

THE MICROBIAL LOOP

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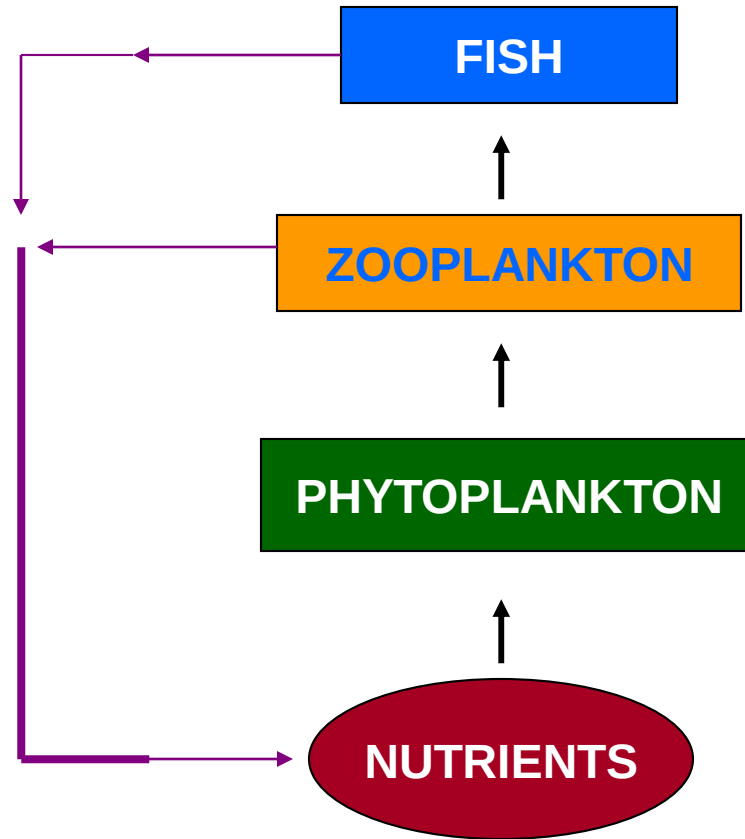
