

Typification of *Chara strigosa* f. *longispina* A.Braun, 1883 (*Characeae*, *Charophyceae*)

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Chara strigosa A.Braun was described by Braun (1847: 16, no figure) based upon material in the herbarium of Gay in Paris and probably collected in western Switzerland, perhaps in Lake Geneva, by François-Barthélémy Ducros (1751–1822), a Swiss clergyman and botanist. Braun's description expressed a similarity to *Chara contraria* var. *hispidula* A.Braun, but that the primary rows protruded more strongly, and the spines were longer. It differs from *Chara tenuispina* A.Braun by the protruding primary rows, shorter bracts, as well as longer and larger oospores. Later, Braun & al. (1859) named the origin of further material: exsiccata No. 42 of “Die Characeen Europa's”: “Im Königssee bei Berchtesgaden...” [Bavarian Alps, Germany]. The label has the annotation: “Wurde schon vor langer Zeit von Ducroz im Jura entdeckt, doch war der Fundort nicht genau bekannt und wurde erst durch die Nachforschungen von Bulnheim aufgeklärt”. [It was discovered long ago by Ducroz in the Jura, but the exact location was unknown and was only clarified by Bulnheim's research]. “In a conference of German naturalists and physicians in 1857, Braun mentioned that *Chara strigosa* occurred at “Königssee von Berchtesgaden” and “im Jura im See von d'Etalières” (Noeggerath & Kilian 1859: 143). Also, only the Lac d'Etalières in western Switzerland is mentioned in Braun & Nordstedt (1882: 150). So, this lake appears to be the origin of the original material of *Chara strigosa* by Braun (1849). Today, the species is not present in the Lac d'Etalières, which shows signs of eutrophication (W. Diewald, pers. comm., 2006).

The original plants of François-Barthélémy Ducros were according to Braun (1847) in the herbarium of Gay in Paris. This refers probably to Jacques Étienne Gay (1786–1864). According to Michelle Casanova (pers. comm.), plants of *Chara strigosa* collected by Ducros could not be found in Paris (PC), also R. D. Wood searched in 1956 in vain in PC for Gay material (Wood 1965: 208). In the absence of any specimens from western Switzerland seen by A. Braun, Wood (1965: 208) designated a neotype in NY for “*Chara globularis* var. *aspera* f. *strigosa*” from number 92 of “Characeen Europa's” (Braun & al. 1870) collected in the Thumsee near Reichenhall (today Bad Reichenhall in Bavaria, southern Germany), where it is still found (Arbeitsgruppe Characeen Deutschlands 2016). This neotypification is somewhat in conflict to the geographical origin given by Braun in the protologue (“... in der westlichen Schweiz”) as the selected plant was collected ca. 500 km northeast in the Bavarian Alps.

Braun & al. (1859) published as no. 49 of “Die Characeen Europa's” an exsiccate of *Chara strigosa* f. *longispina* A.Braun from “Lac d'Etalières bei Neuchâtel (La Brévine) im Juli 1857 ges. von O. Bulnheim” without a description or reference to one (*nom. inval.*). The name was validly published by Braun & Nordstedt (1882: 150) without mentioning other forms, thereby creating the autonym *Chara strigosa* f. *strigosa*. The only station is “Lac d'Etalières”, where Carl Otto Bulnheim (1820–1865) had collected material for the exsiccata in 1857. Sydow (1882: 59) changed the rank to *Chara strigosa* var. *longispina* (A.Braun) Sydow, referring to Braun's name and “Herr Dr. O Nordstedt” who allowed him to consult the manuscript “A. Braun, Fragmente einer Monographie der Characeen”, then in print.

In 1893, Migula (1889–1897) gave an extended description of *Chara spinosa* f. *longispina*, with Lac d'Etalières near Neuchâtel as the only locality.

Magnin (1893: 6, 13, fig. 174) published *Chara jurensis* Hy ex Magnin with a very short diagnosis referring to “*Ch. strigosa* var. *longispina* A. Br.” mentioning several locations and collecting dates in lakes of the Swiss Jura. Later Hy (1913) created the combination *Chara strigosa* f. *jurensis*.

Subsequently, *Chara jurensis* was largely forgotten and was not mentioned by Schubert & al. (2024) as Anders Langangen (1942–2025), the author of the species in this book, did not want to treat forms for which there is “no reason to believe that [they] can be raised to species level” (pers. comm. by e-mail to T. Gregor, 10 January 2025).

