



Lectotypification of the name *Carex accrescens* (Cyperaceae)

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Carex accrescens Ohwi (1931: 255) is a sedge found in northeastern China, Korea, Japan, Mongolia and Russia (Govaerts *et al.* 2007, Dai *et al.* 2010, Park *et al.* 2016, Govaerts *et al.* 2018+). This species has been classified either as sect. *Ammoglochin* Dumortier (1827: 146) (Rotreklová *et al.* 2011) or sect. *Holarrhenae* (Döll) Pax (1888: 124) (Hoshino & Masaki 2011, Park *et al.* 2016). However, both sections have been determined as non-monophyletic, and the latest phylogenetic reconstructions (Global *Carex* Group 2016) recover it in a clade with members of sect. *Holarrhenae* s.s. and some North American species usually classified in sect. *Phaestoglochin* Dumortier (1827: 146).

As part of an ongoing project promoted by the Korea National Arboretum, aimed at tracing the original materials used to describe vascular plant taxa in Korea, we detected problems with the typification of *C. accrescens*. This species was described based on a gathering made by Jisaburo Ohwi in “Kyonson”, currently in Gyeongseong-gun, Hamgyeongbuk-do of North Korea. Regarding typification, Koyama & Kanai (1990) reported the ‘holotype’ at Kyoto University (KYO), as well as an isotype at National Museum of Nature and Science, Tokyo (TNS; herbarium acronyms according to Thiers 2018+). Nevertheless, the use of the term holotype is not correct and must be corrected to lectotype under Art. 9.9 of International Code of Nomenclature for algae, fungi, and plants (ICN, McNeill *et al.* 2012), as Ohwi (1931) only referred to a single gathering but not to a single specimen. There are currently two specimens at KYO that could belong to the mentioned type collection with different accession numbers (KYO-00079069, KYO-00079070). In addition several duplicates exist at TNS, Tokyo University (TI) and National Taiwan University (NTUF). Consequently, those duplicates are to be considered as syntypes (Art. 9.5 of the ICN).

Koyama and Kanai’s reference (1990) could be considered as effective first-step lectotypification. A second-step lectotype is needed in order to narrow Koyama and Kanai’s typification to a single specimen (Art. 9.17 of the ICN). Therefore, the sheet KYO-00079070 is selected here as second-step lectotype. It has attached a label in Ohwi’s handwriting reading “*Carex accrescens* Ohwi *n.n.*”, which supports it being original material. The selected sheet bears a complete and well-preserved specimen that displays all the diagnostic morphological features needed for the identification of the species, such as long creeping rhizomes, prophylls wanting, androgynous spikes, bifid stigmas, and perigynia with serrulate winged margins and bidentate beak (Dai *et al.* 2010, Hoshino & Masaki 2011, Park *et al.* 2016). Any other specimens from Ohwi’s gathering in Kyonson must be considered as isolectotypes (Recommendation 9C of the ICN).

Typification

Carex accrescens Ohwi (1931: 255)

Lectotype (first step: Koyama and Kanai 1990, p. 109, second step: **designated here**):—N. KOREA. Kyonson, Korea borealis [currently Gyeongseong-gun, Hamgyeongbuk-do], 14 June 1930, *J. Ohwi 901* (KYO-00079070!, Fig. 1; iso- KYO-00079069!, NTUF-00000358!, TI (2 sheets!, no barcode number), TNS-219758!).

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FIGURE 1. Lectotype of *Carex accrescens* Ohwi (*J. Ohwi* 901, 14 June 1930, KYO-00079070).

References

- Dai, L.K., Liang, S.Y., Zhang, S.R., Tang, Y.C., Koyama T., Tucker, G.C., Simpson, D.A., Noltie, H.J., Strong, M.T., Bruhl, J.J., Wilson, K.L. & Muasya, A.M. (2010) Cyperaceae. In: Wu, C.Y., Raven, P.H. & Hong, D.Y. (Eds.) *Flora of China*, vol. 23 (*Acoraceae through Cyperaceae*). Science Press and Missouri Botanical Garden Press, Beijing and St. Louis, pp. 164–461.
- Dumortier, B.C.J. (1827) *Florula belgica, Operis majoris Prodrromus*. Staminacia. Typis J. Casterman, Tornaci Nerviorum, 172 pp.
- Global *Carex* Group (2016) Megaphylogenetic specimen-level approaches to the *Carex* (Cyperaceae) phylogeny using ITS, ETS, and *matK* sequences: implications for classification. *Systematic Botany* 41 (3): 500–518.
<https://doi.org/10.1600/036364416X692497>
- Govaerts, R., Jiménez-Mejías, P., Koopman, J., Simpson, D., Goetghebeur, P., Wilson, K., Egorova, T. & Bruhl, J. (2018) World Checklist of Cyperaceae. Available on the Internet: <http://apps.kew.org/wcsp/> (accessed February 2018)
- Govaerts, R., Simpson, D.A., Goetghebeur, P., Wilson, K.L., Egorova, T. & Bruhl, J. (2007) *World Checklist of Cyperaceae. Sedges*. Kew Publishing, Royal Botanic Gardens, Kew, London, U.K., 780 pp.
- Hoshino, T. & Masaki, T. (2011) *Illustrated Sedges of Japan*. Heibonsha Ltd., Tokyo, 778 pp.
- Koyama, H. & Kanai, H. (1990) Type collection in the Herbarium of National Science Museum, Tokyo (TNS) *Cyperaceae* (I). *Bulletin of the National Museum of Nature and Science, Series B (Botany), Tokyo* 16 (3): 109–115.
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (Eds.) (2012) *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code), adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. Koeltz Scientific Books, Königstein, XXX + 208 pp. [Regnum Vegetabile 154]
- Ohwi, J. (1931) Contributiones ad Caricologiam Asiae Orientalis Pars Altera. *Memoirs of the College of Science, Kyoto Imperial University. Series B. Biology* 6 (5): 239–270.
- Park, S.H., Lee, Y.M., Kim, H.J., Yang, J.C., Jang, C.S., Lee, K.H., Lee, J., Han, J.S., Kim, H.J., Jeong, K.S., Son, D.C., Lee, D.H., Joo, M., Sun, E.M., Shin, C.H., Choi, K., Oh, S.H., Chang, K.S., Jung, S.Y. & Ji, S.J. (2016) *Illustrated Cyperaceae of Korea*. Korea National Arboretum, Pocheon, 609 pp.
- Pax, F.A. (1888) Cyperaceae. In: Engler, A. & Prantl, K. (Eds.) *Die Natürlichen Pflanzenfamilien II* 2 (15): 98–126.
- Rotreklová, O., Bureš, P., Řepka, R., Grulich, V., Šmarda, P., Hralová, I., Zedek, F. & Koutecký, T. (2011) Chromosome numbers of *Carex*. *Preslia* 83: 25–58.
- Thiers, B. (2018) *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/science/ih/> (accessed 5 March 2018)