa, teparis albis interdum ad apicem leviter rubescentibus; stamina 8; ovaria rubescentia, styli 3 (rarissime 4), (1.8–) 2–3.2 (–3.4) mm longi, filiformes, stigmatibus capitatis. Flores hermaphroditis: pedicelli (3–) 4–7.5 mm longi; perianthia (2.5–) 2.8–3.5 (–4) mm longa, 4–5 mm

diam., teparis notabiliter patentibus ovatis 2.2–3 mm longis 1–1.5 mm latis apice obtusis vel subacutis; stamina (2.7–) 3–4 mm longa, antheris quam perianthiis exsertis atroviolaceis fertilibus; pollina subproolata 26–37  $\mu\text{m}$   $\times$  23–30  $\mu\text{m}$  diam. Flores feminei: pedicelli 1.8–6 mm longi; perianthia 2.5–3.5 (–4) mm longa, 2–4 mm diam., teparis moderanter patentibus, 2–2.8 (–3) mm longis; stamina 1.2–3 mm longa, antheris non exsertis roseis vel carneis minoribus sterilibus. Achenia castanea late ovata trigona, 2.5–3 mm longa. Numerus chomosomatum  $2n=24$ .

Nom. Jap.: Abukuma-toranoo (nov.) アブクマトラノオ

Typus: Japan; Miyagi Pref., Watari-gun, Yamamoto-machi, Yamadera, E. foot of Mt. Shinzan, alt. 55–60 m (K. Yonekura 93332, 9 May 1993, Holotypus in TUS).

Other representative specimens examined.

Miyagi Pref., Natori-shi, Medeshima (T. Kikuchi s.n., 24 May 1975, TUSG); Watari-gun, Yamamoto-machi, Yamadera, E. foot of Mt. Shinzan, alt. ca. 50 m (T. Mori 4234, 19 May 1987, TUS; J. Iketsu 1491, 22 May 1988, TUS; K. Yonekura 93333, 9 May 1993, TUS); Yamamoto-machi, Yamadera, along Yamadera-gawa River, alt. 40–50 m (K. Yonekura 93329, 9 May 1993, TUS); Yamamoto-machi, Sakamoto, Kuboma, alt. 80–90 m (K. Yonekura 93342, 9 May 1993, TUS); Yamamoto-machi, Sakamoto, along Sakamoto-gawa River, alt. 80–90 m (K. Yonekura 93344, 9 May 1993, TUS).

Fukushima Pref., Sohma-gun, Shinchi-machi, Fukuda, E. of Fukuda Pass, along Mitaki-gawa River, alt. 100–200 m (J. Iketsu and H. Iketani 184, 18 May 1986, TUS); Shinchi-machi, Mayumi, E. of Suzuu Pass, along Yachida-gawa River (K. Shoji s.n., 2 May 1987, TUS), *ibid.*, alt. ca. 120 m (T. Mori 914, 12 May 1985, TUS; J. Iketsu 2003, 1 May 1990, TUS); Haranomachi (T. Fujita s.n., 27 Apr. 1956, TUS); Haramachi-shi, Takanokura, Hosokura, Niita-gawa Gorge, alt. 70–80 m (H. Ohashi and K. Yonekura 28220 & 28221, 26 Apr. 1993, TUS); Sohma-gun, Odaka-machi, Kanaya, along Odaka-gawa River, alt. 130–160 m (K. Yonekura 93752, 10 Oct. 1993, TUS); Futaba-gun, Namie-machi, Takase-gawa Gorge, cult. in Sendai (K. Yonekura 93319, 6 May 1993, TUS); Futaba-gun, Tomioka-machi, Kamiteoka, along Tomioka-gawa River, Takigawa Gorge, alt. 170–190 m (K. Yonekura and Y. Ishiguri 94948 & 94954, 18 Jun. 1994, TUS); Futaba-gun, Naraha-machi, Kido-gawa Gorge, Onnataira – Ôtakijinja, alt. ca. 150 m (T. Nemoto 2934, 20 Apr. 1987, TUS); *ibid.*, near Ôtaki-jinja Shrine, alt. ca. 120 m (T. Kurosawa, J. Iketsu and K. Yonekura 4332, 4 May 1993, TUS); Futaba-gun, Hirono-machi, Kamiyamigawa, Asami-gawa Gorge, near Ôtaki-jinja Shrine, alt. 130–140 m (K. Yonekura