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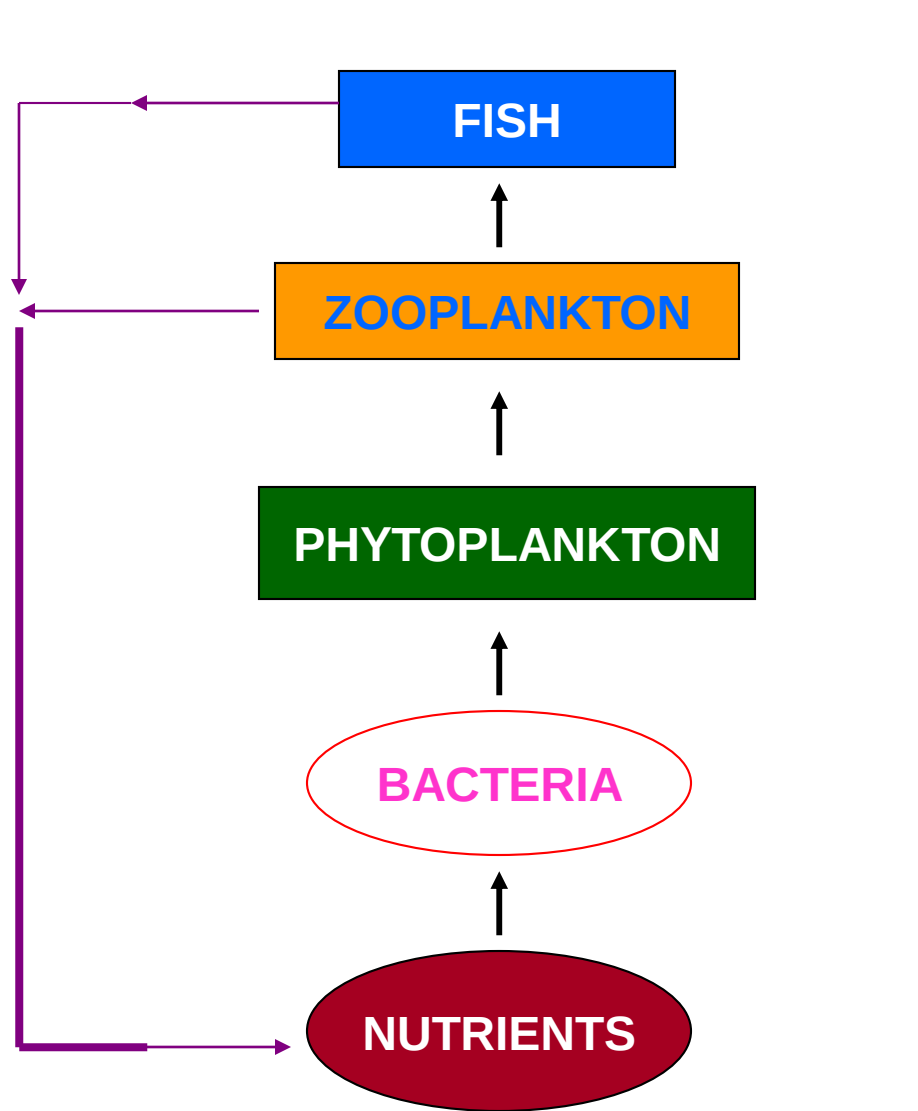
THE MICROBIAL LOOP

