

The Aquatic Food Chain

Piscivorous Fish: Fish that feed on other fish; usually have large jaws and well-developed teeth; solitary predators; short and stout *gill rakers* (bass, pike, perches, gar).

Planktivorous Fish: Fish that eat plankton (mostly 'zooplankton'); filter large quantities of water through long, finely divided *gill rakers* (sunfish, herring).

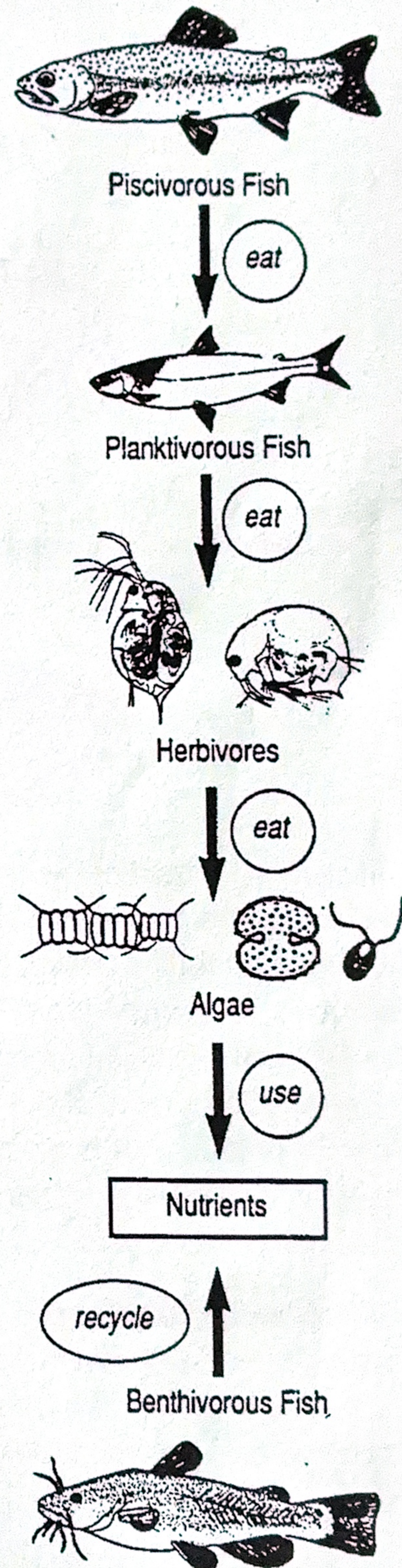
Herbivorous Fish: Feed mainly on plants (such as algae that grows on rocks); usually have smaller mouths than carnivorous fishes; may have special teeth for scraping and grinding.

Plankton: Free-floating microscopic plants (*phytoplankton*) and animals (*zooplankton*). Phytoplankton get their energy from sunlight while zooplankton are herbivores.

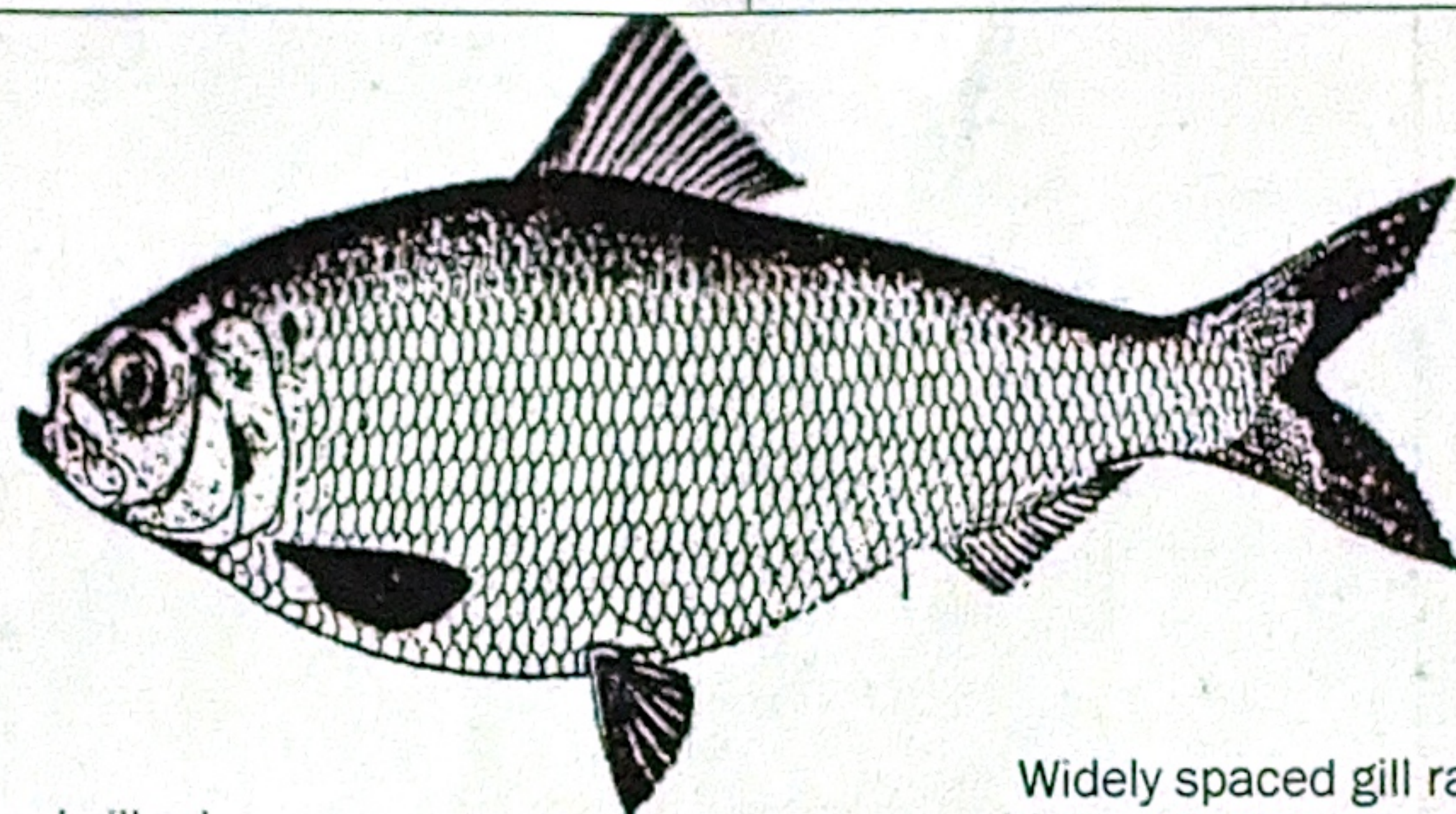
Nutrients: *Nitrogen* and *phosphorus* are required for plant nutrition and are essential to the growth of organisms; although N and P are naturally occurring elements in water, they can enter waterbodies as by-products of human activities (fertilizer, wastewater, industrial waste, etc.)

