

# アネモネ属の新自然雑種, ゴカヤマイチゲ

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Mamoru Sugimoto<sup>1</sup>, Takashi Sato<sup>2</sup>, Yoshikane Iwatsubo<sup>3</sup> and Naohiro Naruhashi<sup>3</sup> : A New Natural Hybrid of *Anemone* (Ranunculaceae) from Japan, *Anemone* × *gokayamensis*

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One of the authors, Sugimoto found an unknown plant belonging to *Anemone* at the bordering area between Toyama Pref. and Gifu Pref. in May, 1990 (Fig. 1). The plant is similar to *Anemone pseudoaltaica* H.Hara, but differs in some characters, and it is also similar to *Anemone debilis* Fisch. in other characters. Therefore, the authors cultivated this plant at Toyama University and observed it for several years. From the results of morphological, ecological and cytological comparison (Table 1), the plant was presumed to be a natural hybrid between *A. pseudoaltaica* and *A. debilis*. The authors name the hybrid *Anemone* × *gokayamensis* and describe it

here.

*Anemone* × *gokayamensis* M. Sugim., Tak. Sato et Naruh., hybr. nov. (Figs. 2 A, B, C and 3 Ba, b)

*Anemone pseudoaltaica* H. Hara × *Anemone debilis* Fisch.

Haec hybrida inter *A. pseudoaltaicam* et *A. debilem* intermedia est. Ab *A. pseudoaltaica* foliis non emortuis mense Junio, foliolis non ternatis et ad marginem grosse incisus differt. Ab *A. debili* petiolis in foliis caulis dilatatis, foliolis radicalibus petiolulatis et sepalis 8-10 (non 5) in numero differt.

Subalpine herbaceous perennial plants. Stems purplish deep-green, 5-10 cm tall. Rhizomes slender, horizontally long creeping, branching, white, cylindrical, 3.0-4.5 mm in diameter, sparingly rooting from nodes, with 1-4 membranaceous scales at apex; internodes more or less elongate. Flowering stems erect, terete, glabrous, green, 3-7 cm tall, 2.0-2.8 mm in diameter. Cauline leaves triverticillate, ternate, petiolate; petioles vaginate, expanded, pilose at margin, 3-13 mm long, 2-4 mm wide; leaflets coarsely and pinnately incised, shortly petiolulate. Terminal leaflets rhombic-lanceolate, slightly acute at apex, cuneate at base, 25-40 mm long, 10-15 mm wide; petiolules 2-3 mm long. Lateral leaflets obliquely rhombic-lanceolate. Radical leaves 1 rarely 2, ternate, longly petiolate; leaflets 2-3-parted, petiolulate, rotundate at apex, pinnately incised and coarsely serrate; petiolules not expanded; laminae deep-green above, purplish below. Leaves withered in September. Flowers solitary, bisexual, actinomorphic, 20-28 mm in diameter; blooming from late May to early June. Peduncles solitary, densely white-



Fig. 1. Map showing growing locality of *Anemone* × *gokayamensis* in Toyama Prefecture.

