

Two New Species of *Carex* (*Cyperaceae*) from the Ogasawara (Bonin) Islands, Japan

Teruo KATSUYAMA

Kanagawa Prefectural Museum of Natural History
499, Iryuda, Odawara-shi, Kanagawa, 250-0031 JAPAN
E-mail: katsu@nh.kanagawa-museum.jp

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Two new species of the genus *Carex* L. (*Cyperaceae*) from the Ogasawara (Bonin) Islands, *C. chichijimensis* Katsuy. and *C. yasuii* Katsuy., are described. *C. chichijimensis* belongs to sect. *Graciles* Tuck. ex Kük. and is closely related to *C. hattoriana* Nakai which is endemic to the Ogasawara Islands, but differs from the latter in having larger, rather glabrous and strongly veined perigynia. *C. yasuii* belongs to sect. *Mitratae* Kük. and resembles *C. gracilispica* Hayata and *C. rhynchachaenium* C. B. Clarke from Taiwan in having gourd-like lanceolate, more than 4.5 mm long perigynia, and stoutly stipitate, cylindrically necked achenes. However, *C. yasuii* is easily distinguished from the latter two species by longer culms, narrowly ovate pistillate scales with acuminate and short aristate apex and glabrous perigynia. Both *C. chichijimensis* and *C. yasuii* are found only in Chichijima Island.

Key words: Bonin Islands, *Carex*, *Cyperaceae*, new species, Ogasawara Islands.

The Ogasawara (Bonin) Islands is a typical oceanic archipelago located approximately 1,000 km south of Tokyo, Japan. Three species of *Carex* L., *C. boottiana* Hook. & Arn., *C. hattoriana* Nakai and *C. toyoshimae* Tuyama, have been reported from the Ogasawara Islands, of which the latter two are endemic to the islands (Toyoda 2003). Recently I found two new sedges in the Ogasawara Islands and published them as ‘Chichijima-nakirisuge’ and ‘Munin-hyoutan-suge’ in Japanese in my monographic book on Japanese sedges (Katsuyama 2005). These two species are formally described here and named *Carex chichijimensis* and *Carex yasuii*, respectively. The latter is named for Mr. Takaya Yasui who is a botanist working on the flora of the Ogasawara Islands.

***Carex chichijimensis* Katsuy., sp. nov.**

Affinis *Carici hattoriana* Nakai, sed utriculis magnioribus 4–5 mm longis 1.5–2 mm latis pachineuris glabratis praeter scabrinervis diversa. [Figs. 1–2]

Type: Japan, Tokyo Pref., the Ogasawara Islands, Chichijima Island, Mt. Yoake-yama, 5 Dec. 2003, T. Katsuyama, T. Yasui, T. Ohmori, Y. Takano and H. Nakayama s.n. (KPM-NA 0125876–holo, Figs. 1, 2; TI, KYO–iso).

Perennial evergreen herbs. Rhizome short, densely caespitose. Culms central, 40–80 cm tall, much longer than leaves, trigonous, smooth. Leaves basal and cauline; blades flat, 2–4 mm wide, stiff, scabrous on the adaxial side and along margins, smooth on the abaxial side; basal sheaths with leaf blades, sometimes bladeless, dark brown, fibrillose. Flowers throughout the year,