Benthivorous Fish: Bottom-dwellers; feed on organisms and detritus on the lake or stream bottom; mouth opening is usually directed downwards (catfish, suckers).

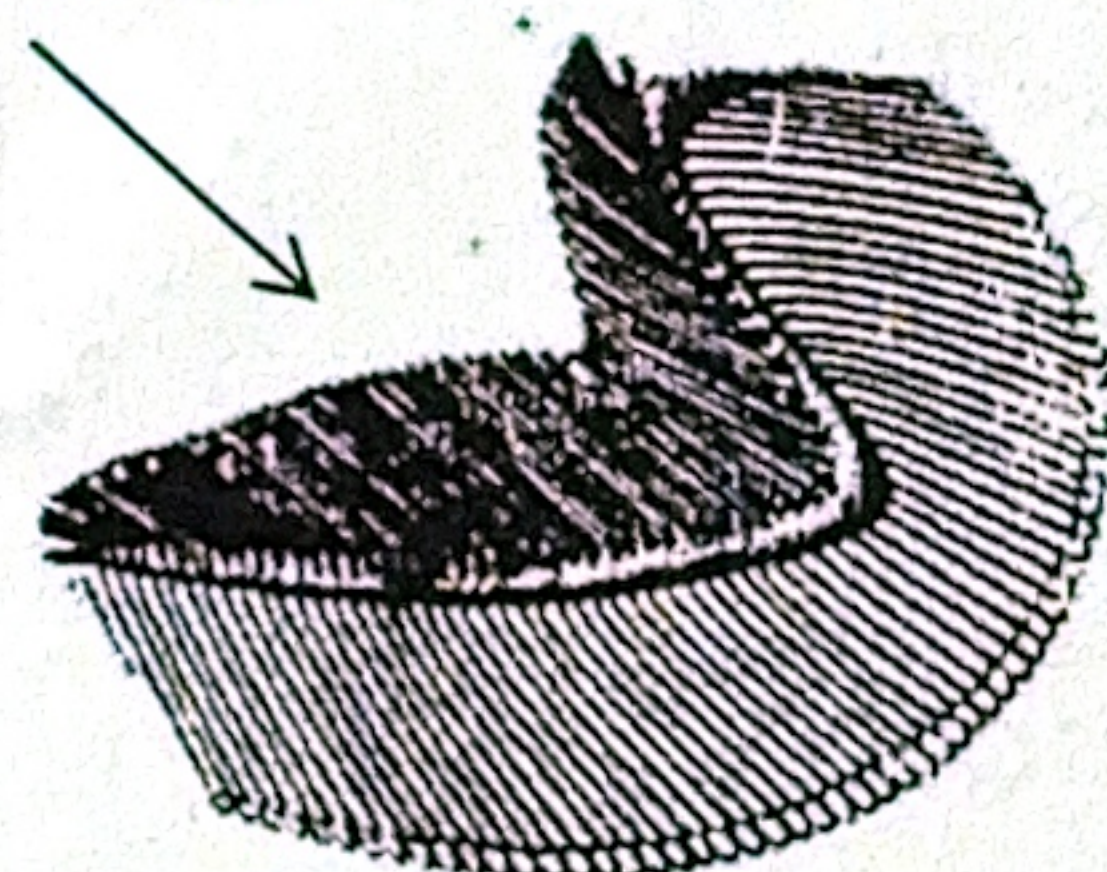
Detritus: Dead organic matter (plants).



