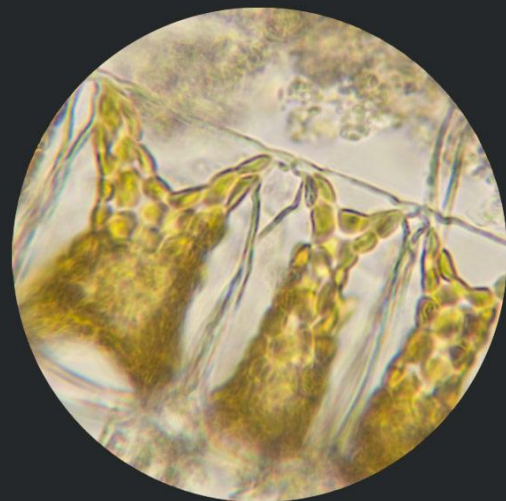
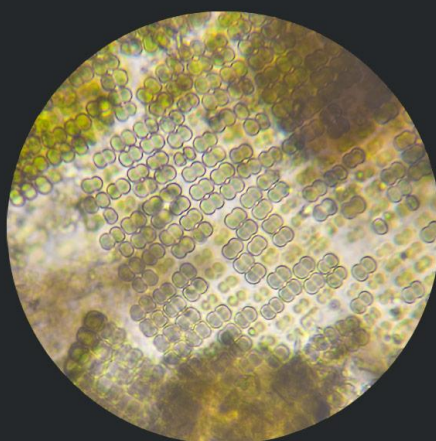
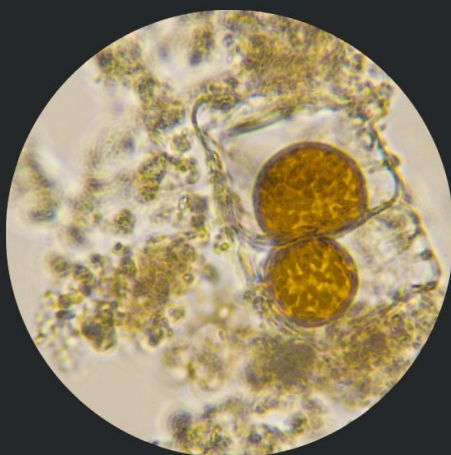
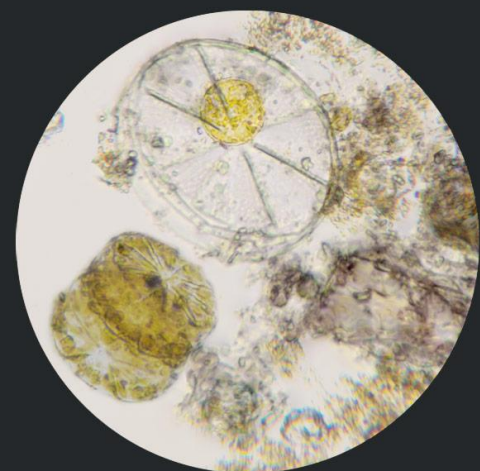
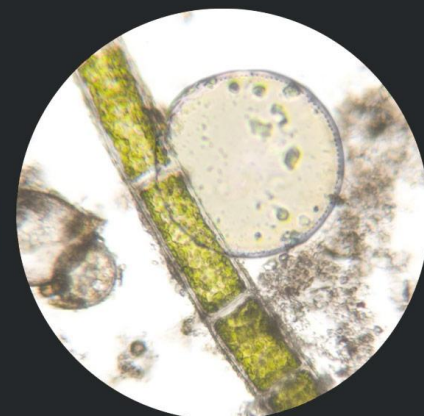
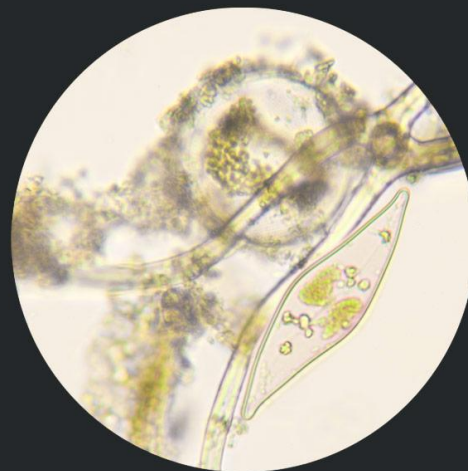