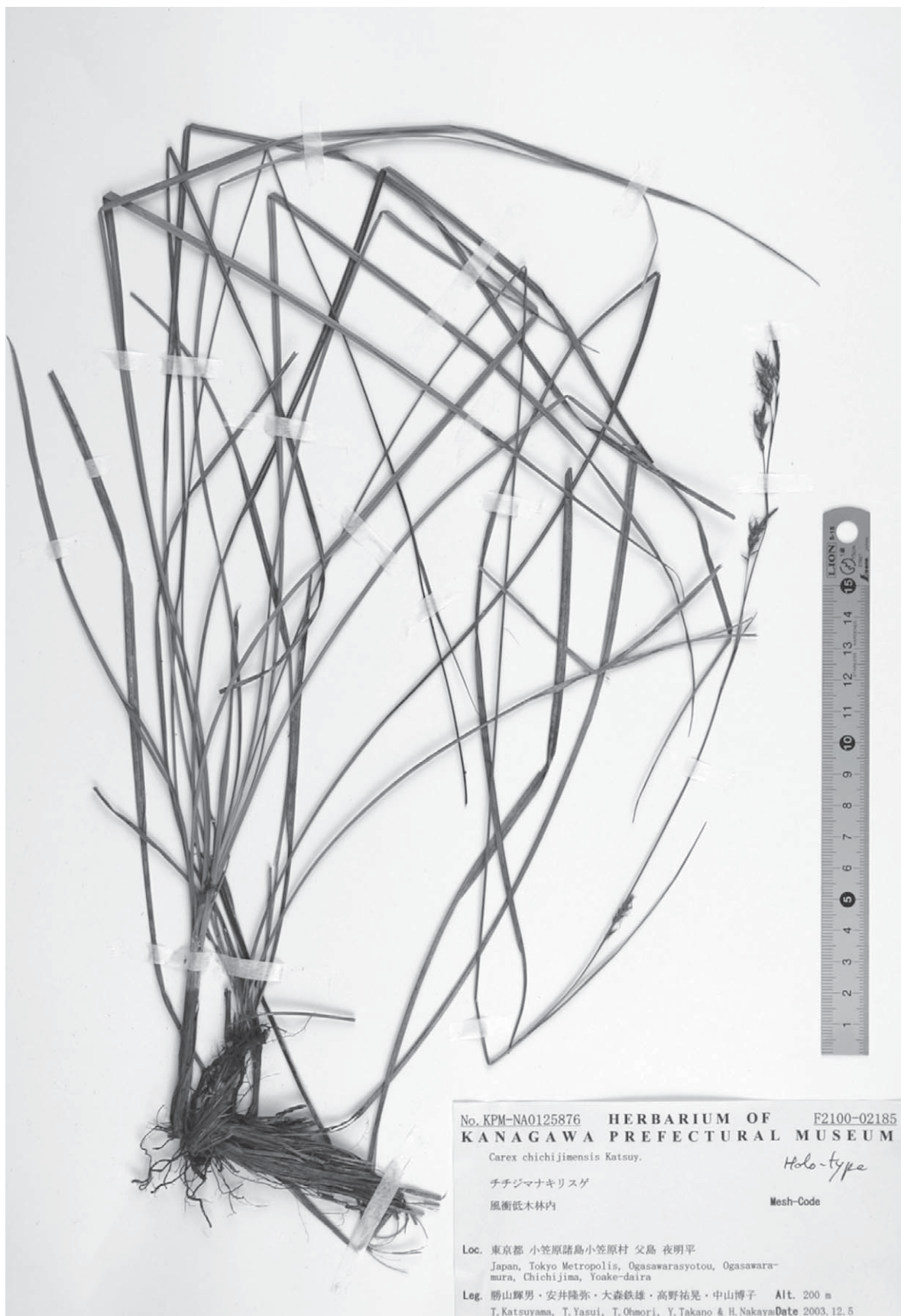


Fig. 1. Holotype of *Carex chichijimensis* Katsuy. Japan: Tokyo Pref., the Ogasawara Islands, Chichijima Island, Mt. Yoake-yama, 5 Dec. 2003, T. Katsuyama & al. s.n. (KPM-NA 0125876).