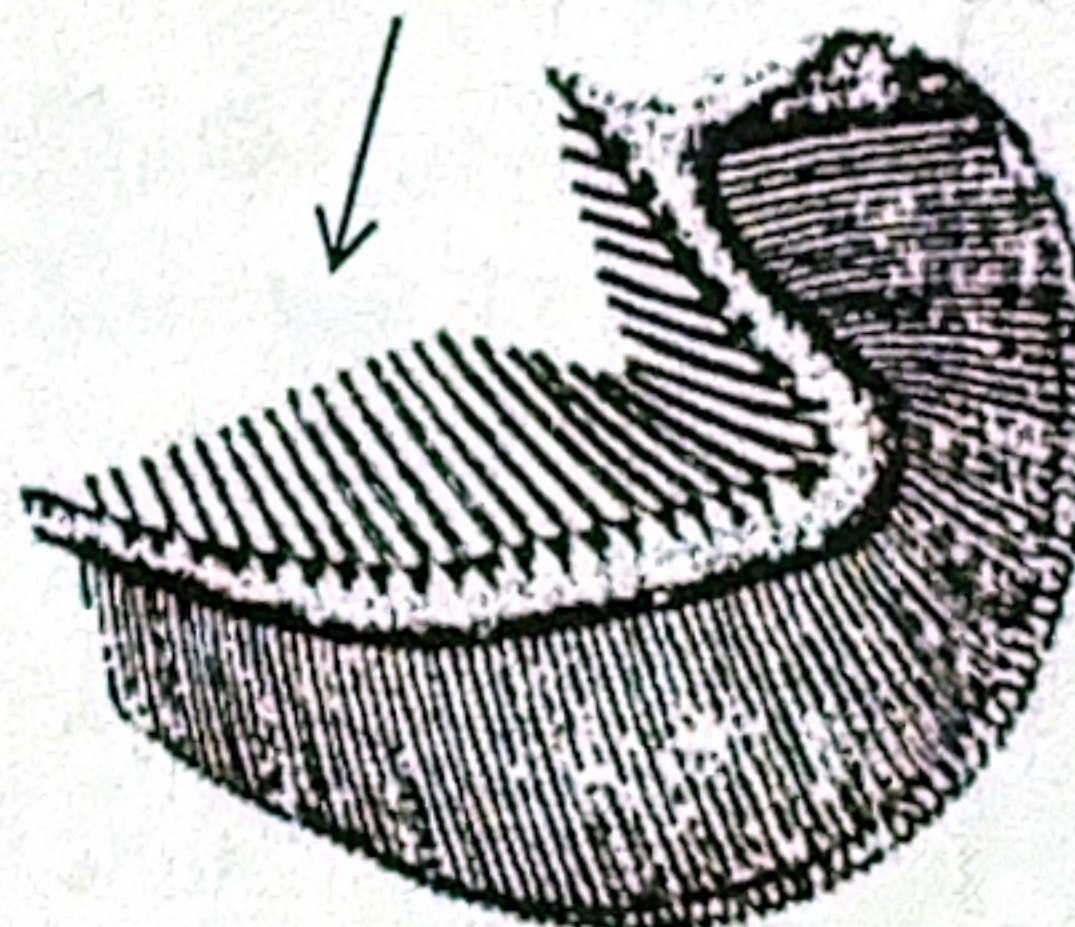
Piscivores		Planktivores
Perches	Pikes	Sunfish
Bass	Gar	Herring
Sculpins	Suckers	



Long, closely spaced gill rakers



Widely spaced gill rakers



Gills: A fish 'breathes' by opening its mouth and drawing in water. When the mouth is closed, the water is forced out through the gills. Under ideal conditions, a fish can remove 80% or more of the oxygen from the water. *Planktivores* use long, finely divided **gill rakers** to collect small food particles.

Differences in body shape: Fish that live in fast-moving waters are more streamlined than those living in quiet waters. Bottom-dwelling fish often have flattened bellies.

Mouth size: Fish that feed on plants (*herbivores*) usually have smaller mouths than carnivorous fishes and may also have special teeth for scraping and grinding. *Piscivores* usually have large jaws for engulfing prey and have well-developed teeth for seizing and holding prey.

Collection methods: Gill nets, trap nets, electrofishing, and seining. Fish surveys help determine the condition of the fish populations.