IMPORTANT FOR THE RECYCLING OF
ORGANIC MATTER AND NUTRIENTS
ABOVE THE THERMOCLINE

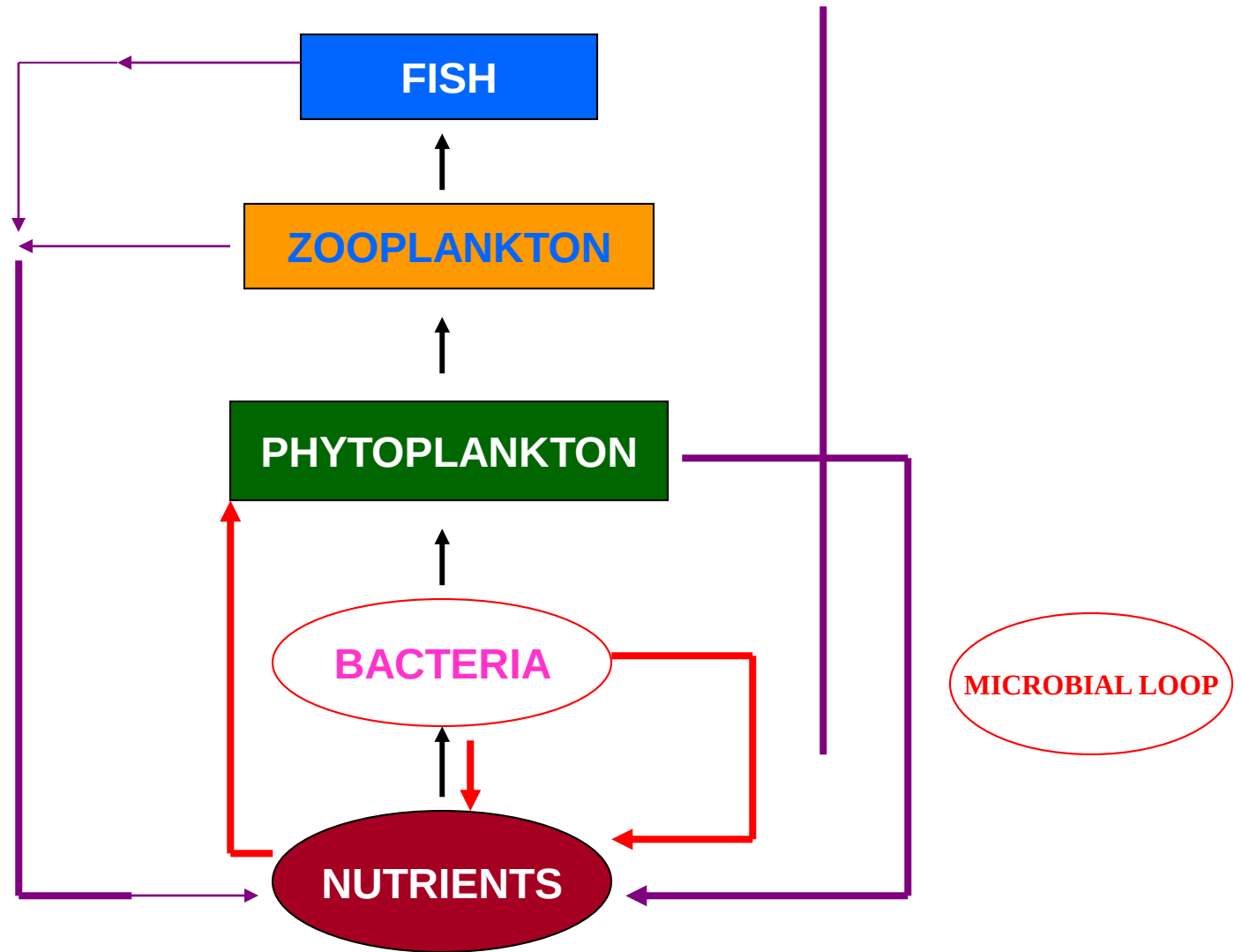
THE MICROBIAL LOOP



Late 1970's early 1980's View of the Food Chain



Mid 1980's View of the Microbial Loop

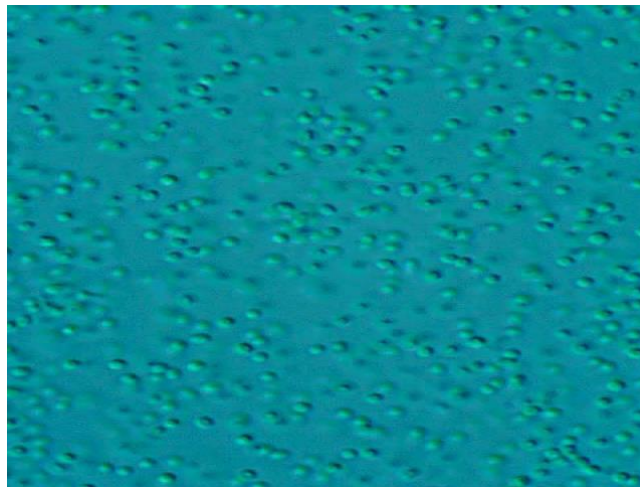


Something else?

