

## THE DESMIDS OF FLORIDA

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The desmids of Florida have never been specially studied, although algologists have listed some of the numerous species from time to time since Bailey (1851, 1855) gave the first known account. Wolle (1892) lists 92 desmids from Florida either found by him or previously reported by Wood or Bailey. Johnson (1894, 1895) reports a few additional species and varieties from the state. The most comprehensive list published to date is that of Borge (1909), who lists one hundred and eight species, varieties, and forms for the state.

The list in the present paper consists of a hundred and forty species, varieties, and forms which have been collected by the writer and identified during the summer quarters of 1932 to 1934 at the Ohio State University. Of these sixty-one are new records for the state.

Collecting has been done in August, December, and April. The desmid flora shows marked seasonal variations, so that to secure a fairly complete knowledge of all the species it will be necessary to make collections throughout the year.

The writer wishes to express his appreciation to those who have aided him so materially in this study, especially to Dr. L. H. Tiffany, E. H. Ahlstrom, and C. E. Taft of the Botany Department of the Ohio State University.

The list of species follows, arranged in the order commonly used by workers on desmids.

- \**Gonatozygon aculeatum* var. *gracile* Grönblad.
- \* " *pilosum* Wolle.
- \* *Netrium digitus* (Ehrenberg) Itzigsohn & Rothe.
- \* " *interruptum* (Brébisson) Luetkemüller.
- \* *Penium libellula* var. *interruptum* W. & G. S. West.
- " *minutum* f. *major* Lundell.
- \* *Closterium archerianum* Cleve.
- \* " *attenuatum* Ehrenberg.
- \* " *costatum* Corda.
- \* " *didymotocum* Corda.
- \* " *kuetzingii* Brébisson.
- \* " *leibleinni* Kuetzing.

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\*New record for Florida.

- \**Closterium pritchardianum* Archer.  
 \* " *ralfsii* var. *hybridum* Rabenhorst.  
 \* " *regulare* Brébisson.  
 " *selaceum* Ehrenberg.  
 " *venus* Kuetzing.  
*Docidium undulatum* Bailey.  
*Pleurotaenium nodosum* (Bailey) Lundell.  
 " *trochiscum* W. & G. S. West.  
*Tetmemorus brebissonii* (Meneghini) Ralfs.  
 \**Euastrum ansatum* Ralfs.  
 \* " *attenuatum* Wolle.  
 " *evolutum* W. & G. S. West.  
 " *humerosum* Ralfs.  
 " *insigne* Hassall.  
 \**Netrium intermedium* Cleve.  
 " *oblongum* (Greville) Ralfs.  
 " *pinnatum* Ralfs.  
 " *ventricosum* Lundell.  
 " *verrucosum* Ehrenberg.  
 \* " *verrucosum* var. *planctonicum* W. & G. S. West.  
 \* " *wollei* Lagerheim.  
 \**Micrasterias abrupta* W. & G. S. West.  
 \* " *alata* Wallich.  
 " *americana* (Ehrenberg) Ralfs.  
 " *apiculata* var. *fimbriata* (Ralfs) Nordstedt.  
 \* " *apiculata* var. *fimbriata* f. *spinosa* Bissett.  
 " *arcuata* var. *gracilis* W. & G. S. West.  
 " *arcuata* var. *expansa* (Bailey) Nordstedt.  
 \* " *arcuata* f. *intermedia* Nordstedt.  
 \* " *conferta* Lundell.  
 \* " *conferta* var. *hamata* Wolle.  
 " *denticulata* Brébisson.  
 " *depauperata* var. *kitchelli* (Wolle) W. & G. S. West.  
 \* " *floridensis* n. sp.  
 " *foliacea* Bailey.  
 \* " *jenneri* Ralfs.  
 " *laticeps* Nordstedt.  
 " *mahabuleshwarensis* Hobson.  
 \* " *muricata* (Bailey) Ralfs.  
 \* " *murrayi* W. & G. S. West.  
 " *pinnatifida* (Kuetzing) Ralfs.  
*Micrasterias radiata* Hassall.  
 \* " *ranoides* n. sp.  
 " *ringens* var. *serrulata* Wolle.  
 " *sol* (Ehrenberg) Kuetzing.  
 \* " *sol* var. *ornata* Nordstedt.  
 \* " *sol* var. *swainii* (Hastings) W. & G. S. West.  
 \* " *torreyi* Bailey.  
 " *truncata* (Corda) Brébisson.

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\*New record for Florida.

