

Plankton Definitions



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Plankton are often defined as small animals and plants less than 5 mm long (0.197"). An object 1 mm long is about as small as the unaided human eye can see. Plankton size is measured in microns. 1,000 microns (µm) equals 1 millimeter (mm) or 0.03937 inches.

The most common zooplankton are arthropods (tiny crustaceans and insects) and eggs and larval forms of aquatic animals such as mollusks, fish and protozoans. Invertebrate larvae (63-560 µm) and copepoda (crustaceans) (153-2,000 µm) are common in fresh water.

It is estimated that over 90% of the world's oxygen is produced by four groups of marine phytoplankton which also are a basic food supply for larger plankton and some larger animals. **Diatoms** and **dinoflagellates** are small (10-243 µm). Picoplankton, which consist of blue-green (**cyanobacteria**) and green (**prochlorophytes**) algae are even smaller (less than 2 µm long).

Comb Jellies - A type of jellyfish

Copepods - (Greek: kope = "oar", Podos = "foot"). A subclass of crustaceans with oar-like swimming legs

Crustacea - (Latin: crusta = crust, shell). Arthropods with a chitinous exoskeleton. The most abundant zooplankton, which eat diatoms, copepods, fish eggs, larva, and other small organisms. Large fresh water daphnia (water fleas) may be from 153 µm to 5,000 µm. Can be seen with the unaided eye at 1 mm. 20 - 30 magnifier often allows viewing of their interiors. Also includes larger animals - crabs, lobsters, crayfish, barnacles

Cyanobacteria - Prokaryotic plankton, blue-green algae are abundant in both oceans and freshwater. Their outer membrane is very hard to digest; not many larger plankton eat them until that membrane is destroyed by a few species of bacteria and virus. Some blue-greens form large floating colonies (mats), which are the major phytoplankton nuisances in fresh water.

Diatoms - Small yellow-green plants (algae) 0.5 - 200 µm long with silicified skeletons (sand, silica, quartz). The most abundant phytoplankton in cold oceans. While still occasionally sampled with nets, the preferred method today is with bottles

Fish larva - Fish eggs and fish young

Ichthyoplankton - (Greek: ichthys = fish). Fish eggs, newly hatched eggs (fry), young fish, and adults of small fish. 153 µm - 5 mm or longer

Jellyfish - Free swimming or floating in marine waters; many have long, thin tentacles with stinging hairs; some have a paralyzing sting due to acetic acid concentrations

Krill - Marine planktonic crustaceans and fish larvae that are the principal food of whalebone (baleen) whales.

Macroplankton or macroinvertebrates - (Greek: makro = big). Zooplankton. Can be seen with naked eye. EPA uses 500 µm, some states prefer 425 µm. Historical research used 363 µm

Microcrustacea - Crustaceans 153 µm - 363 µm long

Microplankton - (Greek: mikro = small). Usually referring to phytoplankton. See *Plankton* below

Nannoplankton - (Greek: nanno = dwarf). Any plankton, usually plants, smaller than 80 µm; many are only 0.2 to 2 µm long

Net plankton - Old term: plankton captured in a 80 µm net

Phytoplankton - (Greek: phyton = plant). Generally, 63 - 153 µm long. Some algae form large clusters, clumps and threadlike groups of considerable size (which may not be defined as plankton), but individual cells are usually 63 µm - 153 µm.

Plankton - (Greek: planktos = to wander or drift). The passively floating or weakly swimming animal and plant life in fresh or

salt water. May reproduce daily, hourly or every 10 minutes when temperature is near 0° C and nutrients are present

Rotifers - (Latin: rotatus = wheel). Multicelled animals with a food ingestion tube with an area of strong cilia whose motion gives the appearance of a rapidly revolving wheel. Sizes range from 1-600 µm. Most are between 200-400 µm long including spines. Sampling of rotifers with mesh sizes larger than 63 µm often underestimates the population

Salps, salp colonies - Marine tunicates with a primitive spinal cord and cartilaginous backbone, free-swimming or large colonies; abundant in all warmer marine waters

Zooplankton - (Greek: zoi = animal life). Includes eggs, young, and small adult animals of all animal species. Generally longer than 153 µm, up to about 5,000 µm (5 µm) or about 0.2"

Selecting Freshwater Net Aperture			
Zooplankton			
500 µm	X-coarse		Late summer, fall
243 µm	Coarse		Spring, early summer
Phytoplankton			
153 µm	Standard		Late summer, fall
80 µm	Fine		Late spring, early summer
Diatoms			
10 µm	Super fine		All seasons

Freshwater Plankton Classifications with Bolting Cloth Sizes			
Aperture Size mm	Inch Size	Open Area	Classification
1000/24	0.0394	58%	Largest zoo- & ichthyoplankton
750/752	0.0295	54%	Larger zoo- & ichthyoplankton
600	0.0236	50%	Large zoo- & ichthyoplankton
560/ 569	0.0220	46%	Medium zoo- & ichthyoplankton
363/ 366	0.0143	44%	Large microcrustacea
239/ 243	0.0096	45%	Microcrustacea
153/ 158	0.0060	45%	No definition
118	0.0046	45%	Microcrustacea, most rotifers
76/ 80	0.0031	33%	Net phyto- & zooplankton
63/ 64	0.0024	33%	Large nannoplankton
63	0.0024	----	Zebra mussel veligers
22	----	----	Zebra mussel eggs
10	0.0004	----	Small nannoplankton