In Kützing (1857) plate 62 with two drawings on the left side and two drawings on the right has the caption: [in the right part] *Chara strigosa* and [in the left part] *β. longispina*. This might be mistaken for a taxon name, i.e. *Chara strigosa* var. *longispina*. But Kützing (1857: 25–26) starts with explanations to the plates. For plate 62 (*Chara strigosa*) we find: Fig. a. Forma brevispina et brevibracteata. — Natürliche Grösse [natural size]. — a.' Quirlast, unterwärts mit Involucrum u. Stengel, vergrößert. [Branch lower side with involucre and stem, magnified]. Fig. β. Forma longispina et longibracteata, caule gracili, verticillis remotis. — Natürliche Grösse [natural size]. — b. Quirlast mit Sporenfrucht und Antheridienkugel. [Branch with oogonium and antheridium]. Plate 62 consists of two parts. On the left the drawings a and a', on the right the drawings β and b. The caption under the drawings is not a taxon name. In such a case all the drawings would belong to this taxon. It should be interpreted as “*Chara strigosa*” short for “*Chara strigosa* Fig. a Forma brevispina et brevibracteata” on the left side and “β. longispina” short for “*Chara strigosa* Fig. β. forma longispina et longibracteata” on the right side.

Recently at HEPIA (Haute école du paysage, d'ingénierie et d'architecture de Genève) a project was launched “Conservation genetics of *Chara strigosa* A. Braun and its ecologically and morphologically related species in Switzerland”. This study, undertaken in 2023 by Delphine Ruffio (Université de Strasbourg) for a Master thesis, found that plants from western and eastern Switzerland differed substantially genetically (Ruffio & al. 2024). According to their *rbcL* sequences, two genetically distinct populations are apparent. Plants from the Upper Engadin grouped with *Chara aspera* Willd., *C. globularis* Thuillier and *C. virgata* Kützing, while plants from the Jura grouped with *C. contraria* A. Braun ex Kützing; in a tree based on “Angiosperm353” plants from the Upper Engadin grouped with *C. virgata* while plants from the Jura grouped with *C. aspera*, *C. contraria* and *C. tomentosa* Linnaeus. In both trees the *C. strigosa* groups were clearly separated. It was speculated that the plants from Jura were derived by hybridization. Both groups should be treated at species level.

Following the neotype designated by Wood (1965) the seemingly haplostichous (secondary cells are reduced) cortex in *Chara jurensis* (*Chara strigosa* f. *longispina*) noted by Magnin (1893, 1904) contrasting with the diplo- to triplostichous cortex in *Chara strigosa sensu stricto* allows their morphological delineation. Further population genetic and morphological studies conducted on both areas, western and eastern Switzerland, should clarify this issue.

According to Langangen (2000) and Schubert & al. (2024) morphological variation is low, except for the arrangement of stipulodes (Romanov & al. 2014) in this species, which is distributed in Northern and Eastern Europe, the Alps, the Caucasus and the Atlas in North Africa with outliers in North and Central Asia; see the distribution maps in Langangen (2000), Romanov & al. (2014), Schubert & al. (2014) and Romanov & al. (2026).

Chara strigosa A.Braun, Übersicht der Schweizerischen Characeen 16. 1847

Neotype (designated by Wood 1965: 208): *Chara strigosa* A.Braun Germany: — “Braun, Aug.-Sept. 1869. Im Thumsee bei Reichenhall” ~ Braun, Rab. & Stiz., Char. Exs. No. 92 as *C. strigosa* (NY), selected Neotype of *C. strigosa* per RDW, Feb. 14, 1959, and marked “α” (Icon 83) (KI 58-5-8).” <https://sweetgum.nybg.org/images3/655/448/00945627.jpg>

Chara strigosa f. *longispina* A.Braun (in Braun & Nordstedt), *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften*, 1882 (1): 150. 1883

Lectotype (designated here): “im Lac d’Etalières bei Neuchatel (La Brévine) im Juli 1857 ges. von O. Bulnheim”, *Chara strigosa* A.Braun f. *longispina* A.Braun, Rabenhorst & Stizenberger, *Die Characeen Europa's*, 2/43. 1859 (NY 3331836)

≡ *Chara strigosa* var. *longispina* (A.Braun) P.Sydow, *Eur. Charac.* 59. 1882

“*Chara strigosa* f. *longispina*” A.Braun, Rabenhorst & Stizenberger, *Die Characeen Europa's*, 2/43. 1859, *nom. inval.*

= *Chara jurensis* Hy ex Magnin, *Échange* 9(97): 6. 1893

Lectotype (designated by Romanov 2026: 1): “Lac d’Etalières bei Nauchatel (La Brévine) [Canton of Neuchâtel, Switzerland], im Juli 1857... O. Bulnheim” *Die Characeen Europa's* no. 43 “*C. strigosa* f. *longispina*” (L 4097560).

≡ *Chara strigosa* f. *jurensis* (Hy ex Magnin) Hy, *Bulletin de la Société botanique de France* 60: (*Mémoires* 26): 34. 1913

“*Chara jurensis*” Hy ex Magnin, *Comptes rendus hebdomadaires des Séances de l'Académie des Sciences*, 115(15): 536. 1892, *nom. inval.*

Registration (of lectotype): <http://phycobank.org/107539>.

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Arbeitsgruppe Armleuchteralgen Deutschlands (2016): Armleuchteralgen. *Die Characeen Deutschlands*. pp [i]–xviii, [1]–618. Berlin & Heidelberg: Springer.

