A new record of *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer (Cyperaceae) in Korea

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한국 미기록 식물: 갯바늘골(사초과)

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ABSTRACT: *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer (Cyperaceae), was found in Ganghwa-gun, Incheon Metropolitan City in Korea. This species is distinguished from related taxa in Korea by its small fusiform tubers, culms without septa when dry, 3-fid stigmas and style base confluent with the apex of achene. This taxon was named 'Gaet-ba-neul-gol' in Korean based on its habitat. We provide its description, illustrations, photographs and a key to the related taxa in Korea.

Keywords: *Eleocharis parvula*, *Eleocharis*, Cyperaceae, new record

적 요: 사초과의 *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer가 인천광역시 강화군에서 발견되었다. 이 종은 작은 방추형의 괴경, 건조했을 때 격막이 없는 줄기, 3개의 주두 및 암술대 기부와 수과 사이에 홈이 없는 특징을 가지고 있어 한국에 분포하는 근연 분류군들과 구분된다. 국명은 생육지를 고려하여 '갯바늘골'로 신칭하였고, 이에 대한 기재, 도해, 사진 및 검색표를 제시하였다.

주요어: 갯바늘골, 바늘골속, 사초과, 미기록

Eleocharis R. Br. (Cyperaceae Juss.) includes about 200 species and is widely distributed (González-Elizondo and Peterson, 1997). It is characterized by unbranched culms, leaves basal and reduced to tubular sheaths, inflorescence of a single terminal spikelet, style base persistent as a tubercle (González-Elizondo and Peterson, 1997; Goetghebeur, 1998; Smith et al., 2002; Dai and Strong, 2010).

In worldwide classification of the genus, Svenson (1929a, 1929b, 1929c, 1929d, 1929e, 1932a, 1932b, 1934, 1937a, 1937b, 1939a, 1939b, 1939c) recognized 9 series and 2 subseries. In the most recent classification, González-Elizondo and Peterson (1997) recognized 4 subgenera, 7 sections, 8 series and 7 subseries based on the morphology of the achenes and scales. But, these

morphological infrageneric classifications are not supported by molecular studies (Roalson and Friar, 2000; Yano et al., 2004).

Thirteen taxa of *Eleocharis* R. Br. are distributed in Korea (Oh and Lee, 1997; Oh, 2006; Kang et al., 2015). Among them, *E. changchaensis* Y. C. Oh & G. Lee is an illegitimate name without Latin description and type (IPNI, 2015). In this study, *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer is reported as a newly founded taxon in Korea. In addition, we provide its description, illustrations, photographs and a key of related taxa.

Taxonomic Treatment

Eleocharis parvula (Roem. & Schult.) Bluff, Nees & Schauer, Comp. Fl. German. (ed. 2) 1: 93 (1836). (Figs 1, 2)

Type: In inundatis ripis lacus Kölmienfis in Mansfeldia (type: BM, photograph!).

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Scirpus nanus Spreng., Pl. Min. Cogn. Pug. 1: 4 (1813) non Poirét (1805).

Scirpus parvulus Roem. & Schult., Syst. Veg. 2: 124 (1817).

Eleogiton parvula (Roem. & Schult.) Link, Hort. Berol. 1: 285 (1827).

Trichophorum parvulum (Roem. & Schult.) Pignatti, Arch. Bot. (Forli) 34: 7 (1958).

Perennials. Roots fibrous. Rhizomes terminated by tubers; tubers fusiform, 2–4.5 mm long. Culms longer than leaves, 0.9–3 cm long. Leaves 1.1–2.6 cm long. Spikelet ovoid, 1.7–3.7 mm long, 0.9–2.2 mm wide. Scales stramineous, 6–10 per spikelet, 1.2–2 mm long, apex rounded to subacute. Perianth bristles 4, equaling or slightly exceeding achene, minutely retrorsely spinulose. Stamens 3; filaments 1–1.8 mm long; anthers 0.3–0.8 mm long. Stigmas 3. Achenes obovate, trigonous, 0.8–1.5 mm long, 0.4–0.8 mm wide, style base triangular, confluent with apex of achene.