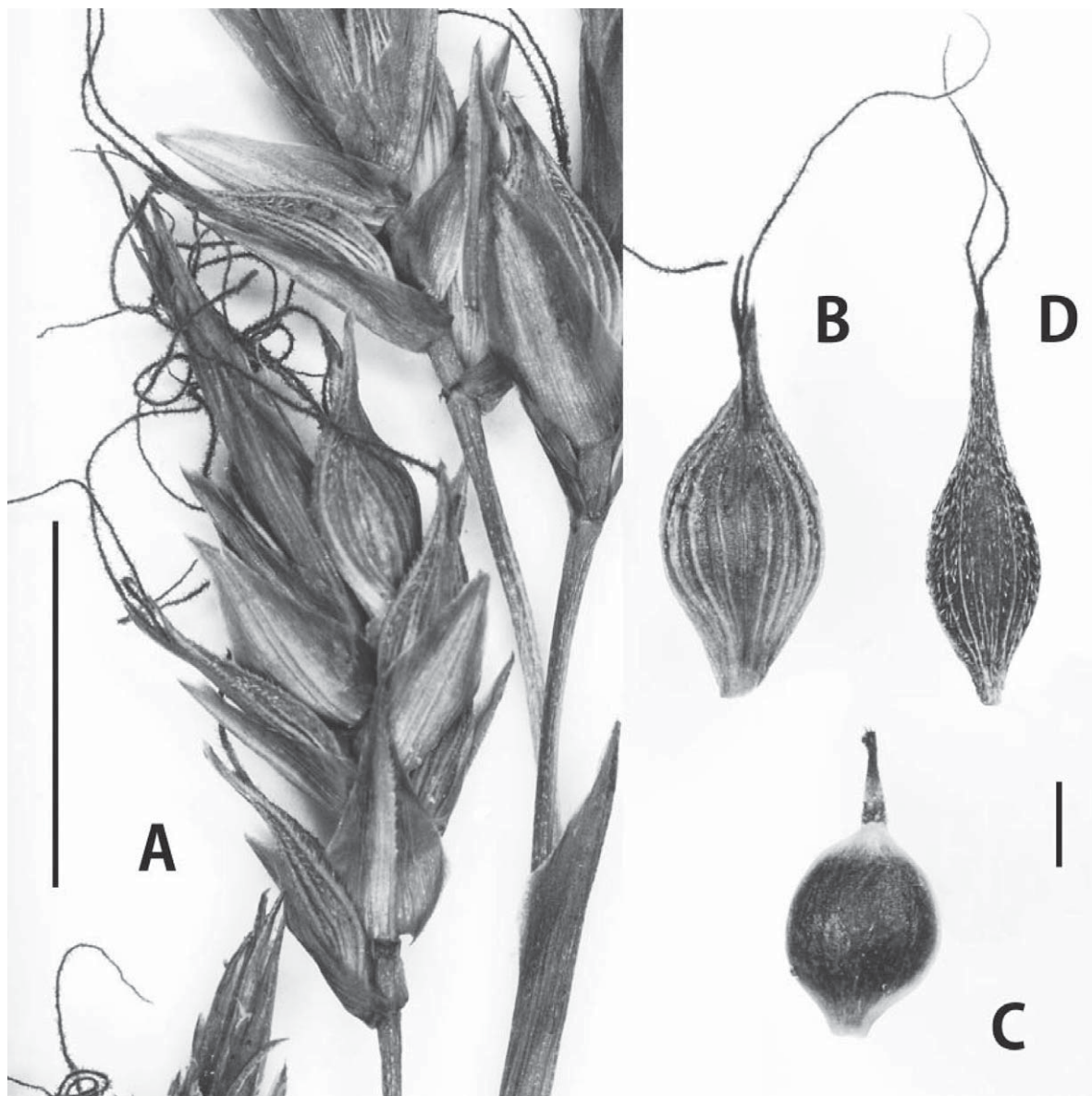


Fig. 2. Spike (A), perigynium (B) and achene (C) of *Carex chichijimensis* Katsuy. (KPM-NA 0125876), and perigynium (D) of *C. hattoriana* Nakai. Scale = 5 mm (A) and 1 mm (B–D).

inflorescence racemose, with 3–7 spikes on upper 1/5 to 1/3 of the culm, solitary (rarely 2) at node; spikes androgynous, staminate section slightly shorter than pistillate one, long pedunculate, narrowly cylindrical, 1–2 cm long, 3.5–4.5 mm wide, subdensely many-flowered (Fig. 2 A). Bracts with sheaths, blades setaceous above, lowest leafy and longer than the spikes. Pistillate scales oblong ovate, slightly shorter than the perigynia, 3–4 mm long, acute, midrib green,

margins brownish. Perigynia erect to ascending, ovate, biconvex, 4–5 mm long, 1.5–2 mm wide, membranaceous, strongly multi-veined, faces almost glabrous, slightly scabrous along veins, short stipitate, attenuate to beaks, apex bidentate (Fig. 2 B). Achenes tightly enveloped in the perigynia, broadly elliptic to ovate, biconvex, 2–2.5 mm long, 1.5–2 mm wide, dark brown at maturity (Fig. 2C). Styles short, ca. 1 mm long, base slightly thickened. Stigmas 2, 5–9 mm long,

persistent. Chromosome number: $2n = 60$ (Yano et al. 2008).

Japanese Name: Chichijima-nakirisuge.

新和名：チチジマナキリスゲ

Distribution: Endemic to the Ogasawara Islands (Chichijima Island), Japan.

Habitat: Wind-exposed shrub dominated by *Distylium lepidotum* Nakai, *Planchonella obovata* (R. Br.) Pierre var. *dubia* (Koidz. ex H. Hara) Hatus. ex T. Yamaz., *Rhaphiolepis integerrima* Hook. & Arn. and so on, alt. 150–250 m, on poor dry soils.

Other specimens examined: Japan. Tokyo pref. the Ogasawara Islands. Chichijima Island, from Mt. Chuou-zan to Mt. Hatsune-yama, 5 Dec. 2003, T. Katsuyama & al. s.n. (KPM-NA 0125875); *ibid.*, 10 Apr. 2005, T. Katsuyama & al. s.n. (KPM-NA 0125889, 0125890); *ibid.*, 7 July 1976, M. Furuse 11303 (KPM-NA 0074053); *ibid.*, 11 May 1976, N. Fujita & Y. Shimizu 336 (TI, KYO); *ibid.*, 26 June 1976, H. Kanai & M. Ono 764171 (MAK 306722, TNS 340255).