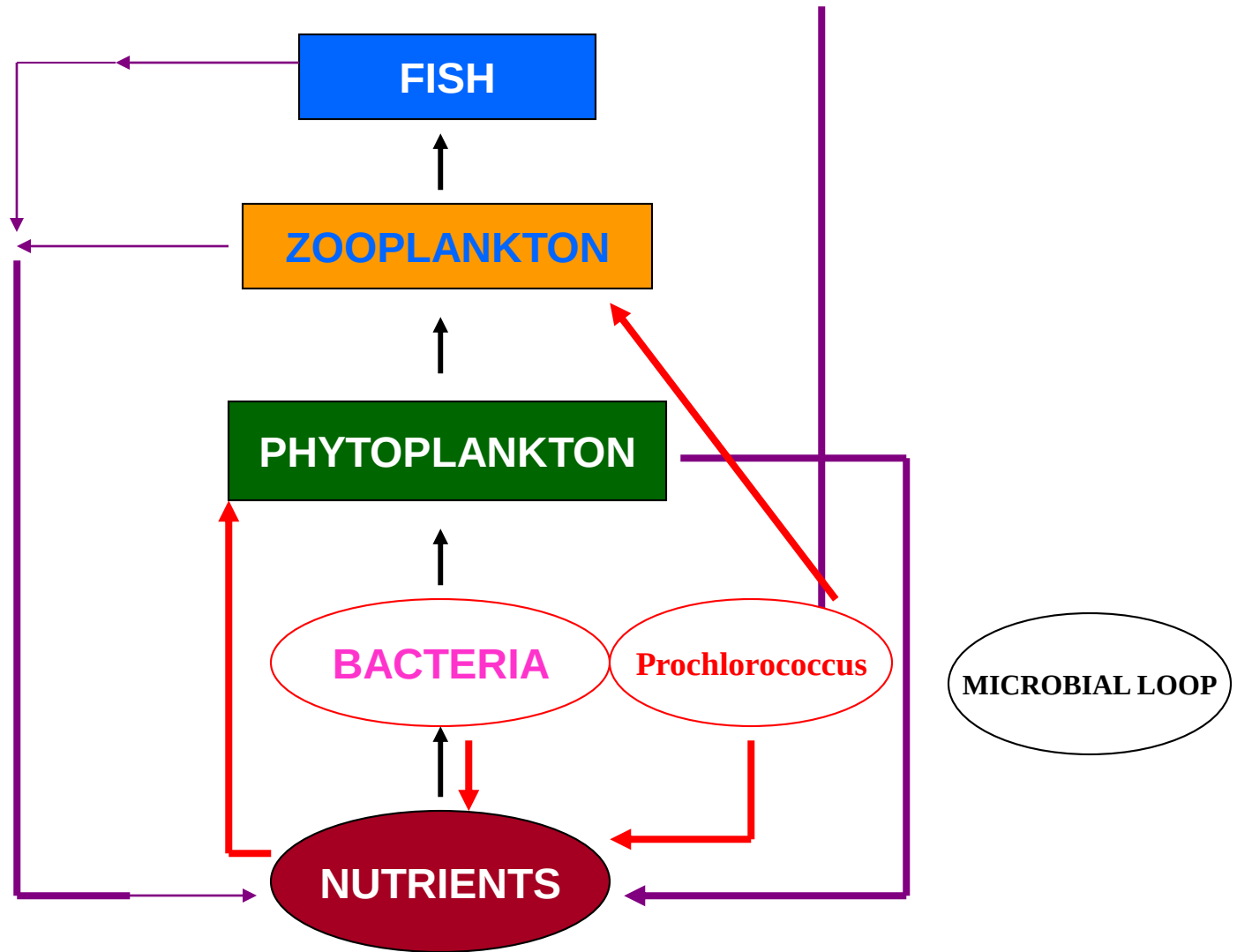
1988 **Prochlorococcus** was discovered

