**A worldwide key to species of *Carbacanthographis* (Graphidaceae) in dichotomous and interactive format, with updated nomenclature and the addition of 17 species new to science**

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We provide an updated, worldwide key to species of the genus *Carbacanthographis*, which is characterized by lirellate ascomata, carbonized excipulum, warty periphysoids, and mostly non-amyloid ascospores. New collections and revision of herbarium material revealed 17 species new to science: *Carbacanthographis acanthoamicta*, *C. acanthoparaphysata*, *C. aggregata*, *C. amazonica*, *C. aptrootii*, *C. brasiliensis*, *C. chionophoroides*, *C. halei*, *C. latispora*, *C. megalospora*, *C. multiseptata*, *C. novoguineensis*, *C. pseudorustica*, *C. salazinicoides*, *C. sipmaniana*, *C. spongiosa* and *C. subchionophora*. New molecular data confirm the position of *C. megalospora* in the genus. The world distribution of four species is expanded: *C. amicta*, previously known from Japan, is reported from Papua New Guinea; *C. induta*, previously known from Cambodia and Vietnam, is reported from Thailand; *C. marcescens*, known from Australia, the Solomon Islands, Japan, China, India, USA, Cameroon, Costa Rica, Cuba, Guyana and Brazil, is reported from French Guyana, Hong Kong, Singapore, and Papua New Guinea; and *C. stictica*, previously known from Brazil, is reported from Colombia, French Guyana, Venezuela and Suriname. In addition, we propose one new combination, *Carbacanthographis nematoides*. Most species are also illustrated. Funding: CAPES (Coordenadoria de Aperfeiçoamento de Pessoal de Nível Superior) and IAPT (International Association for Plant Taxonomy).