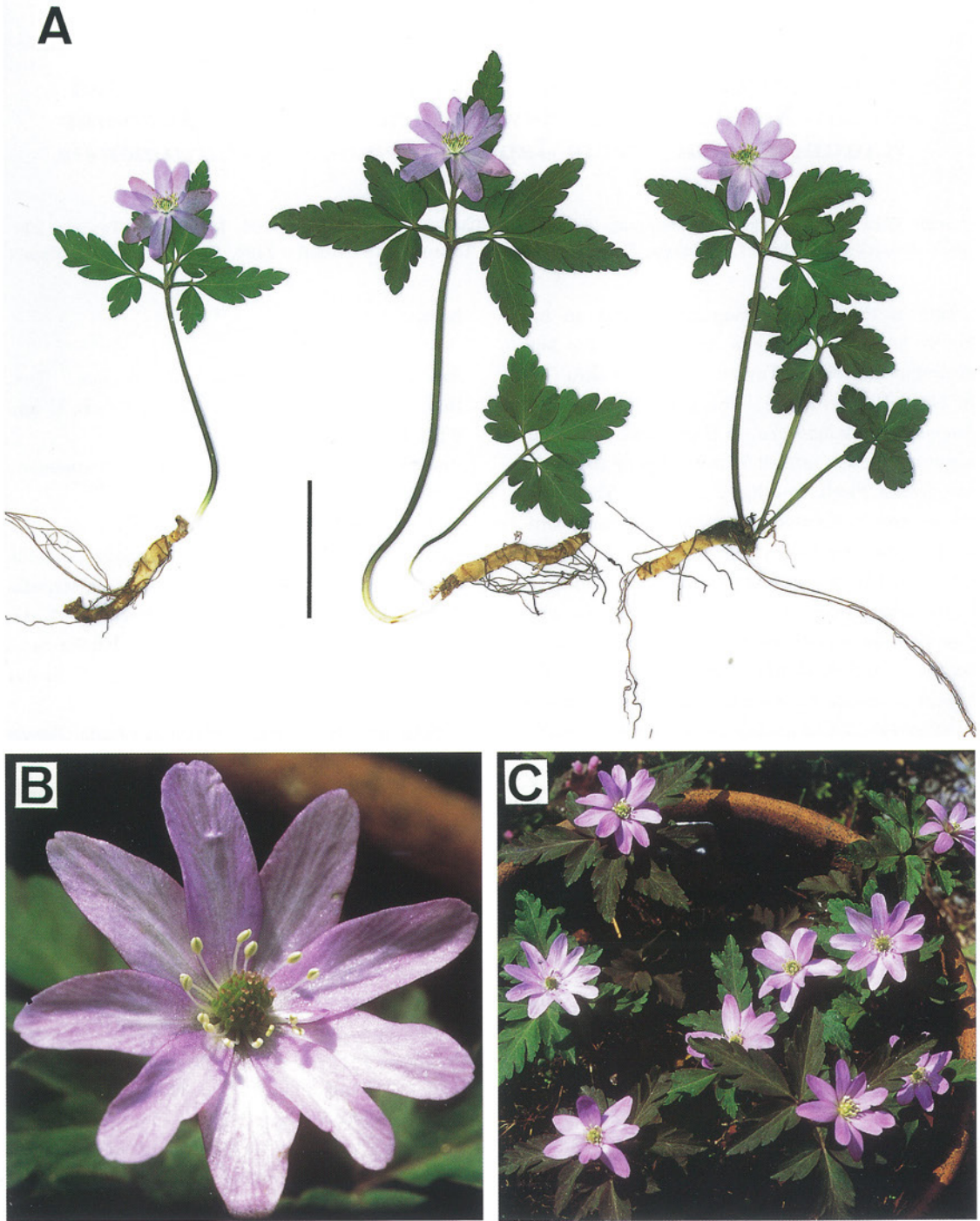


Fig. 2. *Anemone* × *gokayamensis* M. Sugim., Tak. Sato et Naruh. A : Three different specimens (Bar, 3 cm) ; B : Front view of flower ; C : Plants under cultivation.

pilose, 12–20 mm long, 0.8–1.2 mm in diameter.  
 Petaloid sepals 8–10 (11) in number, patent, thin,

narrowly ovate, pale reddish purple, thereafter  
 pale purple ; outer sepals 3, 9.2–13.4 mm long,