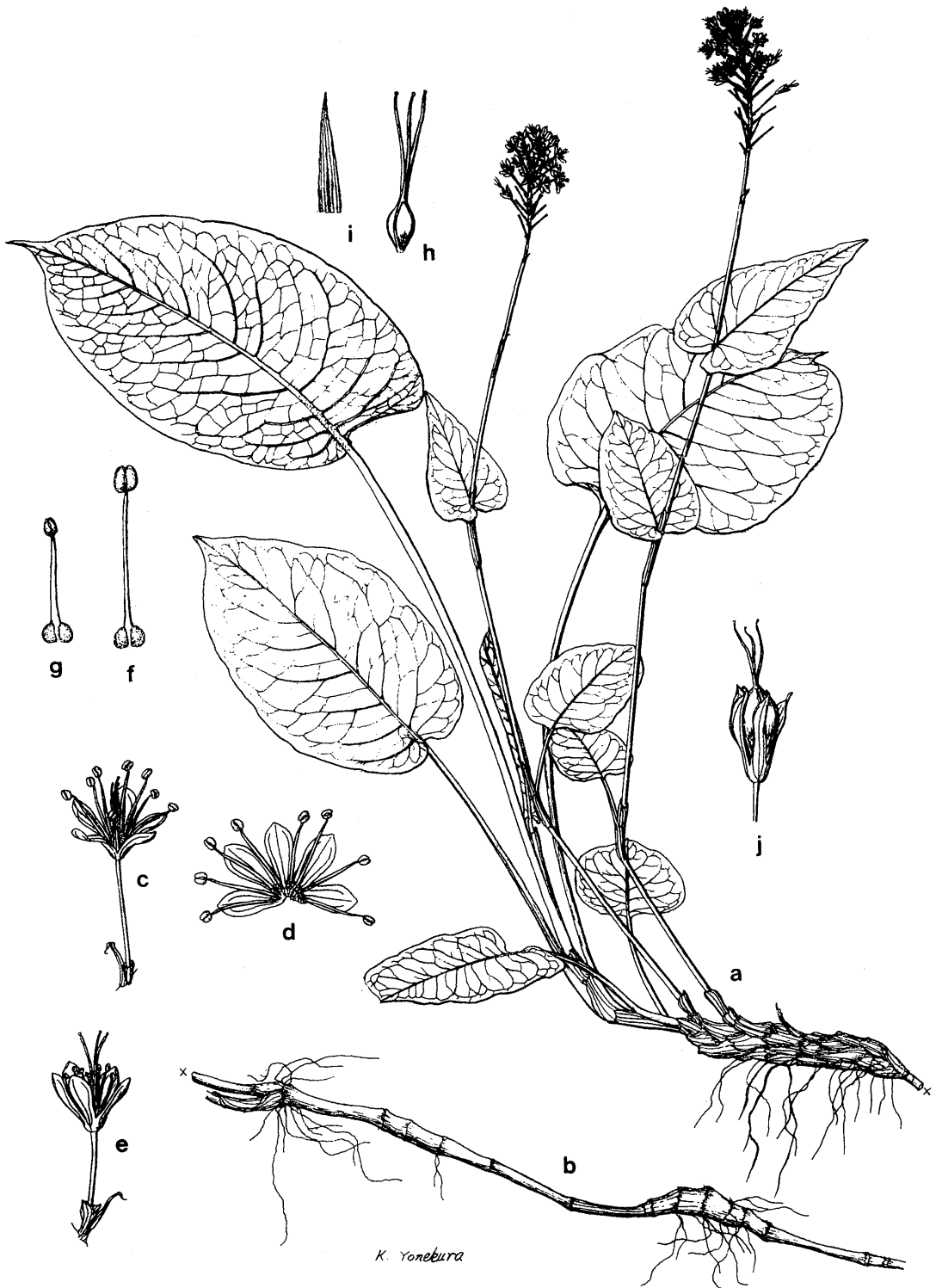


Fig. 1. *Bistorta abukumensis* Yonekura, Iketsu et H. Ohashi. a & b: habit  $\times 0.7$ . b: rhizome. c & d: hermaphrodite flower (d: cut and spread out)  $\times 3.5$ . e: female flower  $\times 3.5$ . f: internal stamen of hermaphrodite flower with nectaries at base  $\times 7$ . g: internal stamen of female flower with nectaries at base  $\times 7$ . h: pistil  $\times 7$ . i: bract  $\times 7$ . j: achene with perianth  $\times 3.5$ . Voucher specimens: a-d, f, h & i; K. Yonekura 93332. e & g; H. Ohashi & K. Yonekura 28221. j; K. Yonekura 93367.