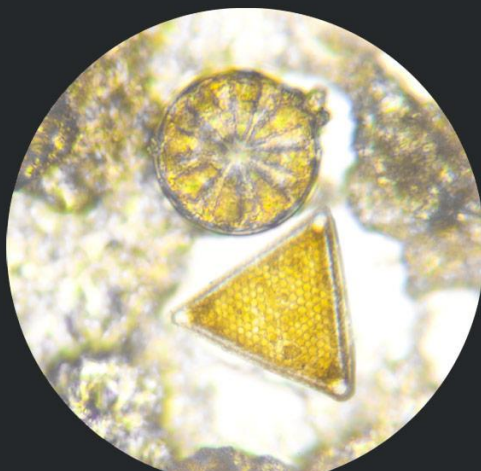
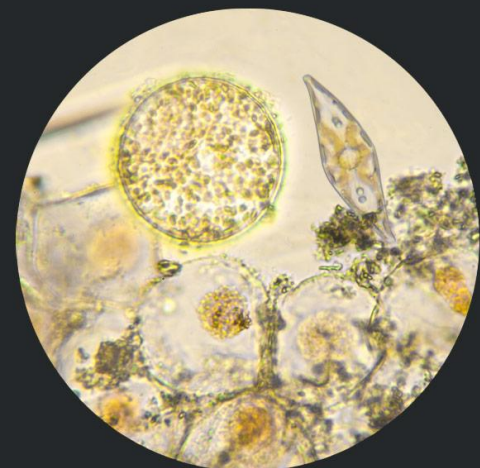
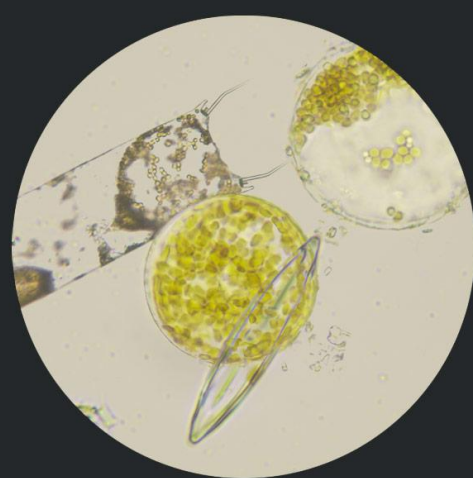
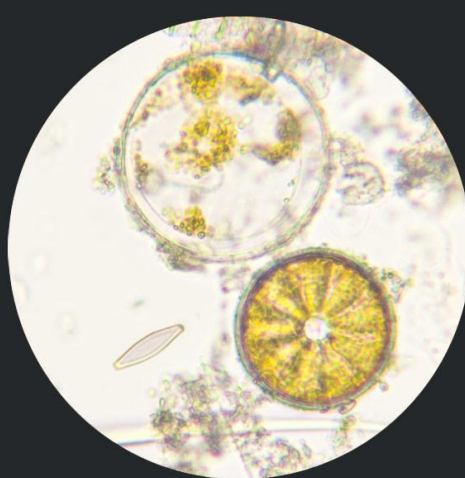
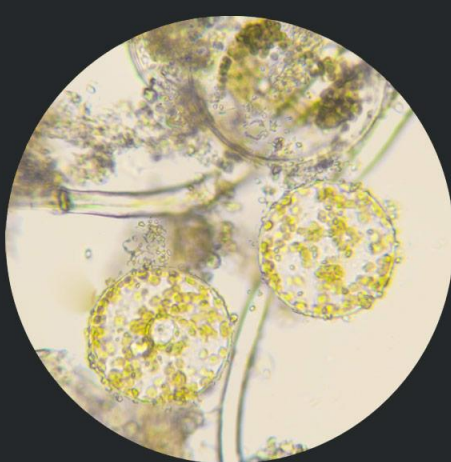
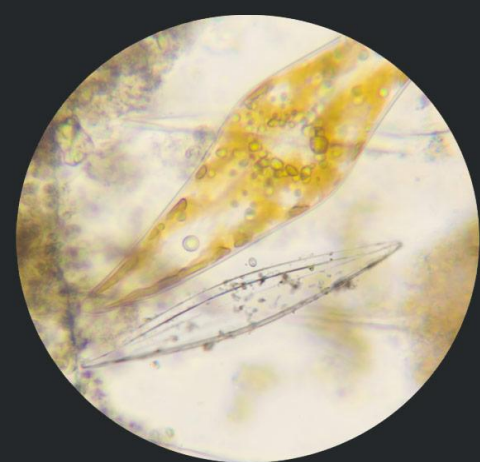


