
ALGAE FROM WESTERN LAKE ERIE^{1, 2}

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ABSTRACT

Four species of algae in the Chlorophyta and five in the Cyanophyta are newly reported for Western Lake Erie. *Gongrosira stagnalis* (G. S. West) Schmidle, collected from the basal fragments of old *Cladophora*, appears to be a new record for the United States. *Nephrocytium obesum* W. & G. S. West, which is reported as often having a shallowly scrobiculate wall, is unique and merits further intensive study.

Algae that are new to the Island Region of western Lake Erie appear occasionally in teaching and research collections at Stone Laboratory, Put-in-Bay, Ohio. This report presents taxa obtained in this way that have not previously been reported. Two of these taxa are of particular interest. *Radiococcus nimbatus* (de Wildm.) Schmidle is of rare occurrence in the United States. *Gongrosira stagnalis* (G. S. West) Schmidle, which occurred as disc-like pads on the basal fragments of old *Cladophora* filaments, is probably a new record for the United States.

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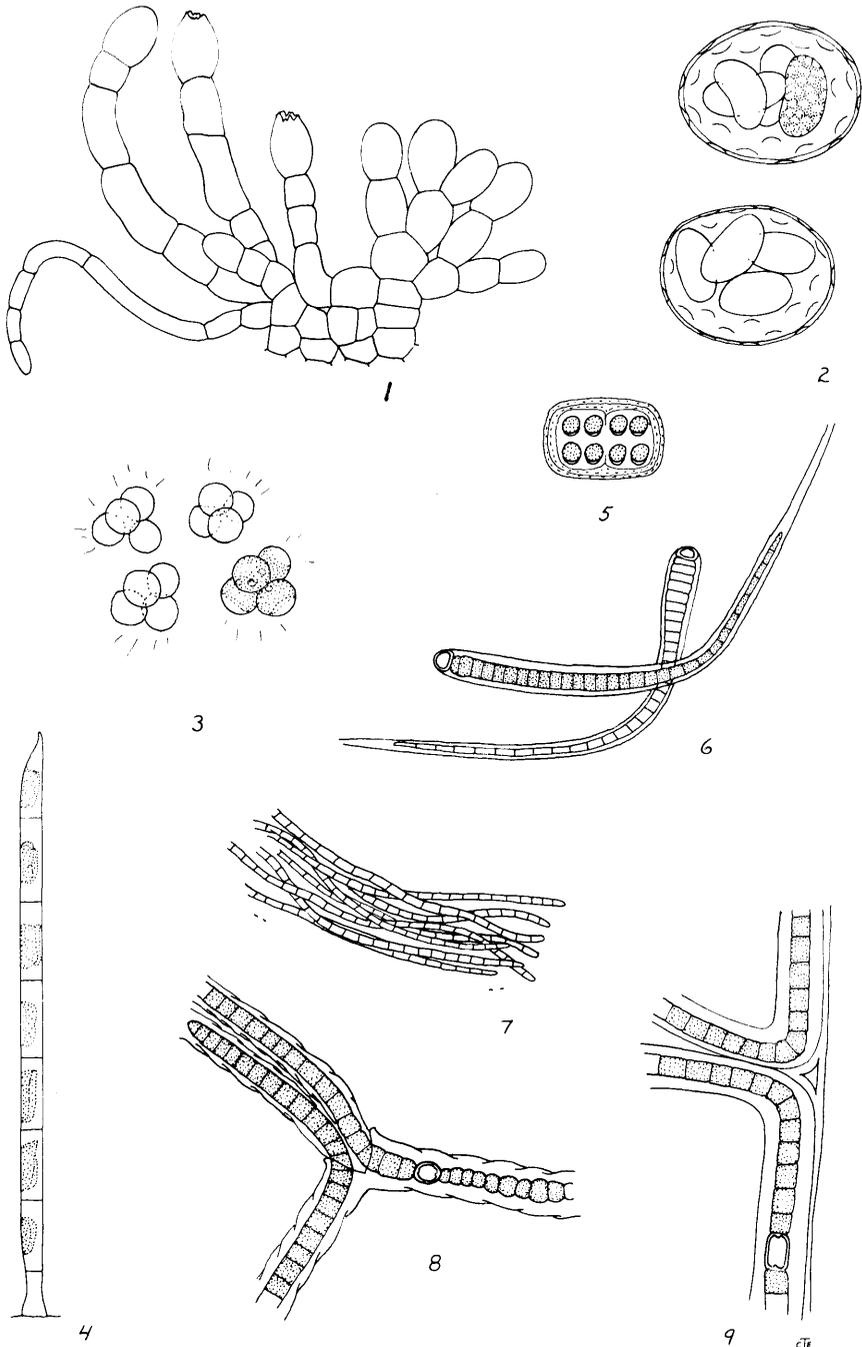


