



## PHYTOPLANKTON : ENVIRONMENT

**NEWS :** Phytoplankton Balloon to Six Times Their Size to Navigate Ocean Depths

### WHAT'S IN THE NEWS ?

A recent discovery has shed light on how single-celled phytoplankton—specifically the bioluminescent species *Pyrocystis noctiluca*—can inflate to six times their original size to reach the ocean's surface. This phenomenon helps explain the long-standing mystery of how these organisms, without appendages, rise to the surface to photosynthesize before sinking back into the ocean depths.

## Types of Phytoplankton



Cyanobacteria



Diatom



Dinoflagellate



Green algae



Coccolithophore

### **Pyrocystis noctiluca:**

- A species of bioluminescent phytoplankton found in oceans.
- **Recent Study Findings:**
  - Can inflate up to six times their size to float and escape gravity.
  - Acts like mini-submarines, adjusting density to move in the water column.
  - Inflation happens after cell division when vacuoles fill with freshwater.
  - Helps them rise to the surface for photosynthesis.
  - Control buoyancy due to being 5%-10% heavier than seawater.
- **Ecological Role:**
  - Part of the food chain and carbon cycle.
  - Contributes to carbon sequestration by absorbing CO<sub>2</sub>.

### **Phytoplankton Overview:**



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- Microscopic, single-celled autotrophs in oceans and freshwater ecosystems.
- Obtain energy through photosynthesis, requiring sunlight, and live in the euphotic zone.
- Phytoplankton turnover faster than terrestrial plants and cover a larger surface area.
- **Key Groups:** Diatoms, cyanobacteria, dinoflagellates, and coccolithophores.
- Form the base of marine and freshwater food webs.
- Responsible for half of global photosynthesis and oxygen production.

## Significance of Phytoplankton:

- Produce more than half of the oxygen.
- Absorb carbon dioxide, reducing global warming.
- Base of the ocean food chain.
- Important bioindicators for ocean health.
- Drive productive fisheries through blooms.

Source : <https://www.thehindu.com/sci-tech/plankton-balloon-to-six-times-their-size-to-reach-ocean-surface/article68769349.ece>

