Figure 2.33: Stream biota. Food relationships typically found in streams.

Bourassa and Morin 1995). Furthermore, the larger species often play important roles in determining community composition of other components of the ecosystem. For example, herbivorous feeding activities of caddisfly larvae (Lamberti and Resh 1983), snails (Steinman et al. 1987), and crayfish (Lodge 1991) can have a significant

Table 2.12: Ranges of densities commonly observed for selected groups of stream biota.

Biotic Component	Density (Individuals/Square Mile)
Algae	$10^9 - 10^{10}$
Bacteria	$10^{12} - 10^{13}$
Protists	$10^8 - 10^9$
Microinvertebrates	$10^3 - 10^5$
Macroinvertebrates	$10^4 - 10^5$
Vertebrates	$10^0 - 10^2$

effect on the abundance and taxonomic composition of algae and periphyton in streams. Likewise, macroinvertebrate predators, such as stoneflies, can influence the abundance of other species within the invertebrate community (Peckarsky 1985).

Collectively, microorganisms (fungi and bacteria) and benthic invertebrates facilitate the breakdown of organic material, such as leaf litter, that enters the stream from external sources. Some invertebrates (insect larvae and amphipods) act as shredders whose feeding activities break down larger organic leaf litter to smaller particles. Other invertebrates filter smaller organic material from the water (blackfly larvae, some mayfly nymphs, and some caddisfly larvae), scrape material off surfaces