A new species of *Fimbristylis* (Cyperaceae): *F. drizae* J. Kim & M. Kim

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A new species, *Fimbristylis drizae* J. Kim & M. Kim, is named and described from Sucheong Lake, Jeongeup-si, Jeollabuk-do, Korea. *Fimbristylis drizae* shares several characters (five-angled culm, 1−2 bladeless sheath, and compound anthela inflorescence) with the related species *F. diphylloides* Makino. It is, however, distinct from *F. diphylloides*, which has two to three stigmas, ovate spikelets, two stamens, a blackish brown scale, and a roadside habitat. In contrast, the new species has two stigmas, oval spikelets, one (or rarely two) stamens, a yellowish brown scale, and a lakeside habitat.

**Keywords:** *Fimbristylis drizae*, *Fimbristylis*, Cyperaceae

The genus *Fimbristylis* Vahl (Cyperaceae) consists of approximately 200–300 species and is distributed primarily in tropic, subtropic, and temperate zones of the Northern Hemisphere (Vahl, 1805; Makino and Nemoto, 1925; Kral, 1971).

*Fimbristylis* is characterized by the usual presence of leaf blades, leaf sheath without long silk hairs at the apex, and achene with deciduous style base (Zhang et al., 2010; Kim and Kim, 2013). Twenty taxa of *Fimbristylis* are distributed in Korea (Lee, 1980; Lee, 1996; Im, 2000; Lee, 2006; Oh, 2007).

Of these, *F. dichotoma* (L.) Vahl and *F. autumnalis* (L.) Roemer & Schultes occur widely, while *Fimbristylis hookeriana* Boeckeler and *F. diphylloides* Makino are rather rare, with sporadic distribution (Oh, 1991; Oh and Park, 1997; Kim and Kim, 2013).

A new species of *Fimbristylis* was discovered for the first time at Sucheong Lake, Jeongeup-si, Jeollabuk-do Province, Korea. The new species shares several characters with the related species, *F. diphylloides* Makino, but it can be distinguished based on the stigma number (2), spikelet shape (oval), stamen number (1, or rarely 2), scale color (yellowish brown), and habitat (lakeside). Thus, we named this new taxon as *Fimbristylis drizae* J. Kim & M. Kim.

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**Taxonomic Treatment**

*Fimbristylis* *drizae* J. Kim & M. Kim, sp. nov. (Figs. 1–3)

**TYPE:** Korea. Jeollabuk-do Province, Jeongeup-si, Sucheong Lake. 28 Sep 2013. J. H. Kim 13158 (Holotype, JNU; Isotypes, JNU, KH)

**Korean name:** Mul-ha-neul-ji-gi 물하늘지기

Perennials. Rhizome absent. Culms aslant, 3–31 cm tall, 0.7–1.1 mm in diam., obtusely 5-angled, glabrous. Basal bladeless sheaths 1 or 2, 1–5 cm long. Leaves longer or sometimes shorter than culm; vegetative shoot usually shortly bladed; blade 7–44 cm long, 1–4 mm wide, flat, upper margin finely toothed, apex acute. Ligule absent. Involucral bracts setaceous, much shorter than inflorescence, base dilated, margin finely serrulate. Inflorescence a subcompound anthela, 1–6 cm long, 1–6 cm wide; rays 3–8, 0.4–4 cm, slight striate. Spikelets solitary, oval, 3–6 mm long, 1.7–2.9 mm wide, whirl over 30-flowered, apex obtuse to rounded. Scales broadly ovate, yellowish brown, 1.7–2.2 mm long, 0.9–1.2 mm wide, margin hyaline, 3-veined keel, veins green, apex mucronate. Stamens 1 (or rarely 2), anthers yellow, 0.5–0.7 mm long. Style not ciliate, 3-angled, 0.7–1.2 mm long; stigmas 2. Achene yellowish brown, obovoid biconvex, 0.6–0.9 mm long, 0.5–0.6 mm wide, with sparsely verruculose.


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Fig. 1. Photographs of *Fimbristylis* *drizae* J. Kim & M. Kim. A. Habit; B. Inflorescence; C. Culm cross section; D. Spikelet; E. Scale; F. Achene; G. Style and stigma.

**Distribution:** Southern Korea (Gyeongnam, Daegu, Jeonnam, Jeonbuk, Chungnam).

**Etymology:** The specific epithet was derived from Journadette H. Driz, who helped find the new species.

**Habitats:** This new species grows at lakeside in Southern Korea.

**Flowering:** August to October

**Notes:** The authors found that the new species, *F. drizae* J. Kim & M. Kim, has been misidentified as *F. globulosa* var. *astrotjaponica* Ohwi until now. It was also known that *F. globulosa* var. *astrotjaponica* is a synonym of *F. umbellaris* (Lam.) Vahl based on the original description and type specimen (Kern, 1974; Zhang et al., 2010). This new species closely resembles *F. diphylloides* Makino, but differs by the presence of two stigmas, oval spikelets, one (or rarely two) stamen, yellowish brown scale color, and the lakeside (Table 1; Figs. 1–3). By applying the IUCN Red List Categories and Criteria (IUCN, 2012), *F. drizae* will be evaluated as a category of vulnerable (VU) species because of its small populations at lakeside.

