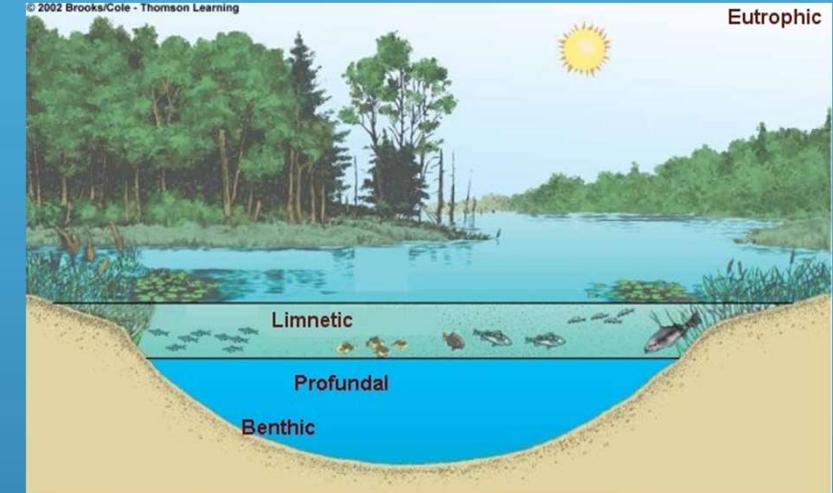


A photograph of a rustic wooden cabin with a dark brown roof and walls, situated on stilts over a calm lake. A small wooden bridge with metal railings leads to the cabin. The cabin is surrounded by lush green trees and foliage. In the background, there are more trees and a faint view of mountains under a clear sky.