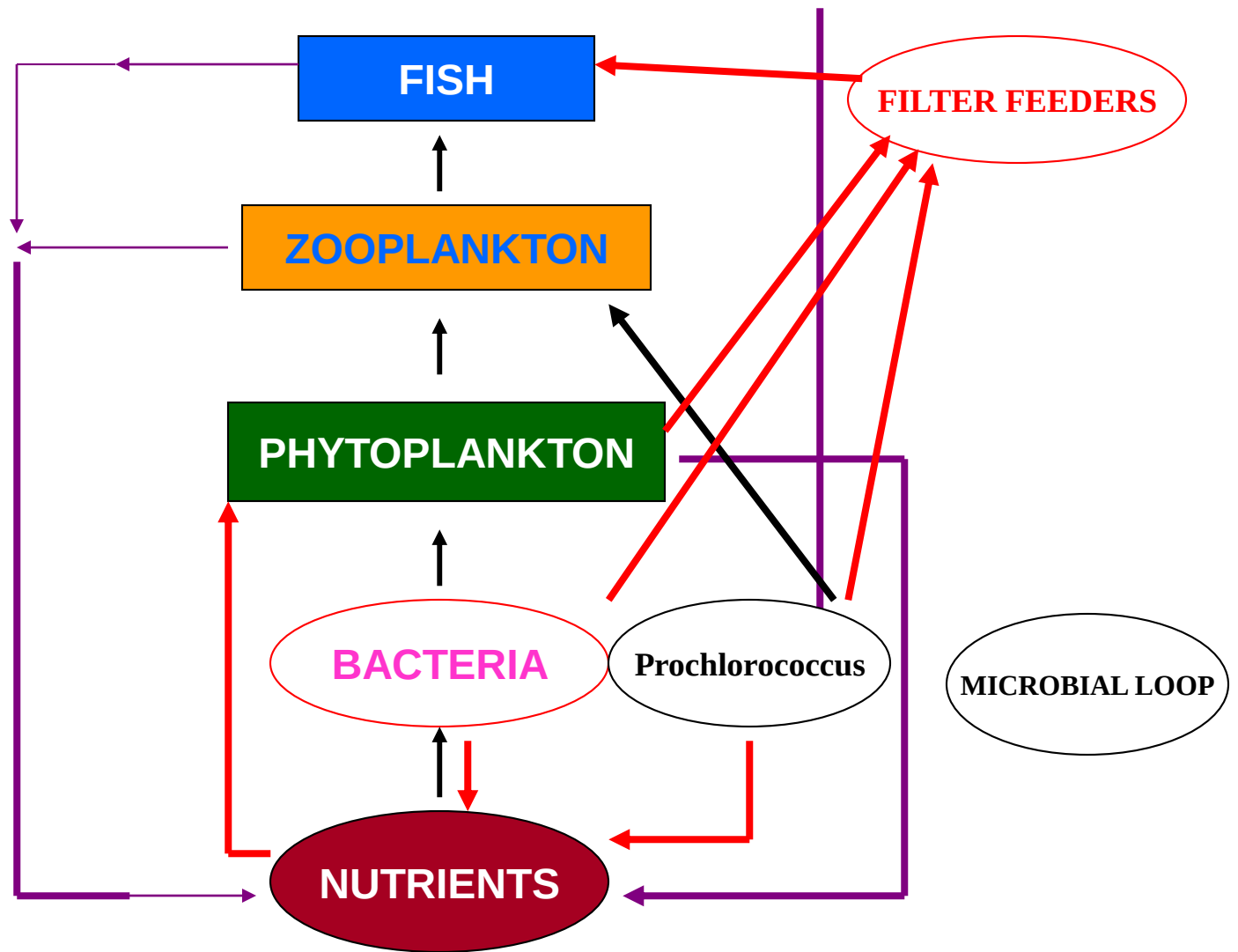
Very small autotroph (Cyanobacteria, uses chlorophyll b)

