## The distribution of Rhodophyta in streams of Central Mexico

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With 3 figures and 3 tables in the text

Abstract: The distribution of species of Rhodophyta was investigated in 424 stream segments, sampled from 1981-1999 in three river basins from central Mexico. Red algae occurred in 12% of the stream segments sampled, a low frequency compared to major surveys in other parts of the world (18-65%). Sixteen species of freshwater red algae were found, of which the most widespread were Compsopogon coeruleus (24 sites) and Hildenbrandia angolensis (16 sites). Two groups of species were clearly distinguished on the basis of environmental characteristics. The first group, which included Batrachospermum gelatinosum, Paralemanea annulata, P. mexicana and Sirodotia suecica, is found in temperate climates, high altitudes (>1700 m), and cold or temperate waters (12–18 °C) that are slightly acidic (pH 5.5–6.5) and of low specific conductivity (77–86 µS.cm<sup>-1</sup>). The second group, including Chroodactylon ornatum, Compsopogon coeruleus, Hildenbrandia angolensis, Audouinella eugenea, A. huastecana, A. meiospora, Batrachospermum globosporum, Sirodotia huillensis and Thorea hispida, is of subtropical to tropical climates, low altitudes (< 1700 m), and warm waters (> 21 °C) that are neutral to slightly alkaline (pH 7.0-8.6) and of high specific conductivity (160-1990  $\mu$ S.cm<sup>-1</sup>). Half of the species found in this study were exclusively of calcareous sites from within a highly homogeneous limestone region (56% Ca). The rest of the sites with rhodophytes were found in sub-basins with andesitic-basaltic or calcareous substrates, and in temperate to semidesertic climates that provoke dramatic changes in the water level of the river or even the complete absence of permanent rivers. A high percentage of the currents contained an influx of organic material in which populations of Compsopogon coeruleus, described as tolerant of these conditions, could be found. The sub-basins that were most similar and had the least diversity corresponded to high mountain regions of Central Mexico (HP and HB). The overall species composition for streams and rivers of Central Mexico revealed high similarities with other tropical regions and had few species in common with freshwater red algal floras of other continents.

Key words: Rhodophyta, distribution, Mexico, flora, lotic ecosystem

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