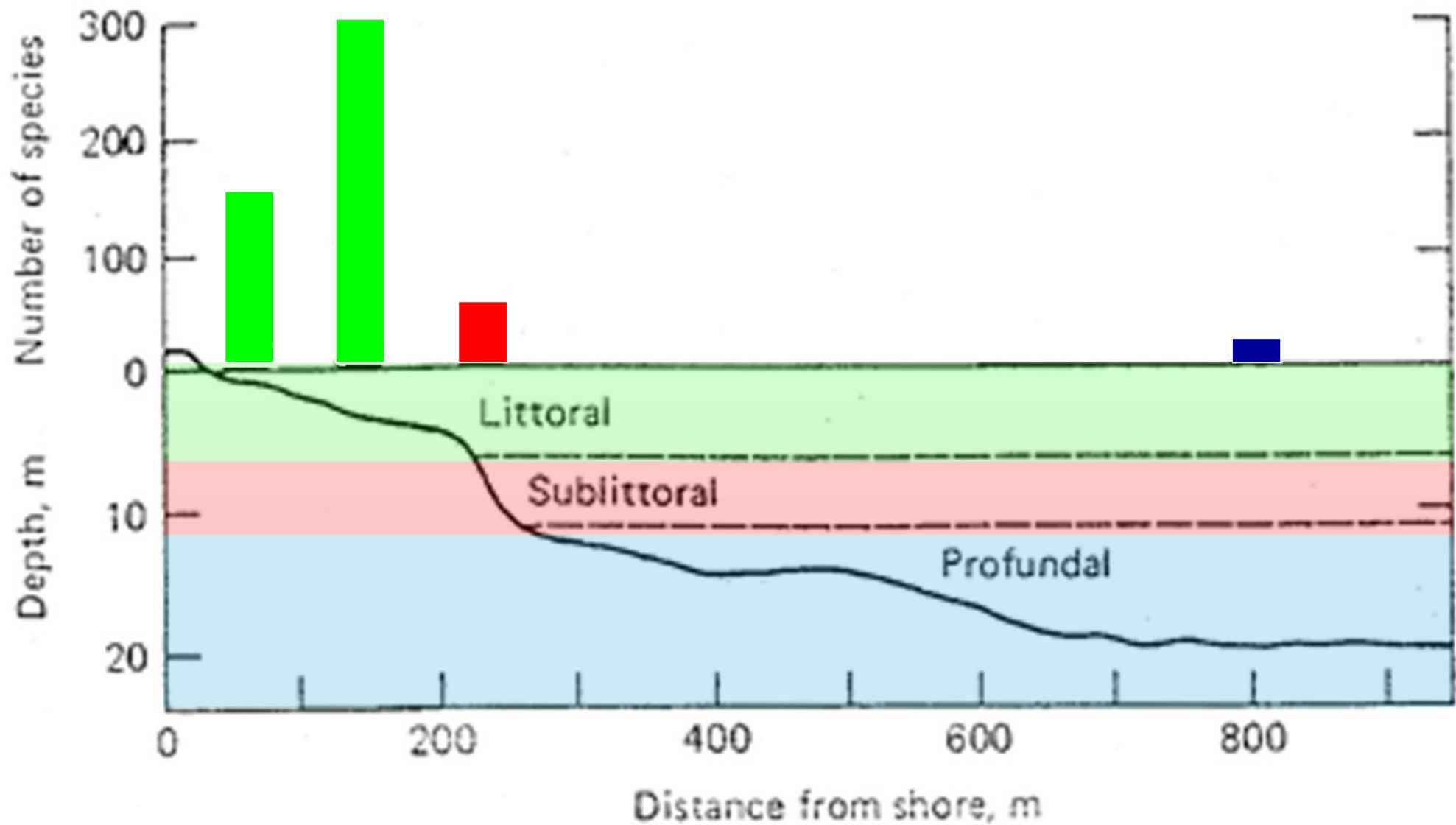
ittorai

# The littoral zone

- comprises often a large proportion of the total lake area
- affects the physical and biological processes in the hole lake ecosystem due to processing of material flowing into the lake from terrestrial runoff, groundwater or stream connections
- the most productive area of the lake
- often used by humans (swimming, fishing boating,..)



## Esromsee: species diversity



# Highest species diversity in the phytal:

- Well developed spatial structures:
  - contact zone sediment-water
  - contact zone macrophytes-water
  - interstitial spaces between macrophytes
- Favourable microclimate (e.g. reduction of wave energy)
- Favourable light conditions
- Plenty of food:
  - epiphytes
  - macrophytes
  - sediment
  - high prey supply for predators