Braun, A. (1847): Übersicht der Schweizerischen Characeen. Ein Beitrag zur Flora der Schweiz. pp. [1]–23. Jent und Gassman, Solothurn.

Braun, A. & Nordstedt, C.F.O. (1882 September): Fragmente einer Monographie der Characeen. Nach den hinterlassenen Manuscripten A. Braun's herausgegeben von Hrn. Dr. Otto Nordstedt. *Abhandlungen der Königlich Akademie der Wissenschaften zu Berlin für das Jahr 1882*: 1–211, 7 pls.

Braun, A., Rabenhorst, L., Stizenberger, E. (1859): *Die Characeen Europa's* II (Nummern 26–50). Dresden. [Exsiccata]

Braun, A., Rabenhorst, L., Stizenberger, E. (1870): *Die Characeen Europa's* IV (Nummern 76–100). Dresden. [Exsiccata]

Hy, F. (1913): Les Characées de France. *Mémoires de la Société Botanique de France* 26: 1–47, 3 pls.

Kützing, F.T. (1857): *Tabulae Phycologicae oder Abbildungen der Tange*. VII. Band. Nordhausen: In Commission bei Ludwig Klincksieck, vormals W. Köhne. pp. [1], [I]–II. 1–40, [1], Tab. 1–100.



- Langangen, A. (2000): On the morphology and ecology of *Chara strigosa* A. Braun (Charophyceae) in Scandinavia, with notes on its total distribution. *Aquilo Ser. Botanica* 38: 1–12.
- Magnin, A. (1892): Végétation des lacs des monts Jura. Note de M. Ant. Magnin, présentée par M. Duchartre. *Comptes rendus hebdomadaires des Séances de l'Académie des Sciences* 115(15): 535–538.
- Magnin, A. (1893 [Janvier]): Notes de Botanique III(1). *L'Échange, Organe des Naturalistes de la région lyonnaise* 9(97): 6–7.
- Magnin, A. (1904). [Végétation des lacs du Jura]. Deuxième partie. Considérations générales sur la flore des lacs du Jura et sur la végétation lacustre. *Annales de la Société botanique de Lyon, tome 29, Notes et Mémoires – Comptes-rendus des séances* 1–2: 1–185.
- Migula, W. (1889–1897): Die Characeen Deutschlands, Oesterreichs und der Schweiz. Unter Berücksichtigung aller Arten Europas. In: Fischer, A., Fischer, E., Hauck, F. Limpricht, G., Luerssen, C., Migula, W., Rehm, H. Richter, P., Winter G. (eds.), Dr. L. Rabenhorst's Kryptogamenflora von Deutschland, Oesterreich und der Schweiz 5, ed. 2. pp. [i]–xiii, [1], 1–765. Leipzig: Verlag von Eduard Kummer.
- Noeggerath, J. & Kilian, H.F. (1859): Amtlicher Bericht über die drei und dreissigste Versammlung deutscher Naturforscher und Ärzte zu Bonn im September 1857. pp. [i]–iv, 1–311, 2 pls. Carl Georgi, Bonn.
- Romanov, R.E., Chemeris, E.V., Vishnyakov, V.S., Chepinoga, V.V., Azovsky, M.G., Kuklin, A.P., & Timofeeva, V.V. (2014): *Chara strigosa* (Streptophyta: Charales) in Russia. *Botanicheskii Zhurnal (Moscow & St. Petersburg)* 99: 1148–1161. (In Russian).
- Romanov, R.E., Zarubina, E.Yu., Bernhardt, K.G., Kuzmenkin, D.V., Efremov, A.N., Anissimova, O.V., Sokolova, M.I., Ebel, A.L., Bazarova, B.B., Chepinoga, V.V., Zhakova, L. V. & Barinova, S.S. (2026): Charophytes (Charales, Characeae) of the Altai Mountains, a hotspot for charophytes in North Asia. *Journal of Asia-Pacific Biodiversity* 19: 508–532.
- Romanov, R.E. (2026): Typification of *Chara jurensis* Hy ex Magnin (Characeae, Charophyceae). *Notulae Algarum* 426: 1–2.
- Ruffio, D., Boissezon, A., Pouchon, C. & Naciri, Y. (2024): Une nouvelle espèce de Characées pour le canton de Vaud. *La Feuille Verte* 54: 14–15.
- Schubert, H., Blindow, I., Nat, E., Korsch, H., Gregor, T., Denys, L., Stewart, N., van de Weyer, K., Romanov, R. & Casanova, M.T. (2024): Charophytes of Europe. pp. [i]–xiii, [1]–1144. Cham, Switzerland: Springer Nature.
- Sydow, P. (1882): Die bisher bekannten europäischen Characeen. pp. [i]–xxviii, [1]–104. Berlin: Verlag von Adolf Stubenrauch.
- Wood, R.D. (1965): A revision of the Characeae 1: Monograph of the Characeae. pp. [i]–xxiv, 1–904. Weinheim: Verlag von J. Cramer.