Urospora penicilliformis (Roth) Areschoug 1874: 4

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Basionym:
Conferva penicilliformis Roth 1806: 271

Type Locality:
Eckwarden, Germany

Habitat:
On rocks, pebbles, boats buoys, tires, logs, pilings, mostly in the upper intertidal zone, together with *Bangia*, *Porphyra*, *Ulothrix*, *Enteromorpha*, *Urospora neglecta*, and cells of the Codiolum phase; occasionally extending into the lower intertidal zone to upper edge of the *Laminaria* belt. Most common of the three species of *Urospora* from British Columbia south, less common than *U. neglecta* northward.

Confirmed Northeast Pacific Distribution (based on culture studies):
San Simeon, California, to Homer, Alaska (Hanic 2005).

Vegetative Morphology:
Gametophytic thalli macroscopic, uniseriate filaments 4-50 mm long in culture (to 20 mm long lower on the shore), composed of multinucleate cells ranging from squat or quadrate to barrel-shaped to elongate, 20-100 μm diameter (average 57 μm, to 192 μm in the low intertidal). Holdfast of 1-12 (average 6) rhizoids in field material, usually > 20 in culture. Sporophytic thalli microscopic, colonial (hence sometimes visible macroscopically), elongate or club-shaped, stalked unicells, with protoplast at distal end of cell and usually with hyaline stipe, reaching 1-2 mm in length in nature.

Reproductive Morphology and Life History:
Alternation of heteromorphic generations. Sexuality most common in gametophytic thalli from the upper, rarely lower intertidal, with gametangia to a maximum diameter of 200 μm. Dioecious, rarely monoecious. Gametes unequal in size. Female gamete green, with stigma, elongate to acuminate, asymmetric, 2 to 3-ridged, twisted and slightly curved, 10.8 μm long, 4.0 μm diameter, capable of parthenogenesis; flagella 18.1 μm long, moving in screw-like fashion. Male gamete pale yellow, without stigma, acuminate to long-ovate, 5.9 μm long, 2.8 μm diameter, not parthenogenetic; flagella 17.4 μm long, moving rapidly and erratically. Zygotes in culture spherical, ovate to slightly elongate, with or without stipe, maturing in 9-12 days in culture when 35-70 μm long (November to February in nature), releasing 16-32 (100s or 1000s in nature) quadriflagellate quadrate zoospores with pointed tails, 22-40 μm long (average 27.1 μm) x 6-14 μm diameter (average 9.0 μm); flagella 12-21 μm long.

Important References:

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Lokhorst, G.M. and B.J. Trask, 1981. Taxonomic studies on *Urospora* (Acrosiphoniales, Chlorophyceae) in western Europe. Acta Botanica Neerlandica *30*: 353-431.