# Living conditions for littoral fauna

## On dead substrate

- constant
- Variable physical factors:
  - Wave effect
  - Grain size

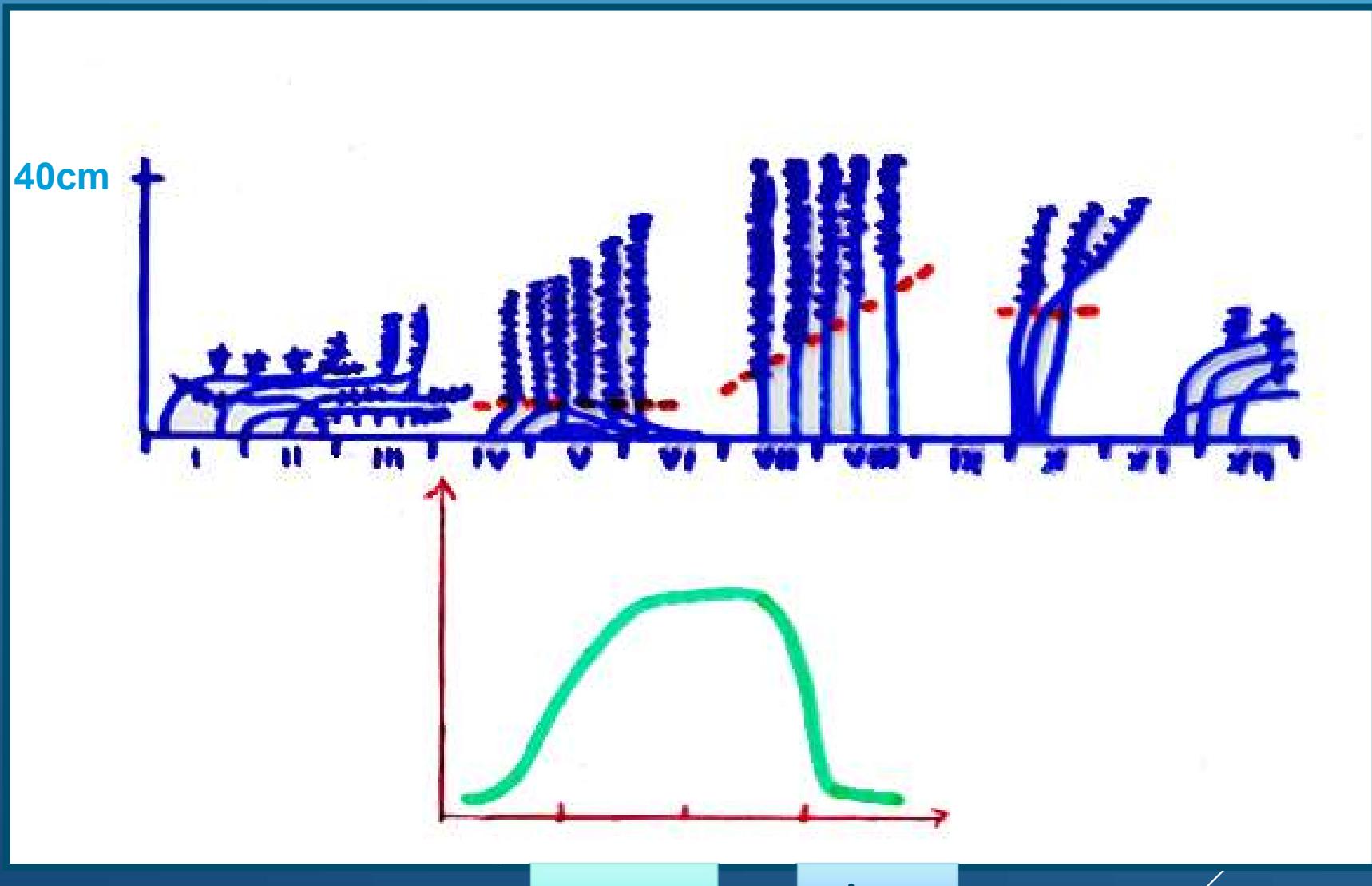
## On living substrate

- Diurnal and seasonal variations due to growth and metabolism of plants
- Vertical zonation

Permanent and transient species: moving in and out of the littoral zone from the terrestrial surrounding (e.g. amphibians, waterfowl) or the pelagic zone (e.g. zooplankton, fish)