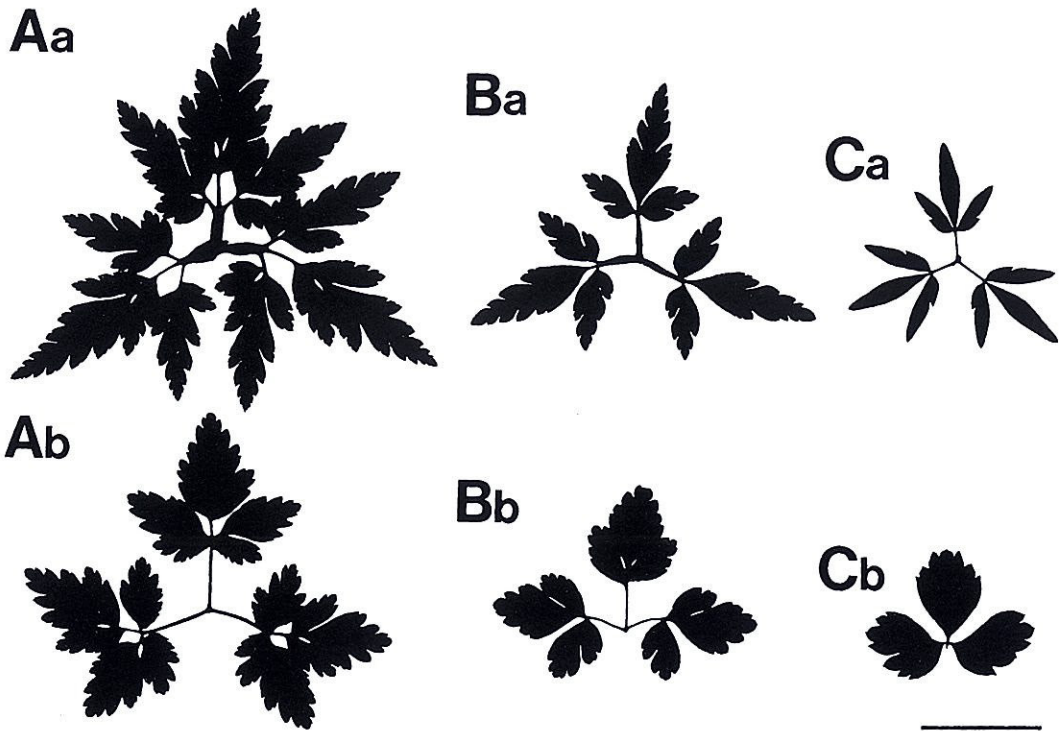


Fig. 3. Leaf shapes of *Anemone pseudoaltaica*, *A. xgokayamensis* and *A. debilis*. A: *A. pseudoaltaica*; B: *A. xgokayamensis*; C: *A. debilis*; a: Cauline leaves; b: Radical leaves (Bar, 3 cm).

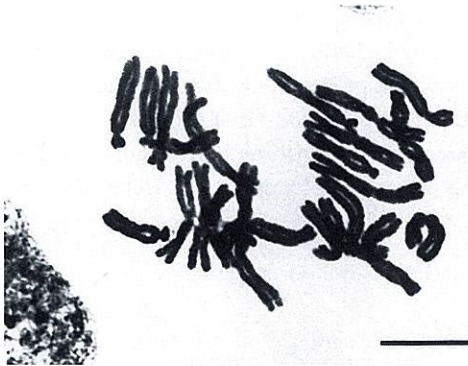


Fig. 4. Somatic chromosomes of *Anemone xgokayamensis* with  $2n=24$  (Bar, 10  $\mu$ m).

4.5–5.8 mm wide; inner sepals 3+2–, 8.6–12.4 mm long, 3.4–4.2 mm wide. Stamens 18–46, nearly erect, 1.5–3.5 mm long; filaments white; anthers white, elliptic, about 1 mm long, basifixed; connectives pale green. Gynoecia green, ellipsoid about 3.5 mm tall, about 3.0 mm wide; receptacles hemispherical. Pistils 23–76; styles

nearly erect; stigmata white, thereafter reddish; ovaries white-pilose. Pollen grains completely sterile. Fruits abortive. Reproduction by rhizomes.

Chromosome number  $2n=24$  in Fig. 4.

Nom. Jap. Gokayama-ichige, nom. nov.

