

## ***Radiocystis fernandoi*, a new planktic cyanoprokaryotic species from tropical freshwater reservoirs**

*Radiocystis fernandoi*, nový planktonní druh sinic z tropických sladkovodních nádrží

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*Radiocystis geminata*, the type species of the cyanoprokaryotic planktic genus *Radiocystis* Skuja 1948, is the only commonly known species of this genus. It occurs in mesotrophic lakes over the world. During our study of planktic samples from tropical lakes from the collection of Prof. C.H. Fernando (Waterloo, Canada), another species with distinctly larger cells and colonies was identified. The type specimens of this species were selected from Brasil (reservoir Joquari, state São Paulo). However, this species has also been found in numerous other localities in Brasil, Indonesia and Sri Lanka, and it probably has a pantropical distribution.

The cyanoprokaryotic chroococcal, colonial genus *Radiocystis* was described in 1948 by Skuja from plankton of southern Swedish lakes. The type species, *R. geminata*, which is the only known species of this genus up to now, occurs in mesotrophic freshwater reservoirs with a more or less cosmopolitan distribution (with the exception of polar regions), but probably in various morpho- and ecotypes (particularly in tropical areas). It is commonly known and described in numerous identification books and floristic papers (Skuja 1948, Starmach 1966, Bourrelly 1970, Hindák et Moustaka 1988, etc.). Another species of this genus was recognized during the investigation of net planktic samples collected in the period from 1964 to 1988 by Prof. Dr. C. Herbert Fernando (Waterloo, Canada) and by his students from tropical lakes over the world.

This genus is characterized by free-floating, microscopic, more or less spherical colonies, composed of irregularly, radially arranged, widely oval to rounded cells, which are slightly distant from one another. The whole colony is surrounded by a fine, diffused, homogeneous colourless slime, not limited at the margin and usually visible only with staining. The radial arrangement of the cells is distinguishable particularly in young colonies, but later on the cells often shift and their arrangement in old colonies is rather irregular. Widely oval, up to almost spherical cells divide by cross-wise binary fission, very probably only in one plane in succeeding generations, perpendicularly to the long axis of the cells (the radial arrangement of the colonies arises from this type of division). Aerotopes (groups of gas vesicles) occur facultatively in cells, but frequently they can be absent during long periods of the vegetative cycle. The cell dimensions in the original

description of *R. geminata* are 2.5-2.8(-3.8) x 1.7-2.6  $\mu\text{m}$ , but considering several other localities the variation range is rather (2)2.5-4(5)  $\mu\text{m}$ .

Another freshwater planktic species, found in samples from Fernando's collection in several large reservoirs in Brasil, Indonesia and Sri Lanka, is distinctly different from the populations of *R. geminata*. It has distinctly larger cells (6-8  $\mu\text{m}$  in diameter, in the type material even 7-8  $\mu\text{m}$  in diameter) and correspondingly larger colonies. The occurrence of aerotopes is also facultative but less frequent (in this new species aerotopes are very small, „point-like“). The cells are mostly rounded, but distinct oval cells appear particularly before division. The radial arrangement of the cells is usually clearly recognizable, however, the mucilage in this species is also very fine, colourless, diffluent, not easily seen without staining. No other structures were found within the colonies.

This species (Fig. 1) was found in the net plankton of large reservoirs in Brasil (in 1979; reservoirs Antibonita, Joquari, both in the state Sao Paulo), Indonesia (in 1977; Lake Toba - Sumatra, Lake Tempe - Sulawesi) and in Sri Lanka (several times in the period 1968 - 1980; Ampari Tank, Chandrila Wewa, Kala Wewa, Parakrama Samudra Lake, Ranna Wewa, Unichchi Tank, Yoda Wewa).

