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Distribution of *Carex kamagariensis* K. Okamoto in Korea

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좀목포사초(*Carex kamagariensis* K. Okamoto)의 분포

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ABSTRACT: *Carex kamagariensis* K. Okamoto was found in throughout the nation. This species is distinguished from other related taxa in *Carex* sect. *Mitratae* by pistillate scales with a long arista and achenes constricted above in the middle. A new Korean name, 'Jom-mok-po-sa-cho', is based on its small size and floral character similarity to *C. genkaiensis.* In this study, a description, illustrations and habitat photos of the species are provided. The key of its related species is also provided.

Keywords: *Carex kamagariensis*, *Carex*, *Carex* sect. *Mitratae*, Cyperaceae

적 요: 국내에 알려지지 않은 사초속 청사초절에 속하는 식물인 좀목포사초(*Carex kamagariensis* K. Okamoto)가 우리나라 전국에 넓게 분포하는 것으로 확인되었다. 분류학적 근연군과는 자인편 까락이 길고 과낭 중앙부가 오목한 특징에 의해 구별된다. 국명은 형태적 특성을 고려하여 좀목포사초로 신칭하였고, 형태적 특징과 도해 및 생태사진을 제시하였다.

주요어: 좀목포사초, 사초속, 청사초절, 사초과

Genus *Carex* L. is the biggest group in Caricoideae of Cyperaceae with more than 2,000 species world-wide (Ohwi, 1965; Reznicek, 1990). The genus is mainly distributed in the temperate climate area of Asia and North America and rarely found from lowlands of the tropical climate including Africa (Koyama, 1961; Ohwi, 1965; Reznicek, 1990).

Carex sect. *Mitratae* Kük. is easily distinguished by its more than 2 spike inflorescences, 3 stigmas, extended appendages from stylopodiums (Kükenthal, 1909; Akiyama, 1932; Koyama, 1961; Egorova, 1999; Katsuyama, 2005; Dai et al., 2010).

Carex kamagariensis K. Okamoto is known to be distributed in Honshu, Shikoku and Kyushu area of Japan (Katsuyama, 2005; Hoshino et al., 2011). Katsuyama (2005) and Hoshino et al. (2011) mentioned that *C. kamagariensis* was distributed in the southern area of Korea. However, this species has not been reported in Korean domestic bibliography (Lee, 1980; Lee, 1996; Oh, 2006). This study reports distribution status of *C. kamagariensis* in Korea based on the herbarium specimens collected throughout the country, and a description, an illustration, and habitat information of the species are provided in this report.

***Carex kamagariensis* K. Okamoto**, Bull. Okayama Coll. Sci. 1: 66 (1965).

Type: Japan, Honshu, Hiroshima Pref., Aki-gun, Kamagari-cho (Apr. 28, 1961, Okamoto no. 934)

Herbs perennial, basal sheath fibrous, culms densely

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http://www.pltaxa.or.kr

Table 1. Characters of *Carex kamagariensis* and its relatives in Korea.

Character	*C. breviculmis*	C. genkaiensis	*C. formosensis*	*C. kamagariensis*
Leaf width (mm)	2-4	2.5-4	2-6	1.5-3
Basal sheath	Brown	Brown	Reddish brown	reddish or brownish
Sheath of bract	Absent	Present	Present	Present
Terminal spike length (m)	1-2	0.5-1.5	1-2	1-3
Lateral spike number	1-2	1-2	1-4	1-2
Staminate scale apex	Aristate	Rounded	Rounded	Rounded
Arista length of pistillate scale (mm)	2-3	0-1	0-1	2-3
Perigynium length (mm)	2.5-3	3-3.5	3-3.5	2.5-3
Achene length (mm)	1.5-2	2	2-2.5	1.5-2
Achene apex	Annulated	Cylindrical	Cylindrical	Annulated
Achene middle	Non-constricted	Constricted	Constricted	Constricted

caespitose, 20–40 cm tall, reddish or brownish near the base, with old leaves usually persisting, leaves shorter than culms, 1.5–3.0 mm wide, usually flat, pale green, scabrous along the margins. Terminal spike staminate, linear cylindrical or lanceolate, 1.0–3.0 cm long, 1.5–3.0 mm wide, lateral spike pistillate narrowly cylindrical, subsessile or shortly pedunculate, 0.5–2.5 cm long, 2.0 mm wide. lateral spike number 1-2, Staminate scales pale brown, oblong, margins entirely white membranous, 2.5–4.5 mm long, 1.5–2.0 mm wide, apex obtuse or rounded. Pistillate scales pale green, obovate, margins entirely white membranous, 2.0–2.5 mm long, slightly shorter than the perigynia, apex acuminate, long aristate; arista 2.0–3.0 mm long. Perigynia fusiform, 2.5–3.0 mm long, pale green, puberulent, multiveined, the beak bidentate, margin scabrous. Achenes ellipsoid to obovate at maturity, trigonous, 1.5–2.0 mm long, about 1 mm wide, dark brown, angles shallowly constricted at middle, apex annulated, stigmas 3 (Table 1; Figs. 1, 2).