Hab. Japan, Honshu, Toyama-Pref.: Higashitonami-gun, Taira-mura, May 24, 1997 (Fl.), M. Sugimoto & T. Sato, no. 9705241 & 9705242.

Type: Japan, cult. in Kosugi-machi, Toyama Pref., M. Sugimoto no. 9604261, Apr. 27, 1996 (Fl.) (Holotype in KANA, Isotype in KYO, MAK, TNS, TOYA).

The epithet of the hybrid name is derived from the locality where the present hybrid was discovered. It was growing at the margin of a subalpine meadow forming a small population. There, *A. debilis* was found together with the hybrid. However, *A. pseudoaltaica* was absent in the same area, but found in a lower and neighboring

place in the same mountain, only 0.5 km far from the hybrid population. *Anemone pseudoaltaica* and *A. debilis* usually occur in different habitats in Toyama Pref., mountain and subalpine area, respectively. Such distribution pattern was also reported from Niigata, Nagano and Akita Prefs. (Matsuda 1983, 1985; Fujiwara 1997; Wada 1997). The place where the hybrid occurs is included in the area of the putative parents. The hybrid is found in close vicinity to one parent, the other parent being within a short distance.

Chromosome number of *A. pseudoaltaica* was counted as  $2n=32$  (Kurita 1956 a, 1957; Nishikawa 1985) and  $2n=48$  (Kurita 1966; Nishikawa, 1985); and *A. debilis* as  $2n=14$  (Sakai 1935);  $2n=16$  (Kurita 1956 b, 1961; Sokolovskaya 1960; Nishikawa 1979; Starodubtsev 1982, 1983). *Anemone*  $\times$  *gokayamensis* has  $2n=24$  as shown in Fig. 4. Therefore, the hybrid with 24 is supposed to be a mixture of a half set of *A. pseudoaltaica* with 32 and a half set of *A. debilis* with 16. The chromosome numbers of the three taxa in Table 1 are shown on plants from the type locality and its neighboring areas, only.

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Table 1. Diagnostic characters in *Anemone pseudoaltaica*, *A. \times gokayamensis* and *A. debilis*

	<i>A. pseudoaltaica</i>	<i>A. \times gokayamensis</i>	<i>A. debilis</i>
Number of sepals	7-16	8-10	5
Shape of sepals	oblong	oblong-ovate	ovate
Length of outer sepals	20-32 mm	9-13 mm	5-8 mm
Width of outer sepals	7-12 mm	4-6 mm	2-4 mm
Terminal leaflets of cauline leaves	double serrate	serrate	slightly serrate
Petioles of cauline leaves	expanded	expanded	not expanded
Leaflets of radical leaves	ternate	trilobate to triparted	not parted
Withering time of leaves	June	September	September
Rhizomes	long	long	short
Pollen grains	normal	abnormal	normal
Chromosome number	$2n=32$	$2n=24$	$2n=16$

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杉本守<sup>1</sup>・佐藤卓<sup>2</sup>・岩坪美兼<sup>3</sup>・鳴橋直弘<sup>3</sup>: アネモネ属の新自然雑種, ゴカヤマイチゲ

この雑種は、富山県五箇山地方で見つかったところから、ゴカヤマイチゲと名付けられた。

ゴカヤマイチゲは、ヒメイチゲの産する標高域の草地の縁にわずかに生育し、推定両親のキクザキイチリンソウとヒメイチゲの中間形を示す。葉は9月まで枯れずに残り、根出葉の小葉が3出葉とならず欠刻も少ないことで、キクザキイチリンソウと区別でき、茎葉の葉柄が鞘状に広がり、根出葉が深く裂け、その小葉柄も長くなり、ガク片が8-10枚となることで、ヒメイチゲと区別できる。

染色体数は $2n=24$ であり、キクザキイチリンソウ( $2n=32$ )とヒメイチゲ( $2n=16$ )の中間の数を示す。

また、ゴカヤマイチゲは、正常な花粉を作らず不稔であり、種子もできない。繁殖はもっぱら根茎による。

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