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the suborders Dendrophylliina, Caryophylliina, Fungiina,
Microsolenina, and Stylinina**

ROSEMARIE C. BARON-SZABO



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Abstract

This study is the second of two parts of a taxonomic review of the scleractinian corals of the Maastrichtian and Paleocene periods. The first part (Baron-Szabo, 2006) focused on the scleractinian suborders Astrocoeniina, Faviina, Rhipidogyrina, and Amphistraeina. The second part deals with the remaining five suborders: Dendrophylliina, Caryophylliina, Fungiina, Microsolenina, and Stylinina. The two parts together represent the first extensive compilation of coral species of the K/T-(Cretaceous/Tertiary) boundary, and deal with more than 2500 records of 550 nominal taxa, of which 259, belonging to 149 genera (including Lazarus taxa=taxa that disappeared before the Maastrichtian and re-occurred after the Paleocene) are considered valid. In the five suborders evaluated in this paper, 136 valid species (including in an addendum 3 taxa belonging to the suborders of the first part) of 81 genera can be reliably documented as occurring in the Maastrichtian and/or the Paleocene. For the following taxa, new combinations are proposed: *Palaeopsammia collignoni* (Alloiteau, 1958), *Palaeopsammia zitteli* (Vaughan, 1900) non Wanner, 1902, *Bathycyathus corneti* (Alloiteau & Tissier, 1958), *Bathycyathus lloydi* (Vaughan, 1920), *Bathycyathus piveteaui* (Alloiteau & Tissier, 1958), *Trochocyathus speciosus* (Gabb & Horn, 1860), *Deltoocyathus cupuliformis* (Alloiteau, 1951), *Asterosmilia alloiteaui* (Alloiteau & Tissier, 1958), *Dasmosmilia kochii* (Pratz, 1910), *Desmophyllum excavatum* (Hagenow, 1839), *Smilotrochus cornucopiae* (Duncan, 1869), *Smilotrochus milneri* (Gregory, 1898), *Alveolocyathus felixi* (Filkorn, 1994), *Pleurocora arachnoides* (Knorr & Walch, 1777), *Meandrophyllia textilis* (Goldfuss, 1826), *Meandrophyllia velamentosa* (Goldfuss, 1826), *Cyathoseris catadupensis* (Vaughan, 1899), *Heterogyra murchisoni* (d'Archiac & Haime, 1853), *Pattalophyllia grumi* (Catullo, 1852), *Stephanophyllia cribraria* (Stephenson, 1916), *Siderofungia morloti* (Reuss, 1864), *Hindeastraea garloica* (Tchéchmédjéva, 1975), *Aspidastraea clathrata* (Goldfuss, 1826), *Paracycloseris nariensis* (Duncan, 1880), *Fungiastraea flexuosa* (Goldfuss, 1826), *Ellipsocoenia conferta* (Umbgrove, 1925), *Baryphyllia maxima* (Umbgrove, 1925), *Tubicora aylmeri* (Gregory, 1900), *Phacellocoenia thomkai* (Eliášová, 1991), and *Euphyllia calyculata* (Catullo, 1852). One species is newly described: *Polyphyloseris mikrothos* **n. sp.**. In addition to the re-examination and re-evaluation of described forms, this study also includes the first description of the largest Maastrichtian coral assemblage known (consisting of about 4000 specimens from Jamaica), as well as new material from the Campanian-Maastrichtian of Argentina, Lower Maastrichtian of Mexico (Cerralvo), and the Paleocene of Austria (Kambüchel-Kalke). Furthermore, lost or “forgotten” coral collections were discovered and illustrated for the first time, including the type and original material of d'Achiardi (1875, Eocene of Italy), Wanner (1902, Maastrichtian-Danian of Egypt), Berryhill, in Berryhill *et al.* (1960, Danian of Puerto Rico), and Schlothheim (1820, Mesozoic-Recent). A diagnosis is provided for each species, as well as for each higher level taxonomic category, and issues concerning new taxonomic assignments are discussed in detail. The descriptions are accompanied by illustrations of representatives of each species, and in many cases, include illustrations of type or original material. Also included is the first comprehensive overview of the stratigraphical and geographical ranges of each taxon. The largest number of species occurring at the K/T-boundary are in the suborders Faviina (79), Fungiina (51), and Caryophylliina (41). In all of the nine suborders 259 valid species are known from the Maastrichtian and/or Paleocene, of which 204 occurred before the K/T-event and 106 species (52 %) crossed the K/T boundary. In the Paleocene 55 new species appeared. While species of all suborders crossed the K/T-boundary, no new species of the suborders Rhipidogyrina, Amphistraeina, and Microsolenina appeared in the Paleocene. On the genus level 96 of the 131 genera (=73.3%) that occurred before the K/T-event crossed the K/T-boundary. Thirty-five genera went extinct and 18 genera have their first occurrence in the Paleocene.

A generic extinction rate of 26.7% across the K/T-boundary, as estimated here, is considerably less than the rates of around 60% previously stated, but is quite similar to recently reported results for other macroinvertebrate groups after taxonomic revision (e.g., echinoids).

Key words: Maastrichtian, Paleocene, taxonomy, survivorship, stratigraphical and geographical distribution