# Seasonal succession

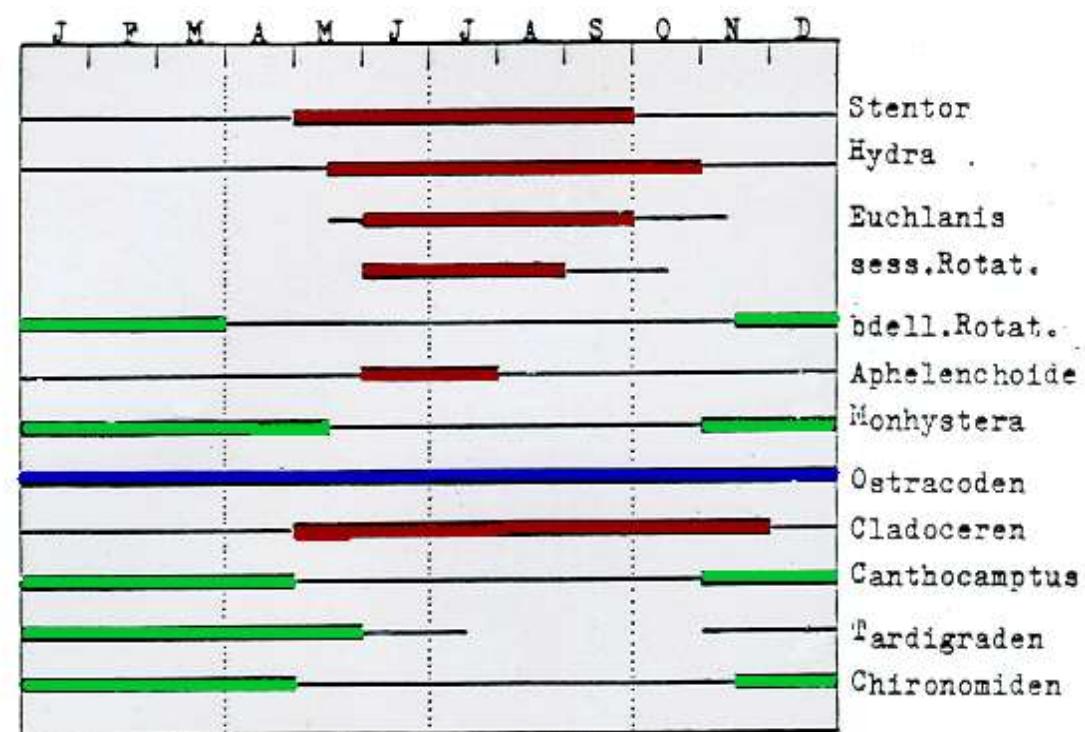
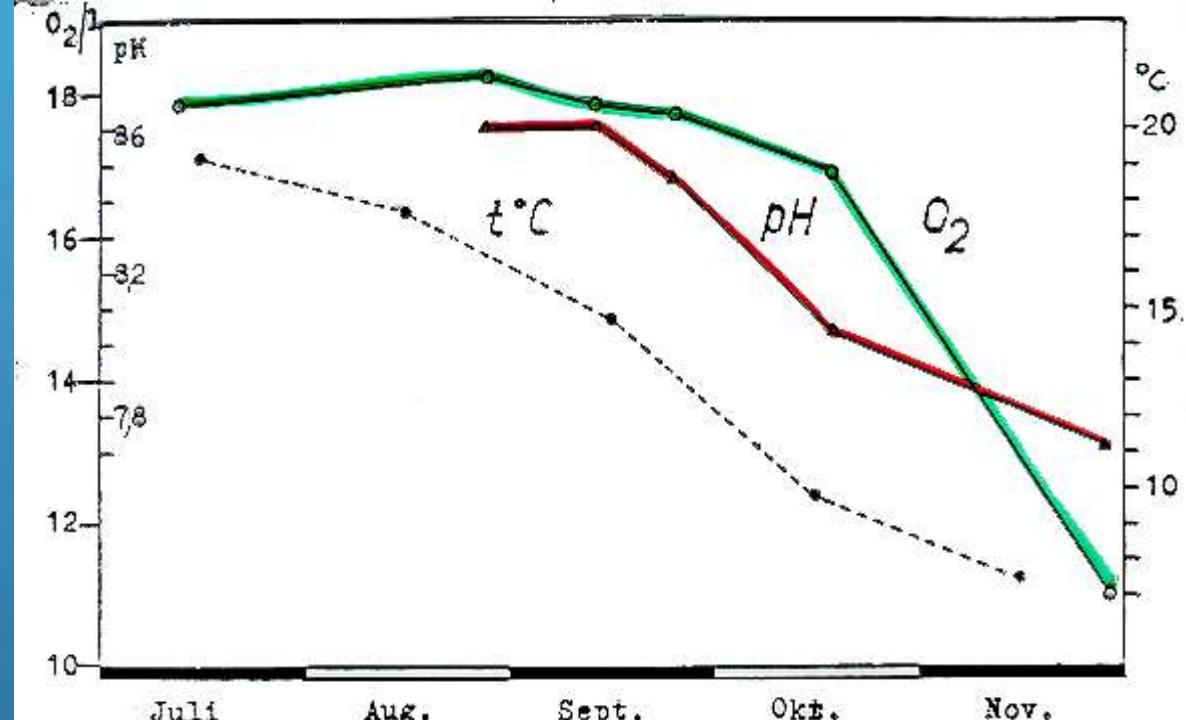
*Elodea*, LUS, SCHIEMER 1967



