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## The Genus *Chara* in Oklahoma

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The specimens listed here were collected mainly by the author during the years 1948 to 1950. Unfortunately time was not available for intensive collecting, which would probably extend both the number of species and the range of the species in the state. Species of *Chara* are common in the farm ponds, lakes, and rivers of Oklahoma, particularly in the central and western parts of the state.

Two species of *Chara* have been previously recorded from Oklahoma. Leake (11) lists *C. evoluta* Allen and *C. fragilis* Desv. from Crystal Lake, Cleveland County. These species were not collected by the present author and the specimens to support the records could not be located in Mrs.

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Leake's collections. The report of *C. evoluta* from a freshwater habitat is surprising since it has so far been found only in saline waters. An unnamed specimen of *C. fragilis* (*C. globularis* Thuill.) collected at Ardmore was located in the Herbarium of the University of Oklahoma and is cited in the list given.

No attempt has been made to give the full synonymy for the species listed. The reader is referred to Horn of Rantzien (8), Wood (14, 15), and Zaneveld (16) for more complete citations.

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#### KEY TO THE OKLAHOMA SPECIES OF CHARA

Note: Terminology of structures is the same as that used in Groves and Bullock-Webster (1920; 1925), (see however Wood (1947) p. 241).

1. Stipulodes in a single row at base of branchlets, ..... (2)
1. Stipulodes in a double row at base of branchlets, ..... (3)
2. Stem and branchlets without cortication, ..... 1. *C. braunii*
2. Stem corticated, branchlets naked, ..... 5. *C. keukensis*
3. Basal cell corticated, ..... (5)
4. Antheridia occurring at base of oogonia. Bracts at sterile nodes of branchlets very small, ..... 6. *C. zeylanica*
4. Antheridia and oogonia at different nodes of branchlets. Bracts at sterile nodes of branchlets forming ring of spines, ..... 7. *C. sejuncta*
5. Cortex of stem diplostichous (cortex cells twice the number of branchlets), ..... (6)
5. Cortex of stem triplostichous (cortex cells three times the number of branchlets), ..... 4. *C. globularis*
6. Primary cortical cells (with spine cells) more prominent than secondary, ..... 2. *C. contraria*
6. Secondary cells more prominent than primary, ..... 3. *C. vulgaris*
1. CHARA BRAUNII Gmelin, 1826.  
*Chara coronata* Ziz. ex Braun.

Illustrations: Groves and Bullock-Webster 1924, pl. 26;  
Wood 1947, pl. 2, fig. 2. Wood 1949, pl. 4, fig. 1.

Distribution for Oklahoma: Comanche County. Lake Quanah Parker, Wichita Mtns. In shallow water. I.L.O. 525. October 1948.

Zaneveld (16) when reviewing this species places the North American specimens in (1) *C. braunii* var. *braunii* (Braun) Zanev. forma *typica* Zanev. and (2) *C. braunii* var. *schweinitzii* (Braun) Zanev. The Oklahoma specimens are closest to his var. *schweinitzii* having well developed stipulodes and bract cells as long as the oogonium (see Wood, 1947, pl. 2, fig. 3 as *Chara schweinitzii* Braun; Wood 1949, pl. 4, fig. 1).

2. CHARA CONTRARIA Braun ex Kuetzing, 1845  
*Chara contraria* Kuetzing.

Illustrations: Groves and Bullock-Webster 1924, pl. 33; Wood 1947, pl. 3, fig. 3.

Distribution for Oklahoma: Murray Co. Lake Classen, Arbuckle Mtns. A dense mat covering lake bottom. I.L.O. 517. May 1948. : Cleveland Co. Stock pond on Highway 62. In shallow water among *Nitella opaca*. I.L.O. 529. March 1949. : South Canadian River near Norman. In pools. Coll. L. Hittle. Det. I.L.O. March 1950. : Love Co. Lake Murray. In shallow water. Coll. W. T. Penfound. Det. I.L.O. 70PA. July 1948. : Murray Co. Sulphur. In mineral spring containing hydrogen sulphide. I.L.O. 504. May 1948. : Platt National Park, Bromide Springs. In pool below springs. I.L.O. 518. May 1948. : Platt National Park, Rock Creek. In pools. I.L.O. 519. November 1948. : Woodward Co. Below Fort Supply dam. Coll. W. T. Penfound. Det. I.L.O. 176P. August 1948.

This is probably the most common species of *Chara* found in the state.

3. CHARA VULGARIS Linnaeus, 1753, *pro parte*.  
*Chara foetida* Braun.

Illustrations: Groves and Bullock-Webster 1924, pl. 28; Daily 1944, pl. 3C, figs. 1-7.

Distribution for Oklahoma: Roger Mills Co. Cattle tank. Antelope Hills. I.L.O. 515. May 1948.