FIGURE 1. *Gongrosira stagnalis* (G. S. West) Schmidle. FIGURE 2. *Nephrocystium obesum* W. and G. S. West. FIGURE 3. *Radiococcus nimbatus* (de Wildm.) Schmidle. FIGURE 4. *Uronema elongatum* Hodgetts. FIGURE 5. *Chroococcus prescottii* Drouet and Dailey. FIGURE 6. *Calothrix fusca* (Kuetz.) Bornet and Flahault. FIGURE 7. *Microcoleus lacustris* (Rab.) Farlow. FIGURE 8. *Scytonema alatum* (Carm.) Borzi. FIGURE 9. *Scytonema myochrus* (Dillw.) C. A. Agardh.

SPECIES LIST

Chlorophyta

Gongrosira stagnalis (G. S. West) Schmidle. (fig. 1.)

Forming distinct hemispherical pads attached to the basal upright cells of old *Cladophora* filaments, or occasionally completely surrounding these cells. Vertical filaments growing from a horizontal, pseudoparenchymatous layer of cells. Vertical filaments densely aggregated except at the margins of the pads where they may be longer and less compact. Occasional filaments of long, narrow cells spreading horizontally over the *Cladophora* cell walls. Filaments not encrusted with calcium except where some of the horizontal filaments are embedded in the calcium that encrusts the *Cladophora* cell walls. Vertical filaments terminating in enlarged ovoid cells that are characteristic of sporangia. Vegetative cells roughly cylindrical with lateral walls varying from convex to concave, walls thick, often stratified, diameter 12 to 23 μ , length 20 to 60 μ , the 60 μ being the length of some cells in the horizontally-spreading filaments, basal cells 17 to 24 μ ; sporangia 17 to 29 μ in diameter. Chloroplast massive, indistinct, one? pyrenoid. South Bass Island, on old *Cladophora* filaments at shoreline.

This species should be compared with *G. lacustris* Brand and *G. debaryana* Rab., two species known to occur in the United States. It differs from the former by having larger vegetative cells and by lacking branches that penetrate the substrate. The diameter of the vegetative cells is generally less than that of *G. debaryana*, though the maximum cell diameter may exceed the minimum diameter of cells of *G. debaryana*. The habitat of calcium-encrusted *Cladophora* filaments is unique.

Nephrocylidium obesum W. & G. S. West. (fig. 2.)

Colony slightly to distinctly ovate; (2)-4 broadly ovate to reniform cells with rounded poles, one margin convex, the other slightly concave or straight, cells surrounded by a very thick, hyaline integument which often has large, circular depressions on the surface (shallowly scrobiculate); chloroplast massive, reticulate, but mostly structurely indistinct. Colony 23 to 43 μ in diameter; cells 12 to 19 μ \times 32 to 34 μ . Kelleys Island, quarry.

This alga has been present in the same quarry for a number of years, but its identity was questionable earlier. The colonies somewhat resemble those of *Oocystis*, but the thick integument, the reniform character of some cells, and the massive, indistinct chromatophore distinguish it from the latter. The scrobiculate nature of the integument appears not to have been reported previously.