# Culture of Infusoria



# Introduction

- The term "infusoria" comes from the practice of steeping substances (usually hay) in water by soaking at temperatures less than the boiling point.
- Only the largest of the protozoans (infusoria) are large enough to be seen by the naked eye. Most species require a microscope to view.
- The "green water" or cloudiness of aquarium water is sometimes an indication of an overabundance of infusoria which can be caused by overfeeding.
- The importance of infusoria to the pisciculturists is with their use as fry food.

# Contd.

- Their small size, ranging from 25  $\mu\text{m}$  to 300  $\mu\text{m}$  makes them an ideal live food for young fry which have just consumed their yolk sac.
- This includes ciliates and **protozoan's**. They obtain holozoic nutrition from bacteria, algae and detritus.
- They reproduce by binary fission or conjugation.
- There are about 2,000 to 3,000 different species of infusorian protozoa under the genera *Paramecium*, *Bursaria*, *Blepharisma*, *Stylonychia*, *Spirostomum*, *Volvox*, *Stentor*, *Vorticella*, and *Epistylis*.
- Freshwater species includes *Paramecium* and *Stylonychia* and marine water species includes *Euplotes* and *Fabrea salina*(20-35 ppt).



# Freshwater Infusoria

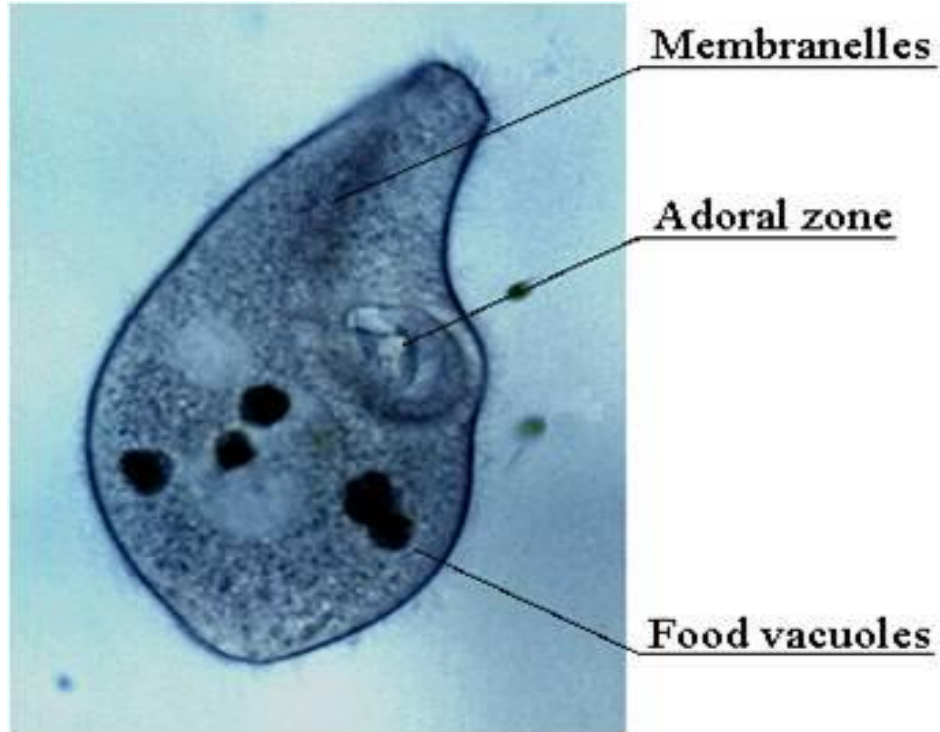


*Paramecium sp*



*Stylonichia sp*

# Marine Infusoria



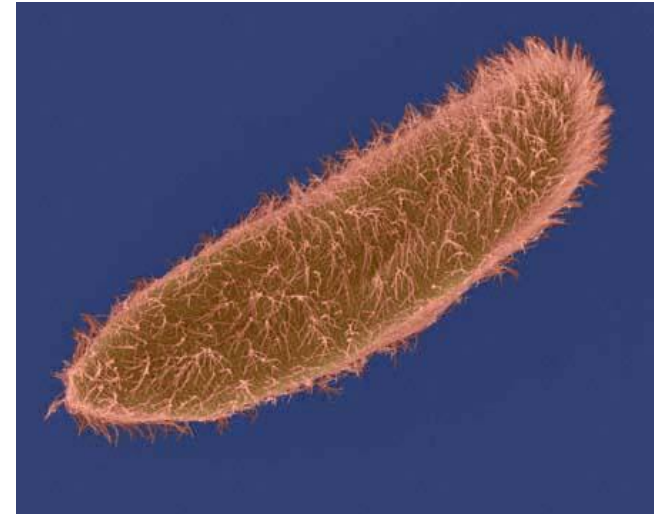
*Fabrea salina*



*Euplotes* sp

# Biology

- Paramecium have a very distinctive **slipper-like appearance**
- Small size, ranging from **25  $\mu\text{m}$  to 300  $\mu\text{m}$ .**
- Presence of many **surface cilia** (hairs) which are used for **swimming and collecting food.**
- They have a semi-transparent appearance and the interior nuclei and food containing vacuoles are readily seen as small globules under the microscope.
- They have **distinct front (rounded) and rear (pointed) ends**



# Culture

Ideal conditions for a ciliate culture, or "infusoria" are :-

- a) a starter culture plus organic nutrients.
- b) exposure to strong daylight (but not sunlight).
- c) warmth (83°F or 28.5°C is ideal)
- d) aeration
- e) somewhat alkaline pH above pH 7.0
- f) water free of chlorine



## Common methods employed for culture

- a) By using banana peel
- b) Straw
- c) Lettuce (blanched or dried)
- d) Milk
- e) Liquifry
- f) Pablum or other powdered cereal
- g) Raw potato
- h) Rice - boiled
- i) Grass
- j) Yeast