The characters separating this species from *C. contraria* are subject to considerable variation (14, p. 251), and the above collection is assigned to *C. vulgaris* with some hesitation since the majority of Oklahoma specimens are certainly *C. contraria*. Zaneveld (16) has divided *C. vulgaris* into six sub-species. Of these only the cosmopolitan *C. vulgaris* ssp. *eu-vulgaris* Zanev. is given as occurring in North America.

4. CHARA GLOBULARIS Thuill. var. CAPILLACEA (Thuill.) Zaneveld, 1940.

*Chara fragilis* Desvaux apud Loiseleur, *pro parte*.

*Chara globularis* var. *fragilis* G. O. Allen.

Illustrations: Wood 1947, pl. 3, fig. 4 (as *C. fragilis*); Kuetzing 1857, pl. 54, fig. 1-3.

Distribution for Oklahoma: Carter Co. "Ardmore". Coll. B. Osborn. Univ. of Oklahoma Herbarium 344R. Det. I.L.O. April 1936.

There has been considerable debate regarding the correct name for this species (6, p. 64; 16, p. 192). Most published illustrations refer to *C. globularis* var. *hedwigii* (*C. fragilis* s. str.). Of the illustrations cited above, Kuetzing's figures are definitely var. *capillacea* (*C. globularis* s. str.), while that of Wood could refer to either variety. The Oklahoma specimens were not in good condition, but lacked the robust nature associated with var. *hedwigii*.

5. CHARA KEUKENSIS (Allen) Robinson, 1906.

*Chara gymnopitys* var. *keukenensis* T. F. Allen.

Illustrations: Wood 1947, pl. 3, fig. 1.

Distribution for Oklahoma: McCurtain Co. Little River near Idabel. In flowing water and pools. I.L.O. 508. August 1948. : Beaver Bend State Park. In shallow water of dammed stream. I.L.O. 523. August 1948. : Murray Co. Platt National Park. In small stream. I.L.O. 514. September 1948.

This species has in Oklahoma a characteristic dark green appearance and grows in dense clumps.

6. CHARA ZEYLANICA Willdenow forma MICHAUXII (Braun) H. and J. Groves, 1911.

*Chara haitensis* Turpin.

*Chara gymnopus* var. *michauxii* Braun in Allen.

Illustrations: Wood 1947, pl. 4, fig. 1.

Distribution for Oklahoma: Beaver Co. Playa near Gate. Coll. W.T. Penfound. Det. I.L.O. August 1949. : Cleveland Co. Farm pond three miles east of Norman. I.L.O. 512. September 1948. : Comanche Co. Lake Elmer Thomas, Wichita Mtns. Coll. W. T. Penfound. Det. I.L.O. 35P. July 1948. Same location. Coll. R. Kelting. Det. I.L.O. 503. August 1948. Lake Quanah Parker, Wichita Mtns. In shallow water. I.L.O. October 1948. : Love Co. Lake Murray. Coll. W. T. Penfound. Det. I.L.O. 70P. July 1948. Same location. In bays. I.L.O. 502. August 1948. Same location. Coll. W. T. Penfound. Det. I.L.O. August 1949. : McCurtain Co. Little River near Idabel. In pools. I.L.O. 511. August 1948. : Oklahoma Co. Lake Hefner. In bays. I.L.O. August 1948.

Wood (14) revived the name *C. haitensis* for this form previously assigned to *C. gymnopus* var. *michauxii* by Braun in Allen (1). However *C. gymnopus* is an invalid name (16, p. 206) and is also a synonym of *C. zeylanica*. Zaneveld (16, p. 208) quotes *C. haitensis* as a synonym of *C. zeylanica* f. *typica* Zanev. Horn at Rantzien (8) cites *C. haitensis* as a synonym of *C. zeylanica* f. *michauxii* following H. and J. Groves (5). The latter seems the better disposition of the American material since the Oklahoma specimens agree with the illustration and description of *C. haitensis* in Wood (14) and differ somewhat from the description and figures of *C. zeylanica* f. *typica* given by Zaneveld (16). This form is common in central and western Oklahoma in lakes and particularly in the numerous farm ponds of the area.

7. CHARA SEJUNCTA Braun, 1845.

*Chara compacta* Robinson.

Illustrations: Daily 1944, pl. 5C. figs. 1-2. Wood 1947, pl. 4, fig. 2 (as *C. compacta*).

Distribution for Oklahoma: Cleveland Co. Pond two miles east of Noble. Growing in red clay. I.L.O. 501. September 1948. : Comanche Co. Lake Quanah Parker, Wichita Mtns. I.L.O. 524. October 1948. : McCurtain Co. Little River near Idabel. I.L.O. 507. August 1948.

There is some doubt if the original description of this species (2, p. 264, footnote) is a description in the sense of the International Rules (see 8, p. 398). H. and J. Groves (5) are followed here in accepting Braun's name and in including *C. compacta* Robinson (13) with *C. sejuncta* (see also 14, p. 256). For a discussion of the relationship between *C. martiana* Wallman and *C. sejuncta* see Horn at Rantzien (8, p. 395 and p. 398).

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