- Cosmarium amoenum* Brébisson.  
 \* " *brebissonii* Meneghini.  
 " *commissurale* Brébisson.  
 " *connatum* Brébisson.  
 " *granatum* Brébisson.  
 \* " *isthmium* W. West.  
 \* " *ochthodes* Nordstedt.  
 " *ornatum* Ralfs.  
 \* " *orthogonum* Delponte.  
 \* " *ovale* Ralfs.  
 \* " *ovale* var. *subglabrum* W. & G. S. West.  
 " *portianum* Archer.  
 " *pyramidatum* Brébisson.  
 \* " *regnesi* Reinsch.  
 \* " *usmense* Skuja.  
*Xanthidium antilopaeum* Kuetzing.  
 " *antilopaeum* var. *minneapolisense* Wolle.  
 " *antilopaeum* var. *polymazum* Nordstedt.  
 \* " *antilopaeum* var. *triquetrum* Lundell.  
*Xanthidium armatum* var. *cervicorne* W. & G. S. West.  
 " *cristatum* Brébisson.  
 " *subhastiferum* W. West.  
*Arthrodesmus convergens* Ehrenberg.  
 " *incus* var. *longispinus* Eichler & Raciborski.  
 " *otocornis* Ehrenberg.  
 \* *Staurastrum arcuatum* Nordstedt.  
 \* " *arctiscon* var. *glabrum* W. & G. S. West.  
 " *brachiatum* Ralfs.  
 " *brasiliense* var. *lundellii* W. & G. S. West.  
 \* " *brevispinum* f. *major* W. & G. S. West.  
 \* " *curvatum* var. *elongatum* G. M. Smith.  
 " *dickiei* var. *maximum* W. & G. S. West.  
 " *grallatorium* var. *forcipigerum* Lagerheim.  
 \* " *limneticum* var. *cornutum* G. M. Smith.  
 " *leptocladum* Nordstedt.  
 " *minnesotense* Wolle.  
 \* " *mulicum* var. *minor* Wolle.  
 \* " *ophiura* Lundell.  
 \* " *ornithopodum* W. & G. S. West.  
 " *paradoxum* var. *osceolense* Wolle.  
 " *quadrangulare* var. *armatum* W. & G. S. West.  
 " *quadrispinatum* Turner.  
 \* " *radians* W. & G. S. West.  
 " *rotula* Nordstedt.  
 " *setigerum* Cleve.  
 \* " *spiculiferum* G. M. Smith.  
 \* " *spongiosum* Brébisson.  
 " *tohopekatigense* Wolle.  
 " *trifidum* var. *inflexum* W. & G. S. West.

\*New record for Florida.

- \**Staurastrum vestitum* Ralfs.  
 \* " *vestitum* var. *semivestitum* W. West.  
 \* " *wolleanum* var. *intermedium* W. & G. S. West.  
*Sphaeroszoma excavatum* Ralfs.  
 " *vertebratum* f. *minor* W. West.  
*Onychonema laeve* Nordstedt.  
 " *laeve* var. *micracanthum* Nordstedt.  
 \* " *filiforme* (Ehrenberg) Roy & Bissett.  
*Spondylosium planum* (Wolle) W. & G. S. West.  
 " *pulchrum* (Bailey) Archer.  
*Hyalotheca dissiliens* (Smith) Brébisson.  
 " *mucosa* (Dillwyn) Ehrenberg.  
 \* " *neglecta* Raciborski.  
*Desmidium aptogonum* Brébisson.  
 \* " *aptogonum* var. *ehrenbergii* Kuetzing.  
 " *baileyi* (Ralfs) Nordstedt.  
 " *coarctatum* Nordstedt.  
 " *cylindricum* Greville.  
 \* " *gracileps* (Nordstedt) Lagerheim.  
 " *quadratum* Nordstedt.  
 " *swartzii* Agardh.  
 " *swartzii* var. *quadrangulare* (Ralfs) Roy.  
*Gymnozyga moniliformis* Ehrenberg.  
 \* " *delicatissima*.  
*Phymatodocis nordstedtiana* Wolle.  
 \* " *nordstedtiana* var. *minor* Borgesen.  
*Triploceras gracile* Bailey.  
 " *verticillatum* Bailey.  
 \**Mateola acutiloba* n. gen. et sp.

*Micrasterias alata* Wallich.

The first record for the United States, although Lagerheim reported it for Cuba.

*Micrasterias floridensis* n. sp. (Pl. I, Fig. 2.)