## By using banana peels

- Add 2 to 3 banana peels in about 50 liters of water in an Aquarium or a Jar.
- Cover with cloth to prevent entry of flies.
- After 2-3 days the skin will have sunk to the bottom and Water turns milky with foul smell indicating heavy bacterial scum cover the water's surface.
- After 4-5 days transparent light yellow colour appears with slime layer formation due to settling of floating spores of infusoria in the air.
- Harvested when the slime on the surface of water breaks up & disintegrate and when the water clears up.
- The culture water can then be used as a source of food and Cultured continued by regular harvest.

## **By using Potato peels**

- Cut a raw white potato into quarter-inch squares and wash thoroughly for use as a medium.
- Add about sixty of these squares to a 5litres of water and allow them to stand overnight.
- Then inoculate the mixture with about one ounce of old culture material and let stand for about ten days.
- As the culture water is removed for use it can be replaced with boiled pond or spring water.

## By using lettuce leaves

- Place brown, rotting lettuce leaves in a wide mouth glass jar. Put in enough to cover the bottom of the jar.
- Add water that is almost boiling to fill the jar about 3/4 of the way full. Boiling water can also be excluded.
- Leave this standing, uncovered for 24 hours. Then add 50-100 ml of old aquarium water (from the surface of the aquarium) and cover the jar.
- Keep in ideal temperature & light
- Green water with some infusoria observed after 5 to 6 days.
- Once in every ten days a piece of scalded lettuce should be added to keep the culture growing.

# Contd.

## By using Liquifry

- Provides a source of decaying substrate for bacteria which in turn as a food for infusoria.

## Others

- Simillary other methods are also employed such as potato
- Apple snail or **Infusorial snails** (*Ampullaria*) are good in culture.
- Feed on the lettuce leaves, hay or other water plants. The droppings (feaces) of the snail containing half digested leaves will help rise large number of infusoria





Water plant along with Apple snail

# Conclusion

- The set-up and maintenance of these cultures is really quite easy
- Have excellent results in rearing fry.
- Besides being small in size, they are soft bodied and nutritionally rich.
- Owing to these qualities, they serve ideally as starter feed for early stages of finfish and shellfish in aquaculture hatcheries.