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Dioecy in *Chamaelirium chinense* (*Melanthiaceae*) from Hainan Island, China

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Sexual traits and proportion were investigated for samples (herbarium specimens) of *Chamaelirium chinense* (K. Krause) N. Tanaka (*Melanthiaceae*) from Hainan Island (Hainan Prov.) and Zengcheng (Guangdong Prov.), China. Nine plants from Hainan exhibited dioecy with the male to female sex ratio of 2 : 1, whereas 19 plants from Zengcheng showed gynodioecy with the hermaphrodite to female ratio of 3.3 : 1. The male and female plants from Hainan showed a morphologically marked sexual dimorphism. The male plants from Hainan were as sound as the female plants in growth state, bearing well developed dense spikes of male flowers with relatively long filaments. These observations suggested that both male and female plants are stable in the population.

Key words: *Chamaelirium chinense*, *Chionographis*, dioecy, evolution, gynodioecy, hermaphroditism, sexual dimorphism, sexual diversity, sexual system.

Sharing many similar traits, two closely related genera, *Chamaelirium* Willd. and *Chionographis* Maxim. (*Melanthiaceae*), were merged by Tanaka (2017b) into the former. He divided the combined *Chamaelirium* (s.lat.) into two sections, *Chamaelirium* with the single North American species, *C. luteum* (L.) A. Gray, and *Chionographis* (Maxim.) N. Tanaka with eight Asian species. The genus currently consists of 10 species, including one new species later described (Liu et al. 2018).

It has been known that *Chamaelirium luteum* is dioecious (Gray 1837, Britton and Brown 1896, Radford et al. 1968, Utech 2002), whereas the populations of sect. *Chionographis* are either hermaphroditic or gynodioecious (Tanaka 1985, 2003, 2013, 2016a, b, 2017a, b, Maki 1993).

According to Tanaka (2016a, as *Chionographis*), samples (herbarium specimens) of a Chinese species, *Chamaelirium chinense* (K. Krause) N. Tanaka, from four localities in southern China, including Hainan, are gynodioecious. The samples (individuals) from Hainan then available were, however, only two (on the sheet of McClure 9392, K000939668), and the spike of one of them was largely missing. This plant was evidently not female, but its true sexuality other than female was unclear.

Since Tanaka (2016a) was published, I have had opportunities to examine several additional specimens (including images) of *Chamaelirium chinense* from Hainan and some other localities in southern China. As a step toward a better understanding of the diversity and diversification of the sexual system in *Chamaelirium*, the sexual traits and proportion in samples of *C. chinense* from Hainan and one locality (Zengcheng) in Guangdong Province, China,

of this genus proved highly diverse in sexual system, it is hoped that they will be more closely scrutinized to elucidate the evolutionary process of their sexual diversification.

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Appendix 1

In the list below, the specimens asterisked represent those examined only on images, and the specimens underlined stand for those examined both in this paper and in Tanaka (2016a).

Specimens examined of *Chamaelirium chinense*: **CHINA**. Canton [Hainan]. Hainan, Five Finger Mt., 1 May 1922, F.A.McClure 9392 (BM013718002*, E00913368*, K000524384, MO2444322*, P01619480*); Hainan, Baoting, Dadiaoluoshan, 7 February 1952, S.Q.Chen 7796 (IBSC 199756 n.b.); Kwantung [Guangdong]. Tsengshing [Zengcheng] District, Naam Kwan Shan, 26 April 1932, W.T.Tsang 20345 (A s.n., K000524384*, MO3085048*, PE00111329 / 60619 (n.b.), TNS 653140 (n.b.), US01247089*); ibid., 30 April 1932, W.T.Tsang 20386 (A s.n., K s.n., MO3085101*, P01619478*, TI s.n., TNS 653141 (n.b.), UC 612118 (n.b.), US01247088*).

田中教之：**中国海南島産チュウゴクシライトソウ（シュロソウ科）の雌雄異株性**

中国固有種のチュウゴクシライトソウ *Chamaelirium chinense* (K. Krause) N. Tanaka（シュロソウ科）の性的変異を知るために，中国海南島の2産地から採集された9個体と，隣接する広東省の1産地（増城区）から採集された19個体の（標本館所蔵）標本を比較観察した．その結果，海南島の個体群は，雄性を示す6個体（ほぼ雄性の1個体を含む）と，雌性を示す3個体から成り，雌雄異株であることが示唆された．広東省の当該個体群は，性型比等から雌性両（全）性異株と判定され，既報の研究結果を追認した．海南島の雄性個体は，相対的に長い花糸をつけた雄花から成るよく発達した密な花序を持ち，雌性個体と同様に正常で良好な生育状態を示す．したがって，その雄性発現は両性花を持つ個体が生育不良時等に示す条件的な雄性化とは異なる．これらのことから，海南島の雄性個体は，雌性個体と同様に安定した存在である可能性が高い．現地における今後の調査・研究が望まれる．

（東京都八王子市大塚）