Korean name: Gaet-ba-neul-gol (갯바늘골).

Fruiting: Sep. to Oct.

Distribution: Africa, America, Asia, Australia, Europe and South Korea.

Korea: Incheon Metropolitan City.

Voucher specimens: Korea, Incheon Metropolitan City, Gangwha-gun, Whado-myeon, Sagi-ri, 23 Sep. 2014, *S. H. Park* 144322 (2 sheets, KH); 13 Oct. 2014, *S. H. Park* 145479 (7 sheets, KH).

Note: *E. parvula* (Roem. & Schult.) Bluff, Nees & Schauer belongs to *Eleocharis* subg. *Eleocharis* sect. *Paupulae* which is usually treated as monotypic (González-Elizondo and Peterson, 1997; Smith et al., 2002). This species is distinguished from taxa of *Eleocharis* by having small fusiform tubers and style base confluent with apex of achene (Svenson, 1929; González-Elizondo and Peterson, 1997; Smith et al., 2002). It grows at coastal saline wetlands in Korea and is also found at salt marshes, salt lakes and brackish mud or sand along the seacoast in Africa, America, Asia, Australia and Europe (Svenson, 1929; Smith et al., 2002; Adam, 2009; Dai and Strong, 2010; Hoshino et al., 2011). *E. parvula* (Roem. & Schult.) Bluff, Nees & Schauer is used for ornament (Simpson and Inglis, 2001). This species was named ‘Gaet-ba-neul-gol’ in Korean based on its habitat.

A key to *E. parvula* (Roem. & Schult.) Bluff, Nees & Schauer and its related taxa in Korea.

1. Culms with transverse septa when dry; achenes longer than 1.9 mm.
2. Scales rounded at apex *E. dulcis* (남방개)
2. Scales obtuse at apex *E. kuroguwai* (울방개)
1. Culms without transverse septa when dry; achenes shorter than 1.9 mm.
3. Plants without fusiform tubers; style base separated from achene by a constriction.
4. Stigmas 2.
5. Style base as wide as achene.

Fig. 1. Photographs of *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer. A. Habit; B. Spikelets; C. Achenes.

Fig. 2. Illustrations of *Eleocharis parvula* (Roem. & Schult.) Bluff, Nees & Schauer. A. Habit; B. Tuber; C. Spikelet; D. Scale; E. Abaxial view of achene; F. Side view of achene.

6. Perianth bristles 4–5	10. Perianth bristles plumose
<i>E. kamtschatica</i> (올방개아재비)	<i>E. wichurii</i> (좀네모골)
6. Perianth bristles absent	10. Perianth bristles spinulose
<i>E. kamtschatica</i> f. <i>reducta</i> (무화피올방개아재비)	<i>E. × yezoensis</i> (긴바늘골)
5. Style base 1/2 as wide as achene	8. Culms terete.
7. Perianth bristles 5–6	11. Style base 2/3–3/4 as wide as achene
<i>E. mamillata</i> var. <i>cyclocarpa</i> (물꼬챙이골)	<i>E. attenuata</i> f. <i>laeviseta</i> (참바늘골)
7. Perianth bristles 4	11. Style base 1/3 as wide as or shorter than achene.
<i>E. equisetiformis</i> (까락골)	12. Perianth bristles longer than tip of style base
4. Stigmas 3.	<i>E. congesta</i> var. <i>japonica</i> (바늘골)
8. Culms 3–5-angled.	12. Perianth bristles shorter than tip of style base
9. Perianth bristles 4	<i>E. congesta</i> var. <i>thermalis</i> (쇠바늘골)
<i>E. acicularis</i> f. <i>longiseta</i> (쇠털골)	3. Plants with fusiform tubers; style base confluent with
9. Perianth bristles 6.	apex of achene <i>E. parvula</i> (갯바늘골)

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