Carex chichijimensis belongs to sect. *Graciles* Tuck. ex Kük. and is closely related to *C. hattoriana* Nakai which is endemic to the Ogasawara Islands, but can be distinguished from the latter by having larger, rather glabrous and strongly veined perigynia (Fig. 2 B, D). Kern and Nooteboom (1979) and Koyama et al. (2000) considered *C. hattoriana* to be conspecific with *C. brunnea* Thunb. in the broadest sense, but

the former is distinguished from the typical *C. brunnea* by its large perygynia and long persistent stigmas. I cannot adopt the treatment of Kern and Nooteboom (1979) and Koyama et al. (2000), and consider that *C. hattoriana* is significantly different from *C. brunnea* and is endemic to the Ogasawara Islands. Comparative morphological characters among *C. chichijimensis* and the related species, *C. hattoriana* and *C. brunnea*, are provided in Table 1.

Carex yasuii Katsuy., sp. nov.

Affinis *Carici gracilispicae* Hayata et *C. rhynchochaenium* C. B. Clarke, sed culmis longioribus, squamis feminis anguste ovatis acuminatis vel brevi aristatis et utriculis glabris diversa. [Figs. 3–4]

Type: Japan, Tokyo Pref., the Ogasawara Islands, Chichijima Island, Mt. Chuou-zan, alt. 280 m, 17 Apr. 2005, T. Katsuyama, T. Ohmori and H. Nakayama (KPM-NA 0129588–holo, Figs. 3, 4; TI, TNS, KYO–iso).

Perennial evergreen herbs. Rhizome short, densely caespitose. Culms central, slender, 20–40 cm tall, as long as leaves, trigonous, smooth. Leaves basal; blades flat, 2–4 mm wide, dark green, scabrous on abaxial side and along margins; basal sheaths with leaf-blades, stramineous to brownish, fibrillose.

Table 1. Comparison among *Carex chichijimensis* and the related species in morphological characters

Characters	<i>C. chichijimensis</i>	<i>C. hattoriana</i>	<i>C. brunnea</i>
Number of spikes at node	solitary	2–4-fasciculate	2–6-fasciculate
Length of staminate section of spikes	slightly shorter than the pistillate section	equal to the pistillate section	shorter than the pistillate section
Shape of perigynia	ovate	narrowly ovate to lanceolate	elliptic
Size of perigynia	4–5 mm × 1.5–2 mm	4–5 mm × 1.3–1.5 mm	2.5–3 mm × 1–1.2 mm
Faces of perigynia	almost glabrous	densely appressed hispid	puberulent
Veins of perigynia	strong	rather fine	fine
Size of achenes	2–2.5 mm × 1.5–2 mm	2–2.5 mm × 1.2–1.3 mm	ca. 1.5 mm × 1–1.2 mm
Stigmas	5–9 mm long, persistent	4–5 mm long, persistent	2–3 mm long, caducous



Fig. 3. Holotype of *Carex yasuii* Katsuy. Japan: Tokyo Pref., the Ogasawara Islands, Chichijima Island, Mt. Chuou-zan, alt. 280 m, 17 Apr. 2005, T. Katsuyama & al. s.n. (KPM-NA 0129588).

Flowers April to May, inflorescence racemose, with 3–5 spikes, bearing on upper 1/4 to 1/2 of the culm, solitary at node, remote; terminal spike staminate, linear, 2–5 cm long, 1–1.5 mm wide (Fig. 4 A); lateral spikes pistillate or androgynous with short staminate section above, erect, pedunculate, narrowly cylindrical, 1–3 cm long, 3–4 mm wide, subdensely many-flowered (Fig. 4 B). Bracts setaceous above, lower leafy, blades equalling the spikes, with short sheaths. Staminate scales oblanceolate, 5–6 mm long,

white to pale brown, midrib green, acute to short aristate. Pistillate scales narrowly ovate, 3–4 mm long, shorter than perigynia, white to pale brown, midrib green, acuminate to short aristate. Perigynia erect, gourd-like lanceolate, acutely trigonous, 4.5–5.5 mm long, 1–1.2 mm wide, membranaceous, finely many-veined, glabrous, stipitate, attenuate to beaks, margins of beak scabrous, apex bidentate (Fig. 4 C). Achenes tightly enveloped with the perigynia, lanceolate, trigonous, 3.5–4 mm long, brown at matur-



Fig. 4. Staminate spike (A), pistillate spike (B), perigynium (C) and achene (D) of *Carex yasuii* Katsuy. (KPM-NA 0129588). Scale = 5 mm (A–B) and 1 mm (C–D).

ity, base stoutly stipitate, stipes stramineous, ca. 1 mm long, attenuate to cylindrical neck, neck stramineous, ca. 0.5 mm long, ca. 0.7 mm across, apex truncate to shallowly concave when dried (Fig. 4 D). Styles short, base thickened. Stigmas 3, ca. 2 mm long, caducous.

