

AQUATIC MICROBIOLOGY AND SEWAGE TREATMENT

Aquatic Microorganisms

Aquatic microbiology refers to the study of microorganisms and their activities in natural waters, such as lakes, ponds, streams, rivers, estuaries, and the sea. Large numbers of microorganisms in a body of water generally indicate high nutrient levels in the water. Water contaminated by inflows from sewage systems or from biodegradable industrial organic wastes is relatively high in bacterial counts. Similarly, ocean estuaries (fed by rivers) have higher nutrient levels and hence higher microbial counts than other shoreline waters.

In water, particularly in water with low nutrient concentrations, microorganisms tend to grow on stationary surfaces and on particulate matter. In this way a microorganism has contact with more nutrients than if it were randomly suspended and floating freely with the current. Many bacteria whose main habitat is water have appendages and holdfasts that attach to various surfaces. One example is *Caulobacter* (see Figure 11.15a). Some bacteria also have gas vesicles that they can fill and empty to adjust buoyancy.

FRESHWATER MICROBIAL FLORA

Figure 27.6 shows a typical lake or pond that serves as an example to represent the various zones and the kinds of microbial flora found in a body of fresh water. The littoral zone along the shore has considerable

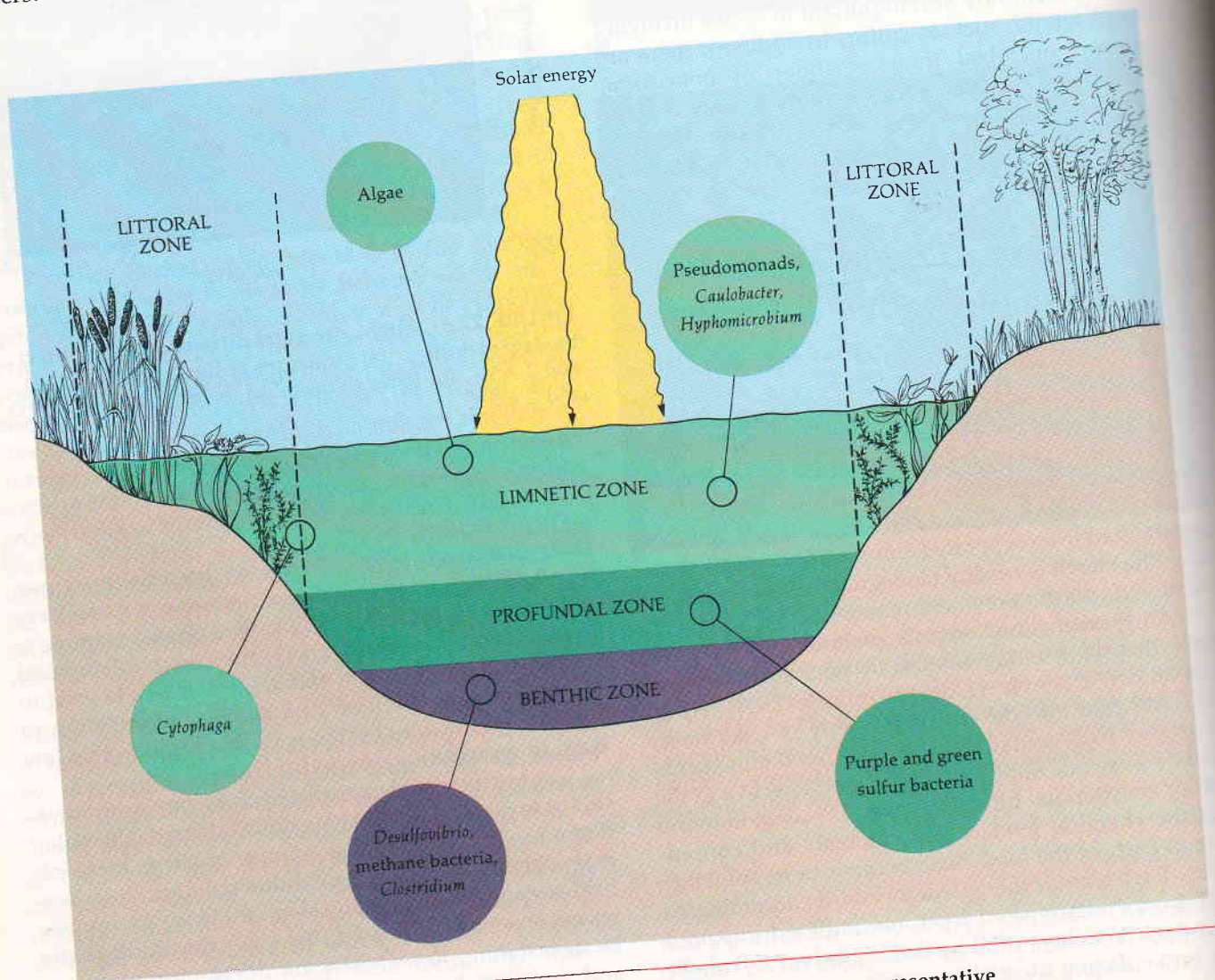


FIGURE 27.6 The zones of a typical lake or pond and some representative microorganisms of each zone. The microorganisms fill niches that vary in light, nutrients, and oxygen availability.