93367, 17 May 1993, TUS); Iwaki-shi, Kawamae-machi, Kawamae, Natsui-gawa Gorge, above Ushio-gawa, alt. 190–200m (T. Kurosawa, J. Iketsu and K. Yonekura 4335, 4 May 1993, TUS); Iwaki-shi, Ogawa-machi, Shiota, Kunugidaira, Natsui-gawa Gorge, alt. 140–150 m (T. Kurosawa, J. Iketsu and K. Yonekura 4334, 4 May 1994, TUS); Iwaki-shi, Miwa-machi, Shimonagai, along Kodama-gawa River, alt. 270–280 m (T. Kurosawa, J. Iketsu and K. Yonekura 4336, 4 May 1993, TUS); Iwaki-shi, Miwa-machi, Gôto, W. of Nakanouchi, along a branch stream of Yoshima-gawa River, alt. 310–315 m (T. Kurosawa, J. Iketsu and K. Yonekura 4338, 4 May 1993, TUS); Iwaki-shi, Miwa-machi, Gôto, Iriyabu, along a branch stream of Yoshima-gawa River, alt. 240–250 m (T. Kurosawa, J. Iketsu and K. Yonekura 4339, 4 May 1993, TUS); Tamura-gun (collector unknown, 19 May 1913, MAK-17293); Iwaki, Abukuma-sankei (K. Sugawara and Y. Sato s.n., 3 Sep. 1968, TUSG).

Distribution: Endemic to Mts. Abukuma in Miyagi and Fukushima Prefectures.

We wish to thank the curators of the herbaria of

米倉浩司, 池津純子, 大橋広好: 阿武隈山地からのイブキトラノオ属の1新種

阿武隈山地には太平洋へ注ぐ多数の小河川があり, それら川沿いにイブキトラノオ属の植物が分布している。この植物はこれまでハルトラノオ *Bistorta tenuicaulis* やクリンユキフデ *B. suffulta* とされてきたが, 著者の一人池津は1987–88年阿武隈山地北部のフロラを研究中に, 当該地域のこの属の植物はそれらの種類に当たらないことに気づいた。同じ頃仙台市のアマチュア研究者庄司邦光氏からも, この問題の研究を大橋が依頼された。その後, 米倉はこの研究を引き継ぎ, 阿武隈山地を詳しく調査し, このイブキトラノオ属植物の生態と形態の変異を観察し続けてきた。それと共に, 国内のハーバリウムでさらに多くの標本を調査した。その結果, 問題の植物は, 福島・宮城両県の阿武隈山地太平洋側に固有の新種であることが明

Kyoto University (KYO), Tokyo Metropolitan University (MAK), University of Tokyo (TI), National Science Museum (TNS), Ibaraki University in Mito, and Botanical Gardens of Tohoku University (TUSG) for permission to examine specimens of their care. Thanks are also due to Drs. Y. Yateishi, T. Nemoto, H. Iketani, T. Ohmiya and T. Kurosawa of the Plant Taxonomical Laboratory of Tohoku University, and Mr. K. Shoji of Sendai for their help to our studies.

\*Present address: Asaka High School, Koriyama, Fukushima, 963 JAPAN.

#### References

The Compilation Committee of Flora of Fukushima Prefecture 1987. Flora of Fukushima Prefecture. p.239. (in Japanese)

らかとなったので, 生育地に基づいてアブクマトラノオ *Bistorta abukumensis* Yonekura, Iketsu et H. Ohashi と命名した。この種は葉形がクリンユキフデに似ているが, 長く匍匐する根茎を持ち, 花序の1節に1花のみをつける点でそれと異なる。また根茎や花序の特徴, および雌花両性花異株である点ではハルトラノオに近いが, 根出葉が卵形または卵状楕円形で葉柄に翼が無く, 茎葉も多く大きいので容易に区別できる。また, 特に両性花では小花柄が近似種に比べて長く, 花被片が著しく開出する点も特徴である。

なお, ハルトラノオも雌花両性花異株であることが今回の研究で明らかとなったが, 雌性個体は一部の地域にまれに見られるに過ぎない。