Japanese name: Munin-hyotansuge.

新和名：ムニンヒョウタンスゲ

Distribution: Endemic to the Ogasawara Islands (Chichijima Island), Japan

Habitat: Mountain forest around the summit of Mt. Chuou-zan, alt. 250-300 m, dominated by *Schima mertensiana* (Siebold & Zucc.) Koidz., on rather moist soils.

Carex yasuii belongs to sect. *Mitratae* Kük. and resembles *C. gracilispica* Hayata and *C. rhynchachaenium* C. B. Clarke from Taiwan in having gourd-like lanceolate, more than 4.5 mm long perigynia, and stoutly stipitate, cylindrically necked achenes (Fig. 4 C, D). However, *C. yasuii* is easily distinguished from the latter two species by longer culms nearly as long as leaves, narrowly ovate pistillate scales with acuminate to short aristate apex and glabrous perigynia. Comparative morphological characters among *C. yasuii* and the related species, *C. gracilispica* and *C. rhynchachaenium*, are provided in Table 2.

Carex gracilispica, *C. rhynchachaenium* and its allies from the eastern and southern Asia make a small group of sect. *Mitratae*, and sometimes belong to sect. *Lageniformes* (Ohwi) Nelmes characterized by gourd-like or lageniform perigynia and cylindrical, truncate necked achenes (Nelms 1951, Kern and Nootboom 1979, Liang et al. 2000). Five species, *C. breviscapa* C. B. Clarke, *C. rhynchachaenium*, *C. formosensis* H. Lév. & Vaniot, *C. genkaiensis* Ohwi and *C. kamagariensis* K. Okamoto, had been recorded in this group from Japan (Katsuyama 2006).

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Table 2. Comparison among *Carex yasuii* and the related species in morphological characters

Characters	<i>C. yasuii</i>	<i>C. gracilispica</i>	<i>C. rhynchachaenium</i>
Length of culms	nearly as long as leaves	hidden under the leaves	hidden under the leaves
Width of leaves	2–4 mm	6–15 mm	1.5–3.5 mm
Shape of pistillate scales	narrowly ovate	elliptic to ovate	elliptic to ovate
Apex of pistillate scales	acuminate to short aristate	obtuse to rounded	obtuse to rounded
Length of pistillate scales	3–4 mm	2–3 mm	2–3 mm
Perigynia	glabrous	puberulent	puberulent
Stipe of achenes	ca. 1 mm long	ca. 0.5 mm long	0.6–0.8 mm long
Apex of achenes	gradually contracted into neck	subabruptly contracted into neck	subabruptly contracted into neck
Neck of achenes	ca. 0.5 mm long, ca. 0.7 mm across	0.7–0.8 mm long, ca. 0.5 mm across	ca. 1 mm long, 0.5–0.7 mm across

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勝山輝男：小笠原諸島産スゲ属（カヤツリグサ科）の2新種

小笠原諸島産スゲ属植物の2新種，チチジマナキリスゲ *Carex chichijimensis* Katsuy. とムニンヒョウタンスゲ *C. yasuii* Katsuy. を正式に記載した。チチジマナキリスゲはナキリスゲ節（Sect. *Graciles* Tuck. ex Kük.）に属し，小笠原固有のムニンナキリスゲに似るが，果胞が大きく，ほとんど無毛で，太い脈が多数あることが異なる。ムニンヒョウタンスゲはヌカスゲ節（sect. *Mitratae* Kük.）に属し，長さ4.5 mm 以上の瓢箪型の果胞

と，柄が太く先が円柱状の瘦果が，台湾のヒロハヒョウタンスゲ *C. gracilispica* Hayata やトックリスゲ *C. rynchachaenium* C. B. Clarke に似るが，花茎が長く，雌鱗片が狭卵形で鋭尖頭または短芒頭であること，果胞が無毛であることにより容易に区別できる。チチジマナキリスゲとムニンヒョウタンスゲはともに小笠原諸島に固有で，分布は父島に限られる。

（神奈川県立生命の星・地球博物館）