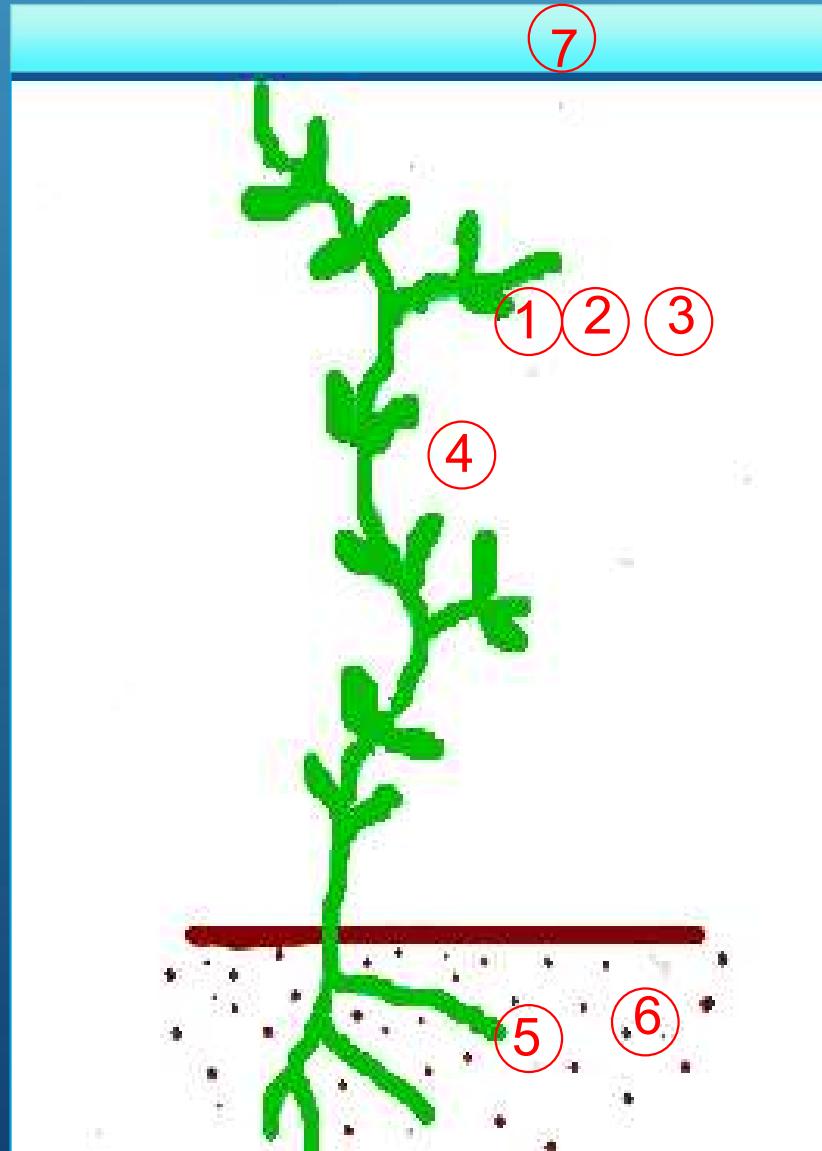
summer

winter

## Seasonal succession



# Life form types in the littoral zone



- 1 miners
- 2 sessiles
- 3 vagile substrate bound forms
- 4 swimmers
- 5 root parasites
- 6 sediment dwellers
- 7 water surface dwellers  
= neuston: epineustic  
hyponeustic

