

Foraminifera

Prelims: Current events of national and international importance

Why in News?

Global review identifies 57 new living species of tiny marine Foraminifera, including three from New Zealand waters.

- **Classification & Nature** - Foraminifera are **single-celled protists** (eukaryotes) belonging to the supergroup Rhizaria.
- They have granuloreticulate pseudopodia, thread-like extensions used for feeding, movement, and building their shells.
- **Shell ("Test")** - Many foraminifera build a shell, called a test, which can have one or multiple chambers.
- The composition of the test varies, common materials include calcium carbonate (calcite or aragonite), agglutinated sediment particles, chitin, or sometimes silica.
- These tests often have openings (pores) that connect different chambers ("foramen" means "hole-bearer").
- **Ecology / Habitat** - Marine - The majority of foraminifera are marine.
- **Benthic vs. Planktonic** - Benthic forams live on or in seafloor sediments (macro-, meio-, micro-benthos).
- Planktonic forams float in the water column; many belong to the suborder Globigerinina.
- **Other environments**- Some foraminifera are found in brackish or freshwater, and a few even in terrestrial/soil environments.
- **Reproduction & Life Cycle** - Forams generally have an alternation of generations- sexual (haploid) and asexual (diploid) phases.
- **Importance in Science**
 - **Fossil record** - Foraminifera have an extensive fossil record, it makes them very useful in biostratigraphy (dating rock layers) and paleoclimatology (reconstructing past climates).
 - **Environmental indicators** - Because different foram species prefer different environmental conditions (e.g., temperature, salinity,

depth), they are used as indicators of past and present marine conditions.

- **Carbonate production** - Their calcium carbonate shells contribute significantly to marine sediments.
- **Size & Diversity** - There are thousands of species estimates suggest 6,700–10,000 living species and many more fossil species.
- Size-wise, many are small (less than 1 mm), but some species' tests can grow much larger (up to ~20 cm for rare species).
- **Significance**
 - **Climate Research** - Because forams record chemical signatures in their shells (e.g., isotope ratios), scientists use them to infer past ocean temperatures, ice volume, and even CO₂ levels.
 - **Oil Exploration** - Foraminifera fossils help geologists date and correlate sedimentary rock layers, which is crucial in hydrocarbon exploration.
 - **Marine Ecology** - They're part of marine food webs and carbon cycling.

Reference

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