![Fig. 2. Illustrations of Fimbristylis drizae J. Kim & M. Kim. A. Habit; B. Inflorescence; C. Culm base part; D. Culm cross section; E. Spikelet; F. Scale; G. Achene; G. Bottom view of achene; I. Style and stigma; J. Flower.](image)

![Fig. 3. Holotype of Fimbristylis drizae J. Kim & M. Kim.](image)
Table 1. Comparison of morphological characters of *Fimbristylis drizae* and *F. diphylloides*.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>F. drizae</em></th>
<th><em>F. diphylloides</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant length</td>
<td>3–31 cm</td>
<td>9–53 cm</td>
</tr>
<tr>
<td>Bladless sheath</td>
<td>1–2</td>
<td>1–3</td>
</tr>
<tr>
<td>Culm cross section</td>
<td>5-angled</td>
<td>5-angled</td>
</tr>
<tr>
<td>Inflorescences</td>
<td>compound anhela</td>
<td>compound anhela</td>
</tr>
<tr>
<td>Spikelet shape</td>
<td>oval</td>
<td>ovate</td>
</tr>
<tr>
<td>Spikelet length</td>
<td>3.0–6.0 mm</td>
<td>4.2–6.2 mm</td>
</tr>
<tr>
<td>Spikelet width</td>
<td>1.7–2.9 mm</td>
<td>1.8–2.5 mm</td>
</tr>
<tr>
<td>Scale color</td>
<td>yellowish brown</td>
<td>blackish brown</td>
</tr>
<tr>
<td>Scale apex</td>
<td>mucronate</td>
<td>obtuse</td>
</tr>
<tr>
<td>Scale length</td>
<td>1.7–2.2 mm</td>
<td>1.4–1.8 mm</td>
</tr>
<tr>
<td>Stamen numbers</td>
<td>1 (or rarely 2)</td>
<td>2</td>
</tr>
<tr>
<td>Style length</td>
<td>0.7–1.2 mm</td>
<td>0.6–0.8 mm</td>
</tr>
<tr>
<td>Stigma</td>
<td>2</td>
<td>2–3</td>
</tr>
<tr>
<td>Achene shape</td>
<td>biconvex</td>
<td>biconvex or 3-sided</td>
</tr>
<tr>
<td>Habitats</td>
<td>lakeside</td>
<td>roadsides</td>
</tr>
</tbody>
</table>

Key to *Fimbristylis drizae* and its related taxa.

1. Spikelets very narrowly ovoid to linear
   - *F. hookeriana* 바위하늘지기
2. Inflorescences comprising 1 spikelet
   - *F. subbispicata* 짧은하늘지기
3. Inflorescences comprising 2 or more spikelets.
4. Achene terete
   - *F. stantonii* 백향나물지기
5. Achene obvoid biconvex or 3-sided.
7. Style base with long hairs
   - *F. squarrosa* 밑에물지기
8. Style base glabrous
9. Scale less than 1.5 mm
   - *F. aestivalis* 졸물이지기
10. Scale longer than 2mm
7. Leaf blade folded, achene subsmooth
   - *F. sieboldii* 갓물이지기
8. Leaf blade flat, achene with reticulation.
9. Spikelet narrowly oblong, achene with hexagonal reticulation
   - *F. longispica* 중앙하늘지기
10. Spikelet ovoid, ellipsoid, achene with transversely oblong reticulation
    - *F. dichotoma* 하늘지기
11. Spikelet length 3.0
12. Spikelet shape oval
13. Inflorescences compound anthela
14. Spikelet shape ovate
15. Inflorescences compound anthela
16. Spikelet more than 30 flowers, stem with bladeless sheath
17. Scale color yellowish brown, blackish brown
18. Scale apex mucronate obtuse
19. Stamen numbers 1 (or rarely 2)
20. Style 2–3
21. Achene shape biconvex biconvex or 3-sided
22. Stamen 2
23. Style length 0.6–0.8 mm
24. Achene shape biconvex
25. Spikelet length 3.0
26. Spikelet shape oval
27. Inflorescences compound anthela
28. Spikelet more than 30 flowers, stem with bladeless sheath
29. Scale color yellowish brown, blackish brown
30. Scale apex mucronate obtuse
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96. Achene shape biconvex biconvex or 3-sided

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Literature Cited


