Recent Nummulitidae of the West Pacific

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Living Nummulitidae gain their highest diversity on subtropical and tropical shallow carbonate bottoms of the West Pacific. They prevent to live in high illuminated areas near the water surface, since their flat tests could be easily damaged by the hydrodynamic regime. Thus, they prefer calm water conditions and extend their depth distribution down to the base of the photic zone. All West Pacific Nummulitidae can be differentiated into 8 species belonging to 5 genera according to an ecological species concept.

The genus *Operculina* (D'ORBIGNY) is represented by 3 species. While *O. discoidalis* (D'ORBIGNY) prefers to live on fine grained bottom under medium light conditions (round about 10% surface intensity), *O. ammonoides* (GRONOVIUS) prefers coarser substrate and sometimes can be found on hard bottom. Light dependence ranges from 4% to 40% surface intensity. Less illuminated coarse sands are inhabited by the genotype *O. complanata* (DEFRANCE), which is the dominant symbiont bearing foraminifer between light intensities from 0.2% to 10% surface illumination.

The genus *Planostegina* (BANNER & HODGKINSON) demonstrates transitions to the genus *Operculina* in test form and surface, while the division into chamberlets is similar to *Heterostegina*. *Planostegina operculinoides* (HOFKER) is distinguished by small tests and delicate chamberlets. It lives on sandy bottoms restricted to light intensities between 1% and 10% surface illumination. The larger and more robust *Planoperculina heterosteginoides* (HOFKER) develops complete septula between 0.7% and 2% surface light intensity and shows morphological transitions to *O. complanata* in less illuminated areas (< 0.7% surface intensity) by incomplete septula. Both species prefer medium to fine grained sands.

Heterostegina depressa (D'ORBIGNY) spans a broad range in light intensity (1% to 60% surface illumination) by thick tests and cryptic life mode near the surface. Test construction relieves life under high water energetic regimes. This species prefers to live firmly attached to hard substrates, thus withdrawing transportation by water movement.

Nummulites venosus (FICHTEL & MOLL) with similar test construction to *H. depressa* differs in undivided chambers. This species exclusively prefers coarse sand and prevents high sediment movement induced by waves starting its distribution below the fair weather wave base. The upper limit according to light intensities may be similar to *H. depressa*, the lower limit seems to be 2% surface illumination.

Tests of the cyclic, large sized species *Cycloclypeus carpenteri* (BRADY) are easily transported in case of the thin, plate-like form. The upper distribution limit correlates with the storm wave base, thus *C. carpenteri* is restricted to depths more than 50m. The lower distribution limit depends on light intensity and is located near the base of the photic zone (0.4% surface illumination).

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