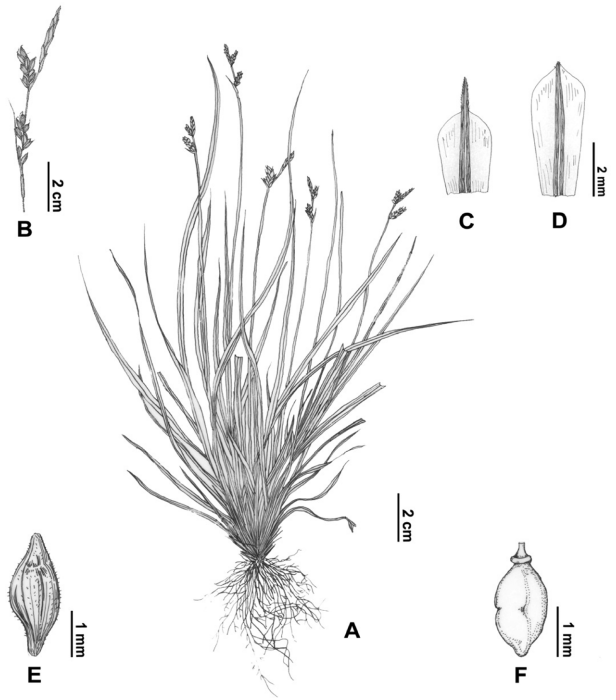

Fig. 1. Illustrations of *Carex kamagariensis* K. Okamoto. A. Habit; B. Inflorescence; C. Pistillate scale; D. Staminate scale; E. Perigynium; F. Achene.

Flowering and fruiting: April-May

Korean name: Jom-mok-po-sa-cho (**좀목포사초**)

Distribution and habitat: Korea (We could not examine the North Korea specimens in the present study), Japan (Honshu, Shikoku, Kyushu) In forest margins and field margins, waysides and grasslands on mountain slopes.

Specimens examined: Gyeonggi-do, Namyangju-si, Onam-eup, Cheonma-san, 17 Apr. 2009, *ParkSH90261* (KH); Gangwon-do, Pyeongchang-gun, Jinbu-myeon, Dongsan-ri, Odae-san, 30 May. 2010, *WR-100530-015* (KH); Chung-cheongnam-do, Hongseong-gun, Oseosan, 13 May. 2005, *K383*; Gyeongsangbuk-do, Bonghwa-gun, Mulya-myeon, Gaedan-ri, Munsu-san, 10 Jun. 2010, *L100788*; Gyeong-sangnam-do, Hamyang-gun, Macheon-myeon, Samjeong-ri, Jiri-san, 6 Jun. 2010, *WR-100606-005* (KH); Jeollabuk-do, Buan-gun, Byeonsan-myeon, Junggye-ri, Naebyeon-san, 15 May. 2010, *WR-100515-028* (KH); Jeollanam-do, Hwasun-gun, Nam-myeon, Gosi-ri, Dubong-san, 13 May. 2009, *WR-090513-434* (KH).

Key of *C. kamagariensis* and its relatives in Korea

1. Sheaths of bract absent, achenes not constricted at middle. ····· *C. breviculmis* 청사초
1. Sheaths of bract present, achenes constricted at middle.

Fig. 2. Photographs of *Carex kamagariensis* K. Okamoto. A. Habit; B. Perigyniums; C. Achene.

2. Terminal male spike equal to or shorter than the lateral female spike, pistillate scales shortly aristate ..... *C. genkaiensis* 목포사초
2. Terminal male spike longer than the lateral female spike, pistillate scales arista 2.0 mm long or longer.
3. Achenes lanceolate, apex cylindrical. ..... *C. formosensis* 긴목포사초
3. Achenes ellipsoid to obovate, apex annulated. ..... ***C. kamagariensis* 좀목포사초**

Carex kamagariensis has clear differentiation of having aristas in female flowers in comparison with *C. formosensis* K. Okamoto and smaller, concave shape in the center of an achene, and apex annulated. *C. formosensis* was found to be distributed in Mokpo areas, South Korea (Lee, 1980; Lee, 1996). However it could not be confirmed in this study. Further studies are needed to clarify their distribution.

C. kamagariensis was thought to be *Carex breviculmis* in Korea because of its similar shape but easily distinguished by the shape of achene. This study designate the new name as 'Jom-mok-po-sa-cho' regarding smaller size than *C. formosensis*. Thus, *C. kamagariensis* is distributed in Japan and southern areas of Korea.

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