New Status and Combinations for Japanese Taxa of Chionographis (Melanthiaceae)

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ABSTRACT. Chionographis japonica var. hisauchiana Okuyama is raised to specific rank as C. hisauchiana (Okuyama) N. Tanaka, since it differs markedly from C. japonica (Willdenow) Maximowicz var. japonica in several characters. Chionographis japonica var. minoensis H. Hara and C. japonica var. kurohimensis Ajima & Satomi are transferred to C. hisauchiana at subspecific rank as C. hisauchiana subsp. minoensis (H. Hara) N. Tanaka and C. hisauchiana subsp. kurohimensis (Ajima & Satomi) N. Tanaka, respectively. A key to the four taxa accepted here is presented.

Key words: Chionographis, Japan, Melanthiaceae.

The genus Chionographis Maximowicz is often placed in the tribe Heloniadeae, together with Chamaelirium Willdenow of eastern North America and a few other genera (Engler, 1888, tribe as Heloniadet; Hutchinson, 1934; Tamura, 1998), under Melanthiaceae (Maximowicz, 1867, as Melanthiaceae; Tamura, 1998) or Liliaceae (Engler, 1888; Hutchinson, 1934). It is apparently most closely allied to Chamaelirium, from which it differs mainly by its zygomorphic flowers (vs. actinomorphic), unequal tepals (vs. equal), fewer ovules (2 vs. 6–12 ovules per locule), polycentric chromosomes (vs. monocentric), and in the sexual attributes (plants usually hermaphrodite or gynodioecious vs. dioecious) (Tanaka, 1985, and key below). Chionographis is distributed in Japan, Korea, and southern China (Hara, 1968; Chen, 1980; Tanaka, 1985; Chen & Tamura, 2000). According to Hara (1968), it comprises four species, of which two, C. japonica (Figs. 1A, 2A) and C. koidzumiana Ohwi, are distributed in Japan (the former also in southern Korea). Only the former species, as traditionally circumscribed, is considered here. Hara (1968) recognized three subspecies under C. japonica, i.e., subspecies japonica, subspecies hisauchiana (Okuyama) H. Hara (Figs. 1B, 2B, under the name C. hisauchiana subsp. hisauchiana), and subspecies minoensis (H. Hara) H. Hara (Fig. 2C, under the name C. hisauchiana subsp. minoensis). Later, a new variety, C. japonica var. kurohimensis Ajima & Satomi (Fig. 2D, under the name C. hisauchiana subsp. kurohimensis), was described by Ajima (1976).

Hara's Chionographis japonica subsp. hisauchiana (Figs. 1B, 2B) differs markedly from C. japonica subsp. japonica (Figs. 1A, 2A) in several characters such as floral, vegetative, chromosomal, sexual, and breeding attributes (Tanaka, 1985, and key below). It seems, therefore, more appropriate to treat it at specific rank. Hara's C. japonica subsp. minoensis (Fig. 2C) and Ajima and Satomi's C. japonica var. kurohimensis (Fig. 2D) are, respectively, much closer in morphological, chromosomal, sexual, and breeding characters to C. hisauchiana than to C. japonica (Tanaka, 1985, and key below). Chionographis japonica subsp. minoensis differs from C. hisauchiana mainly in leaf characters and has a disjunct distribution from the latter. It is transferred here to C. hisauchiana without any change in rank. Chionographis japonica var. kurohimensis differs from C. hisauchiana subsp. hisauchiana and C. hisauchiana subsp. minoensis in chromosome number and some morphological characters (Tanaka, 1985, and key below) and has a disjunct distribution from the latter subspecies. It is therefore treated here as a third subspecies of C. hisauchiana.

Chionographis hisauchiana as here circumscribed (Figs. 1B, 2B–2D) is distributed in more northern regions in Japan (central and northern Honshū) than C. japonica (Figs. 1A, 2A; Kyūshū, Shikoku and west to central Honshū) with a very minor overlap in their ranges.

A more detailed account of the variation and taxonomy of the genus Chionographis will be forthcoming.

Figure 1. Flowers of Chionographis from Japan. —A. C. japonica (Willdenow) Maximowicz from Osaka, Kōchi Pref., Shikoku (N. Tanaka I (TEU)). —B. C. hisauchiana (Okuyama) N. Tanaka subsp. hisauchiana from Naguri-mura, Saitama Pref., Honshū (N. Tanaka la (TEU)). Both flowers bisexual and at same scale. Drawn from living plants.


KEY TO FOUR TAXA OF CHIONOGRAPHIS OCCURRING IN JAPAN

1a. Flowers with lower 2 tepals vestigial, with 1 or both often absent (Fig. 1A); main veins of leaf blades obscurely impressed and fine veins tending to be slightly elevated adaxially (Fig. 2A); leaf blades usually opaque adaxially; plants usually hermaphrodite but self-incompatible; 2n = 24 — C. japonica

1b. Flowers with lower 2 tepals shorter than upper ones but always present (Fig. 1B); main veins of leaf blades clearly impressed and fine veins not elevated adaxially; leaf blades lustrous or nearly opaque adaxially (Fig. 2B—2D); populations usually gynodioecious, sometimes hermaphrodite where hermaphroditic individuals self-compatible; 2n = 42 or 44.

2a. Leaf blades nearly opaque adaxially (Fig. 2B), comparatively thin; upper tepals 2.7—5.7 mm long (Fig. 1B); 2n = 42 — C. hisauchiana subsp. hisauchiana

2b. Leaf blades lustrous adaxially (Fig. 2C, 2D), comparatively thick; upper tepals 3.6—12.0 mm long.
3a. Leaf blades usually narrowly elliptic or narrowly oblong (Fig. 2C); main veins usually deeply impressed adaxially; upper tepals 3.6–6.9 mm long; 2n = 42. 

C. hisauchiana subsp. minoenesis

3b. Leaf blades usually elliptic to oblong (Fig. 2D); main veins moderately impressed adaxially; upper tepals 3.7–12.0 mm long; 2n = 44. 

C. hisauchiana subsp. kurohimensis

In the above key the ranges of variation in tepal length of the three subspecies of C. hisauchiana are based on the following samples: subspecies hisauchiana, 33 individuals from 1 locality; subspecies minoenensis, 35 from 1; subspecies kurohimensis, 446 from 13. The ranges include measurements of both female and hermaphrodite plants.

Acknowledgments. I am most grateful to the keepers of KANA, KYO, MAK, TI, and TNS for permission to examine their specimens. I also express my deep gratitude to Roy E. Gereau (MO), R. J. F. Henderson (BRI), and Victoria C. Howell (MO) for their critical reviews of the manuscript.

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