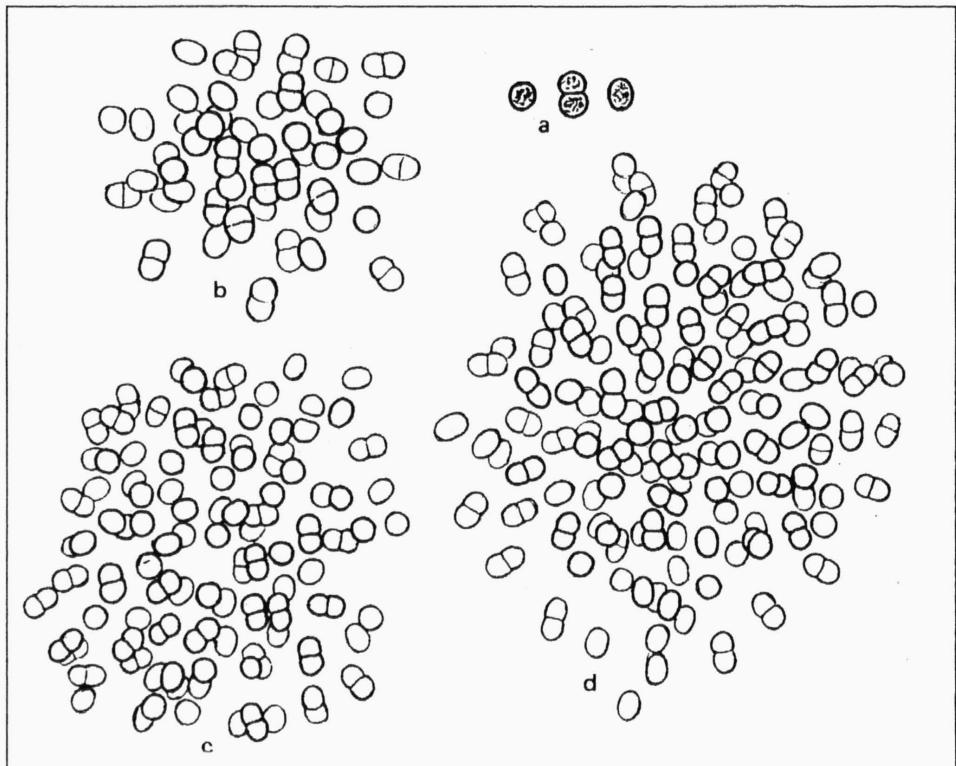


Fig. 1. - *Radiocystis fernandoi*, spec. nova (iconotype).

## Diagnosis

Coloniae microscopicae, libere natantes, sphaericae, subsphaericae vel paucim irregulariter globosae, cum cellulis irregulariter, de centro coloniae plus minusve radialiter ordinatis, paucim inter se distantibus. Cellulae cyanoprokaryoticae, rotundatae vel globose ovales, 6 - 8 µm in diametro, contentu pallide aeruginoso, aliquando cum aerotopis minutissimis impletae. Mucilago tenuis, diffluens, incolora, sine structura, paucim visibilis. Divisio cellularum perpendiculariter secus axem longitudinalem; reproductio disintegratione coloniarum ad cellulas solitarias.

Habitatio: Plancto lacubus piscinisque tropicis mesotrophicis. Locus classicus: Lacus artificialis Joquari, Brasilia (Sao Paulo).

Typus: figura nostra 1a-d (iconotypus); 17.8.1979 coll.

Etymologia: Species ad honorem Prof. Herberto Fernando (Waterloo, Canada) nominata.

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## Souhrn

V příspěvku je popsán nový druh planktonní sinice *Radiocystis fernandoi*. Tento druh byl popsán ze sběru Prof. C. H. Fernanda (Waterloo, Canada), po němž byl také pojmenován. Od příbuzného druhu *Radiocystis geminata* se liší výrazně většími buňkami a koloniemi. Typový materiál pochází z Brazílie (nádrž Joquari, São Paulo), druh byl nalezen na mnoha dalších lokalitách v Brazílii, Indonésii a na Srí Lance.

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