Cells large, about as long as broad, suboctangular, deeply constricted, sinus linear. Semicells five-lobed, interlobular incisions narrowly linear; polar lobe cuneate, with dilated truncate apex, not projecting beyond the lateral lobes; lateral lobes almost equal and cuneate, divided into two lobules by a V-shaped incision; each lobule bifurcate into short spines. Vertical view fusiform. Cell wall finely punctate.

Zygosporium unknown.

Length, 224–228 $\mu$ ; breadth 207–224 $\mu$ ; breadth of isthmus 21–22.5 $\mu$ ; polar lobe at apex 76–86 $\mu$ .

Habitat: Keystone Lake near Odessa, Florida.

*Micrasterias foliacea* Bailey. (Pl. I, Fig. 7.)

*M. foliacea* Bailey occurs abundantly around Riverview and Childs. Cells with a zygosporium were found at Riverview, April, 1933.

\*New record for Florida.

Zygospore ovoid with stout bi- or trifurcate spines. Length of zygospore without spines  $52\mu$ ; thickness  $38\mu$ ; length of spines  $17-21\mu$ .

Turner (1893) figures the zygospore of the species and Krieger (1932) figured the zygospore of the var. *ornata*. The latter differs so markedly from the zygospore of *foliacea* vera that one is led to conclude that it either should be made a distinct species, or else that Krieger did not have the zygospore of the variety.

*Micrasterias piquata* n. sp. (Pl. I, Figs. 3-5.)

Cells small, about  $1\frac{1}{2}$  times as long as broad, subrectangular with broadly truncate poles, deeply constricted, sinus slightly open; semicells three lobed, incisions below polar lobe shallow and open; polar lobe broad with apex slightly convex and terminating in two (rarely one) laterally extending short spines, lateral lobes subrectangular, with two (sometimes one) short parallel spines at each corner. Vertical view of semicell broadly oval.

Zygospore unknown.

Length,  $100-111\mu$ ; breadth,  $83-96\mu$ ; thickness,  $37\mu$ ; breadth of isthmus,  $17-19\mu$ .

Habitat: Pond 6 miles south of Riverview.

*Micrasterias ranoides* n. sp. (Pl. I, Fig. 1.)

Cells large, a little longer than broad, circular, deeply constricted, sinus open; semicells 5-lobed with deep, fairly open interlobular incisions; polar lobe cuneate with apical margin retuse with the lateral margins drawn into spines at each corner. Lateral lobes equal and cuneate, each divided into lobules by a wide open sinus about half as deep as the interlobular sinus; each lobule drawn into two long diverging spines. Side view of cell fusiform with polar lobe about half as thick as cell. Cell wall smooth.

Zygospore unknown.

Length,  $208-269\mu$ ; breadth,  $202-259\mu$ ; breadth of isthmus,  $21-23\mu$ ; length of polar lobe,  $102-118\mu$ ; thickness,  $45-50\mu$ ; breadth of polar lobe at base,  $19-20\mu$ ; at apex,  $74-79\mu$ ; length of spines,  $20-25\mu$ .

Habitat: Keystone Lake near Odessa, Fla.; Okeechobee, Fla.

*Micrasterias radiata* Hassall.

Many varieties have been given for this species, but as they do not appear to be distinct they cannot be maintained. The lateral lobes may be very narrow as in *M. dichotoma* Wolle. They may be reduced in number as in the variety *simplex* Smith.

*Micrasterias sol* var. *ornata* Nordstedt. (Pl. I, Fig. 10.)

Abundant in several localities: Riverview, Childs, Okeechobee, etc. Specimens with zygospores were found at Riverview in April, 1933.

Zygospore spherical with stout acute spines, some of which are curved. Diameter of zygospore without spines,  $83-86\mu$ . Length of spines,  $38-45\mu$ ; thickness at base,  $9\mu$ . Length of cell,  $196-214\mu$ ; breadth of cell,  $200-203\mu$ ; breadth of isthmus,  $21-22\mu$ .

*Staurastrum muticum* var. *minor* Wolle. (Pl. I, Fig. 6.)

The zygospore of *Staurastrum muticum* shown in W. & G. S. West (Vol. 4, Pl. 118, Fig. 20) (from Ralfs) does not agree with those found

near Kissimmee. Cushman (1903, p. 224) gives a description of zygospores which agree very well with those found in Florida. Either Ralfs has incorrectly figured the zygospore of this species, or else the smaller form has zygospores quite different from the species vera, in which case it would be entitled to specific rank. Further data are needed before a correct assignment can be made.

*Mateola* n. gen.

