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Key to the genera of marine bluegreen algae of southeastern North America

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OF SOUTHEASTERN NORTH AMERICA

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The following key is part of a nearly-completed manuscript on the marine bluegreen algae of the region indicated. While virtually all genera considered to be valid are included, it is possible that a few additional genera are present and will be found in the future. For this reason, statements in the key often include more than the essential contrasting character with the hope that this greater-than-necessary delimitation of the genera involved will serve to cast doubt upon or to avoid misidentification of one at hand that the key does not include.

1. Plants not distinctly filamentous (except in one species that portion embedded in limestone)..... 2

1. Plants filamentous..... 6

2. Cells not basally attached to a substratum (though the plant or colony may be); cell division producing daughter cells of equal size..... 3

2. Some cells of a colony or plant basally attached to a substratum and often penetrating it (especially limestone); daughter cells of unequal size; "endospores" often produced..... ..... Entophysalis

3. Cells before division ovoid to cylindrical, dividing in a plane perpendicular to the long axis..... Coccochloris

3. Cells before division spherical, ovoid, cylindrical, or pyriform, not dividing in a plane perpendicular to the long axis..... 4

4. Cells usually pyriform, radially arranged within a spherical gelatinous matrix..... Gomphosphaeria

4. Cells not radially arranged within a gelatinous matrix..... 5

5. Plants or colonies a flat plate, the cells in regular rows... ..... Agmenellum

5. Plants or colonies spherical or irregular in shape, the cells spherical before division and usually irregularly distributed within the gelatinous sheath..... Anacystis

6. Trichomes not tapering at the apex to a slender filament or to a hair..... 7

6. Trichomes tapering at the apex to a slender filament or to a hair; heterocysts present (except in Amphithrix)..... 23

7. Trichomes unbranched (plant branched in Hormothamnion)..... 8

7. Trichomes with false branching..... 19

8. Trichomes forming a regular spiral..... 9

8. Trichomes not forming a regular spiral..... 10

9. Trichomes without visible crosswalls, evidently one-celled, and not over 2 microns in diameter..... Spirulina

9. Trichomes with crosswalls, hence multicellular, over 2 microns in diameter..... Arthrospira

10. Strictly planktonic..... 11

10. Not strictly planktonic..... 12

11. Trichomes in fascicles, twisted and rope-like, with individual sheaths..... Skujaella

11. Trichomes solitary, without a visible sheath (16-24 microns in diameter, the cells 7-11 microns long)..... Oscillatoria

12. Without a visible sheath..... Oscillatoria

12. Sheath present, though in Phormidium it is often diffluent and easily overlooked..... 13

13. Heterocysts present..... 14

13. Heterocysts not present..... 16

14. Heterocysts basal only, the filament attached at the base.... ..... Microchaete

14. Heterocysts intercalary..... 15

15. Filaments free, gonidia present in series between the heterocysts..... Nodularia

15. Filaments agglutinated to form a plant mass that is often branched but not with a common gelatinous sheath; the filaments with individual sheaths; gonidia not produced..... Hormothamnion

16. Sheaths diffluent, the filaments more or less agglutinated into a thin, flat layer in which the filaments are prostrate ..... Phormidium

16. Sheaths distinct..... 17

17. Trichomes single within the sheath..... 18

17. Trichomes many within the sheath..... Microcoleus

18. Filaments forming erect tufts (false branches produced but often rare and overlooked)..... Symploca

18. Filaments loose or forming an irregular or matted layer... ..... Lyngbya

19. Trichomes single within the sheath..... 20

19. Trichomes few to many within the sheath (often single in the upper parts of Hydrocoleum)..... 22

20. Without heterocysts..... 21

20. Heterocysts present..... Scytonema

21. Plants forming erect tufts, false branches solitary...Symploca

21. Plants forming a mat or penetrating limestone, false branches often in pairs..... Plectonema

22. Plants usually in moist places rather than submerged, forming erect tufts or fascicles..... Schizothrix

22. Plants intertidal or submerged, forming tufts or dense bunches; trichomes few within the sheath, not closely aggregated, single in the upper parts, apex capitate.... ..... Hydrocoleum

23. Plants penetrating shells or limestone; branches of two kinds: cylindrical, and tapering to a hair..... Mastigocoleus

23. Plants not penetrating limestone..... 24

24. Plants within a spherical or hemispherical gelatinous matrix..... 25

24. Gelatinous sheath around the individual trichomes only... 26

25. Heterocysts basal only, filaments radiating from the center of the gelatinous matrix..... Rivularia

25. Heterocysts intercalary, filaments irregular in arrangement in the matrix..... Brachytrichia

26. Without heterocysts..... Amphithrix

26. Heterocysts present..... 27

27. Heterocysts basal only; plant mass forming a flat crust, the filaments unbranched..... Isactis

27. Heterocysts basal or intercalary; plants in soft tufts or a velvety expansion..... 28

28. Filaments unbranched (or if branched, the false branches not remaining within the original sheath)..... Calothrix

28. Filaments branched, the branches remaining within the original sheath..... 29

29. False branches several (2-6) retained partly within the original sheath..... Dichothrix

29. False branches numerous that are retained within the original sheath..... Polythrix

GLOSSARY

capitate - having a globose head or tip
diffluent - soft and dissolving or melting together
endospores - spores produced inside a sporagium. The term is loosely used when applied to bluegreen algae, for bluegreen "endospores" are little more than the division of the contents of a vegetative cell into a number of small vegetative cells retained for a while inside the "sporangium".
false branching - If a trichome breaks within a sheath and one end of it then penetrates the sheath wall and grows out, forming a sheath of its own around the external portion, it is referred to as a false branch.
gonidia - a vegetative cell that is usually larger or of different shape from the ordinary and the contents of which are usually more dense thus resembling a spore
heterocyst - a cell in which the contents have become almost colorless (yellowish), the wall thicker, and with tiny pointed plugs in the end wall or walls common to an adjacent cell
intercalary - located within a filament other than at the ends
pyriform - more or less pear-shaped
trichome - a single row of cells not including the sheath

SYNONYMS

In a 1956 paper by F. Drouet and W. A. Daily, "Revision of the Coccoid Myxophyceae," scores of genera treated as valid by previous authors, were relegated to synonymy. In the list that follows, the valid genus name, as used in this key (and following Drouet and Daily) is given at the left with some of the more widely-used synonyms following it. Synonyms for several filamentous genera are also given. The genera listed here as valid should not be construed to be the indisputable valid genus in each case. In some cases, the taxonomic history may still await thorough investigation, in others validity may be a matter of opinion.

Agmenellum	- Merismopedia
Amphithrix	- Leptochaete
Anacystis	- Chroococcus, Gloeocapsa, Pleurococcus, Eucapsis, Microcystis
Coccochloris	- Aphanothece, Gloeothece, Synechococcus
Entophysalis	- Dermocarpa, Chamaesiphon, Xenococcus, Hyella, Pleurocapsa
Isactis	- Mastigonema
Microchaete	- Fremyella
Skujaella	- Trichodesmium