Table 1 Characteristic sizes of transitions between major realms of life in the ocean

Transition	Size	Notes
Lower size of a cell	0.15 μm ≈ 10^{-15} g_C	Limited by cell wall thickness and to a lesser extent genome size (Equation 8)
Osmo-heterotrophs to phototrophs	10^{-14} to 10^{-13} g_C	Transition from diffusion feeding on dissolved organic matter to photosynthesis (Equation 4)
Phototrophs to mixotrophs	10^{-8} g_C	Transition from acquiring inorganic nutrients by diffusion feeding to acquiring nutrients by active feeding (Equation 5)
Mixotrophs to heterotrophs	10^{-7} g_C (10^{-8} to 10^{-5} g_C)	Transition to acquiring carbon and nutrients solely by predation through active feeding (Equation 6)
Unicellular to multicellular organisms	10^{-6} g_C	Development of vascular networks
Copepods to fish	≈1 mg_{WW}	Smallest size for a functional camera eye
Fish to cetaceans	≈10 kg_{WW}	Smallest size for maintaining a homeothermic metabolism

gWW=gram wet weight: gC=gram carbon weight