Cells united into twisting filamentous colonies. (No gelatinous sheath evident). Body of cell about twice as long as broad, shape of a right parallelepiped with each of the eight corners extended into a thick process, making complete outline of cell roughly cubical. Processes semicrescent-shaped with cusps diverging from isthmus. A chloroplast in each semicell having two pyrenoids.

Zygospore unknown. Figure shows cells in process of ordinary cell division.

*Mateola acutiloba* n. sp. (Pl. I, Fig. 9.)

Description as in genus.

Length of cells,  $30\mu$ ; breadth over all,  $41\mu$ ; breadth of apices,  $13\mu$ ; breadth of isthmus,  $22\mu$ .

Habitat: Pond between Sanford and Mt. Dora, Fla. Collected December, 1932.

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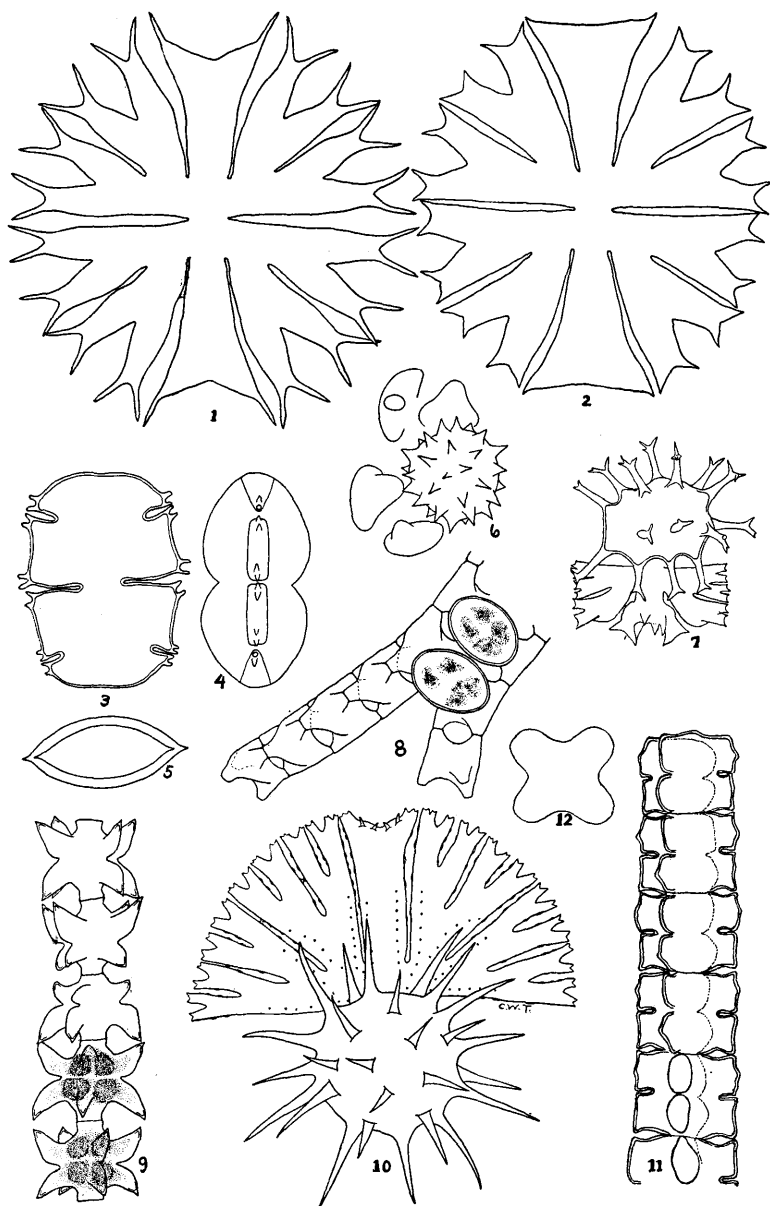


Fig. 1. *Micrasterias ranoides* n. sp.

Fig. 2. *Micrasterias floridensis* n. sp.

Figs. 3-5. *Micrasterias piquata* n. sp.

Fig. 6. Zygospore of *Staurastrum muticum* var. *minor* Wolle.

Fig. 7. Zygospore of *Micrasterias foliacea* Bailey.

Fig. 8. Zygospores of *Desmidium baileyi* (Ralfs) Nordstedt. ■

Fig. 9. *Mateola acutiloba* n. gen. et sp.

Fig. 10. Zygospore of *Micrasterias sol* var. *ornata* Nordstedt.

Figs. 11-12. *Phymatodocis nordstediana* Wolle.