Radiococcus nimbalus (de Wildm.) Schmidle (fig. 3.)

Colony a broad mucilage-envelope with a radially fibrillar structure and groups of 4 globose cells arranged tetrahedrally in the matrix, remains of the parent cell walls sometimes evident; each cell with one cup-like chromatophore and one pyrenoid. Cells 10 to 13 μ in diameter. Kelleys Island, quarry. Collected by Robert Kalinsky.

Radiococcus is a rare alga, but is recognizable by the radial fibrillar structure of the matrix and the tetrahedral arrangement of each 4 cells.

Uronema elongatum Hodgetts (fig. 4.)

Filaments sessile, mostly rigid, relatively short; cells cylindrical with a laminate chromatophore more than half the circumference of the cell and from half to two thirds the cell length; terminal cell asymmetrically acuminate, apex sometimes slightly recurved. Cells 6 to 9 μ in diameter. North Bass Island, pond cut-off. Collected by Robert Kalinsky.

Uronema filaments were attached to floating masses of mixed *Oscillatoria* and dead *Cladophora*. It is readily separated from *Ulothrix* because of the shorter and rather rigid filaments and the acuminate apices.

Cyanophyta

Chroococcus prescottii Drouet and Daily. (fig. 5.)

Colony free-floating, (8) to 16 cells; cubical arrangement, colonial envelope hyaline, lamellate; cells spherical, bright blue-green, each cell and group of cells enclosed in a sheath. Colony of 16 cells, 27 to 29 μ \times 25 to 33 μ ; cells 6 to 8 μ . Kelleys Island, quarry.

This is undoubtedly the alga reported from the same locality by Tiffany (1934) as *Eucapsis alpina* Clements and Schantz. Though the cell arrangement is the

same as in *Eucapsis*, the cells are fewer in number and the colonial sheath is lamellate.

Calothrix fusca (Kuetz.) Bornet and Flahault. (fig. 6.)

Filaments attached to other algae, strongly curved, tapering and hair-like from the large basal cells; heterocysts basal, hemispherical. Basal cells 9 to 11 μ in diameter; heterocysts 9 to 11 μ in diameter. South Bass Island, in mucilage of other algae along shore line.

Microcoleus lacustris (Rab.) Farlow. (fig. 7.)

Mucilage envelope broad, enclosing numerous entwined trichomes, sheaths of trichomes colorless and confluent; cells cylindrical, slightly constricted at cross walls, apical cells not capitate, cells pale blue-green. Cells 4 to 5 μ in diameter, 8 to 12 μ long. Kelleys Island, in roadside puddles in quarry, intermingled with *Scytonema myochrous* (Dillw.) C. A. Agardh.

Scytonema alatum (Carm.) Borzi. (fig. 8.)

Olive-brown wooly mats on stones; trichomes with false branching, branches in pairs, between heterocysts; sheaths wide, lamellated, with diverging layers, yellow to brown; cells short cylindrical; heterocysts subglobose. Filaments 12 to 20 μ in diameter; cells 7 to 10 $\mu \times 7$ to 12 μ ; heterocysts about the same dimensions as the vegetative cells. Kelleys Island, quarry.

Though the diameter of the filaments is well below the range recorded for this species, the other dimensions and characters agree.

Scytonema myochrous (Dillw.) C. A. Agardh. (fig. 9.)

Greyish-black mats on soil; trichomes with false branching, branches in pairs, between heterocysts; sheaths wide, lamellated, dark grey-brown; cells quadrate or slightly cylindrical; heterocysts cylindrical or sometimes nearly quadrate. Filaments 12 to 24 μ in diameter; cells 6 to 11 $\mu \times 6$ to 12 μ ; heterocysts 6 to 11 $\mu \times 12$ to 24 μ . Kelleys Island, roadside puddles in quarry.

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