Present in high abundance in the ocean, especially in oligotrophic areas

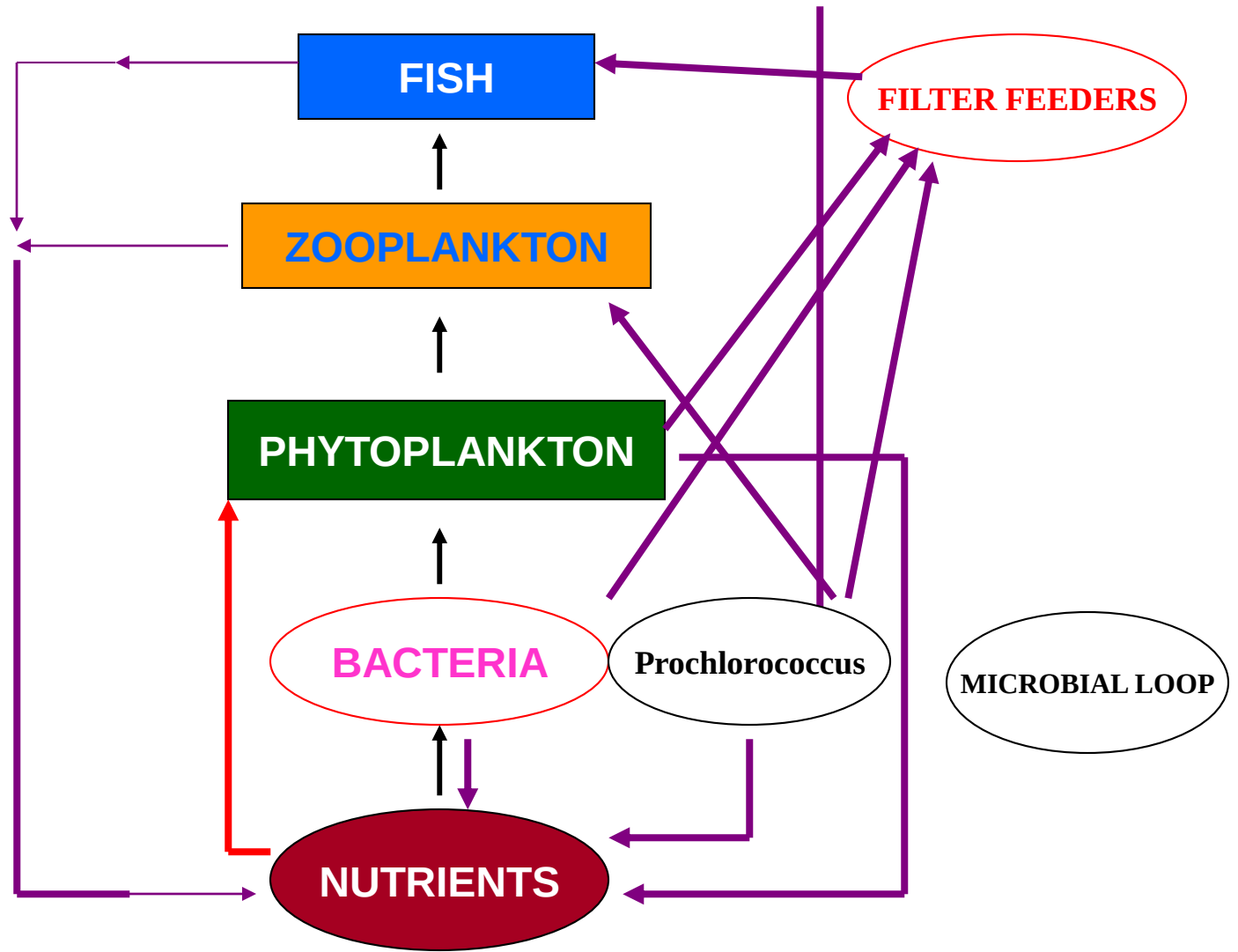


Mid 1980's View of the Microbial Loop



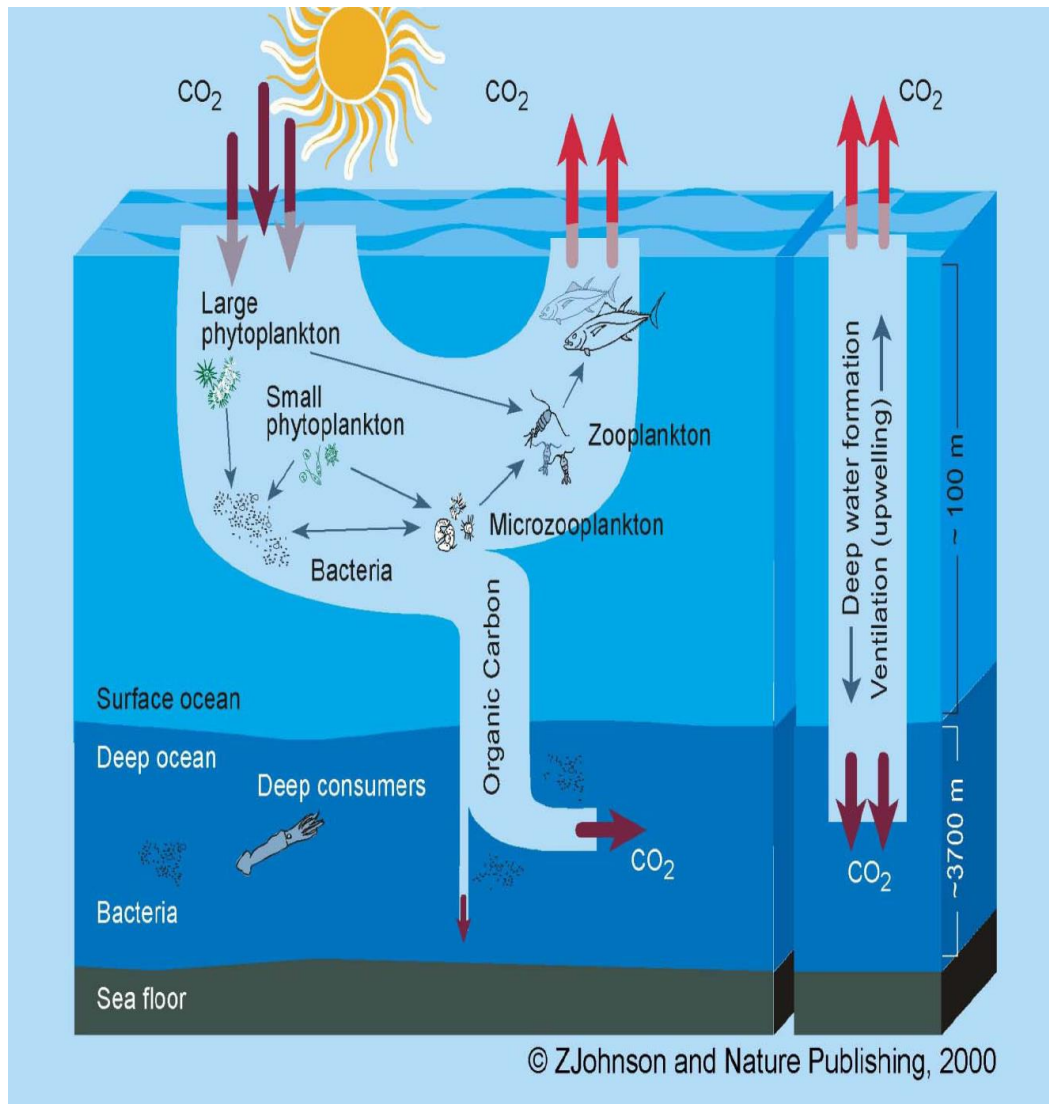


21st Century View of the Microbial Loop

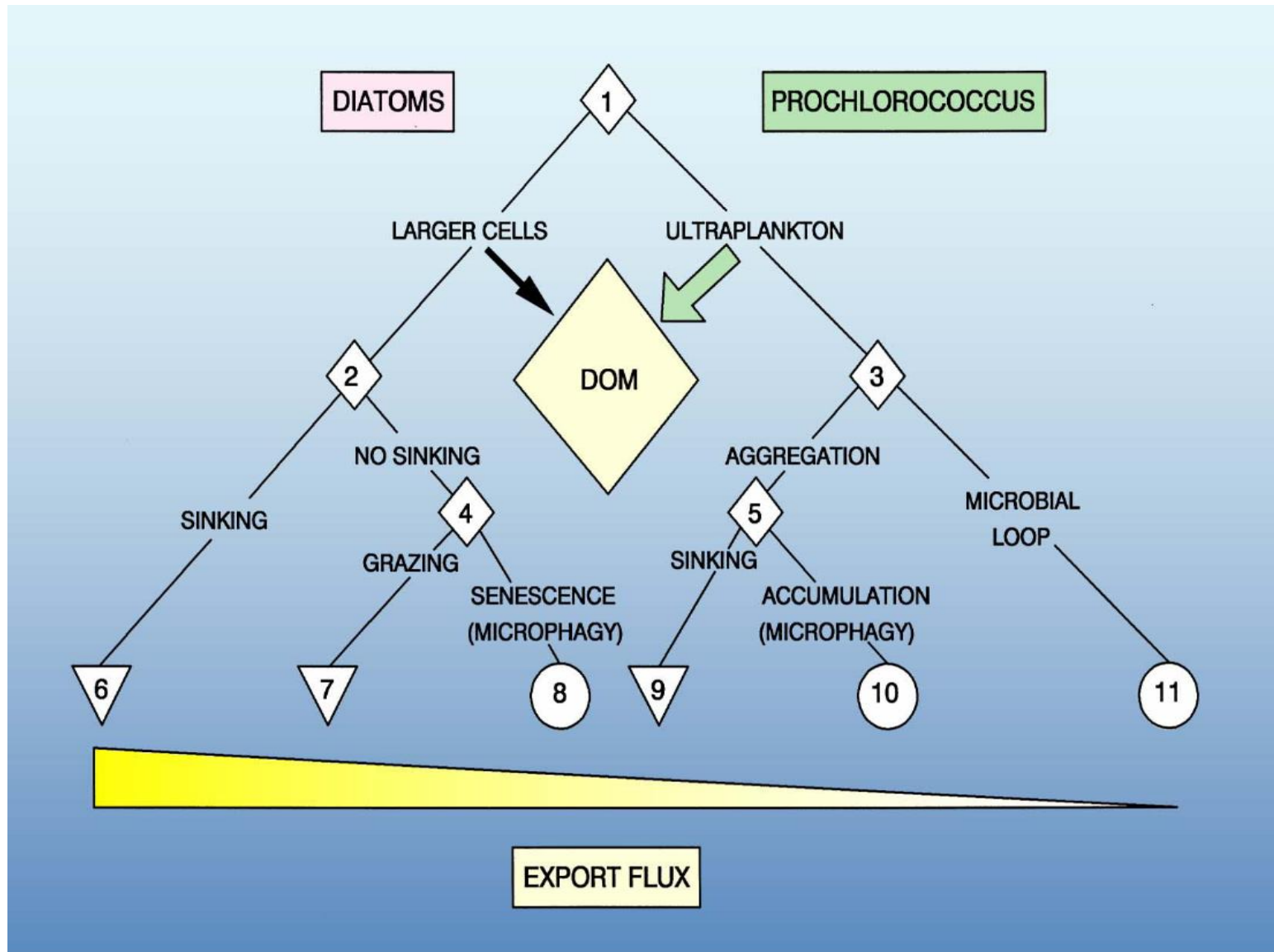


WHY IS THIS IMPORTANT?

- Base of the food web, heterotrophic and autotrophic bacteria are a significant percentage of the total biomass of the ocean
- Carbon cycling
 - – Eutrophic systems microbial community acts as a sink for organic C (respired as CO₂)
 - – Oligotrophic system microbial community acts as a direct link between trophic levels



**In steady
state,
new
production
= carbon
export**



CONTRIBUTION OF DIFFERENT SOURCES TO MARINE DOM

Sources of DOM to ocean ecosystems

1. Direct algal excretion
2. Zooplankton (sloppy feeding, excretion)
3. Viral lysis
4. Bacterial release
5. Solubilization of POM