## Life form types in the littoral zone

1 miners



# Life form types in the littoral zone

1 miners

Foto: M. Schagerl



*Cricotopus brevipalpis* (Chironomidae) in the mesophyll of *Potamogeton natans*

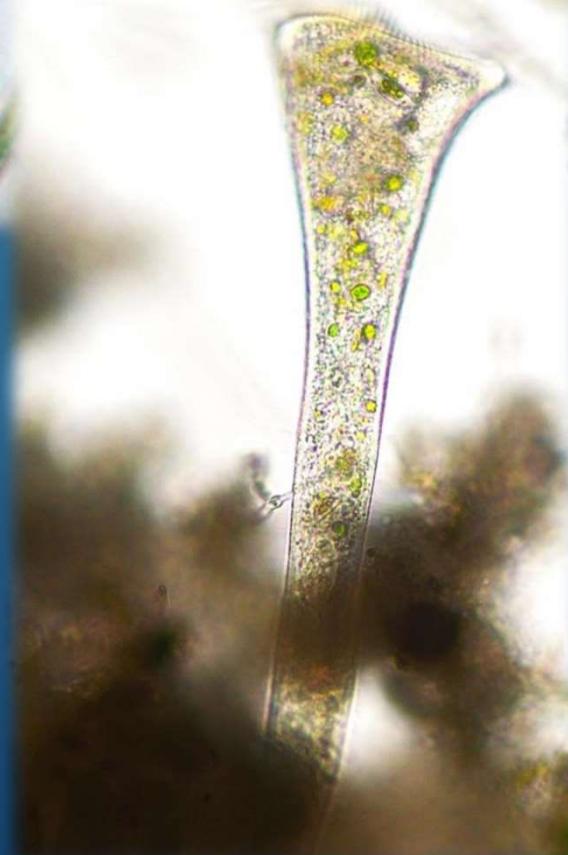
## Life form types in the littoral zone



*Vaginicola sp.*

2 sessiles

*Stentor polymorphus.*



*Hydra sp.*



## Sessile rotifers

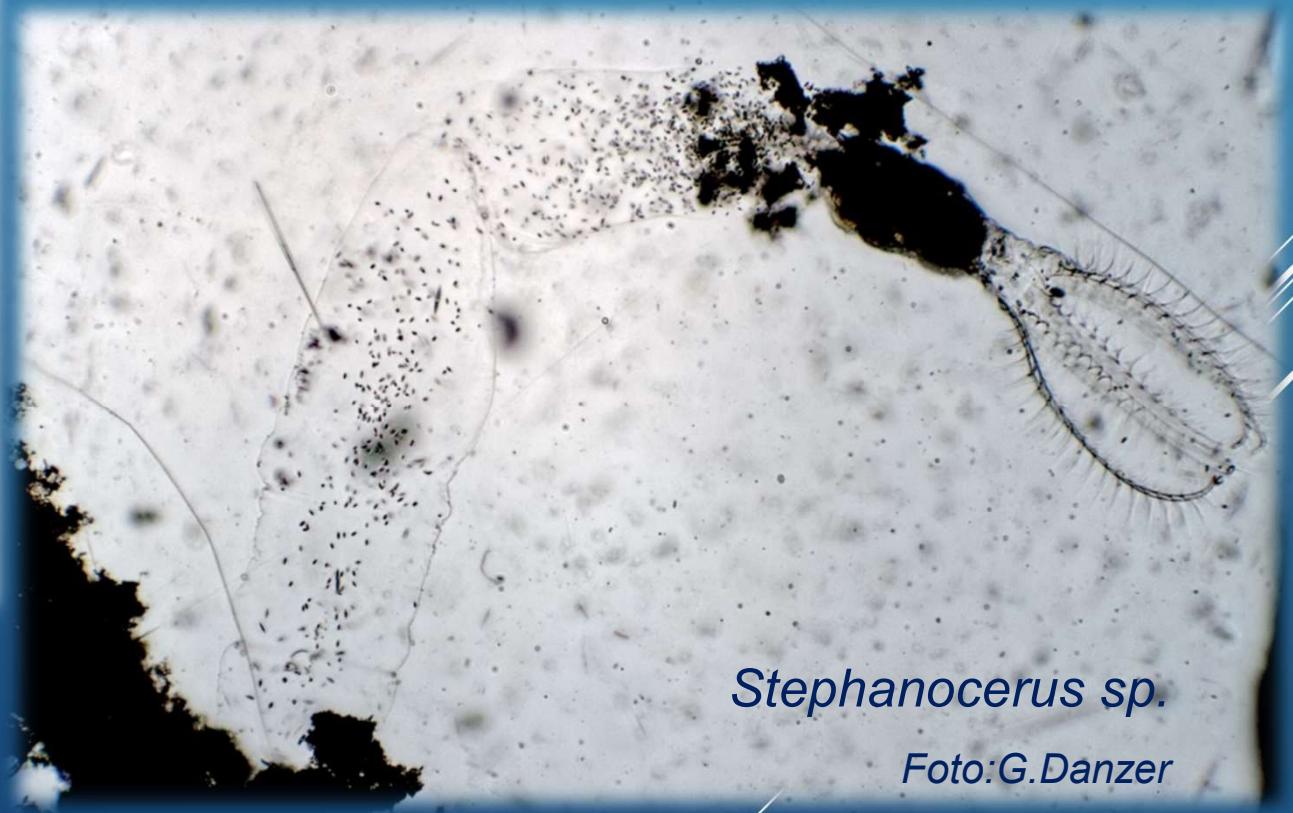


*Floscularia ringens*



*Collotheaca* sp.

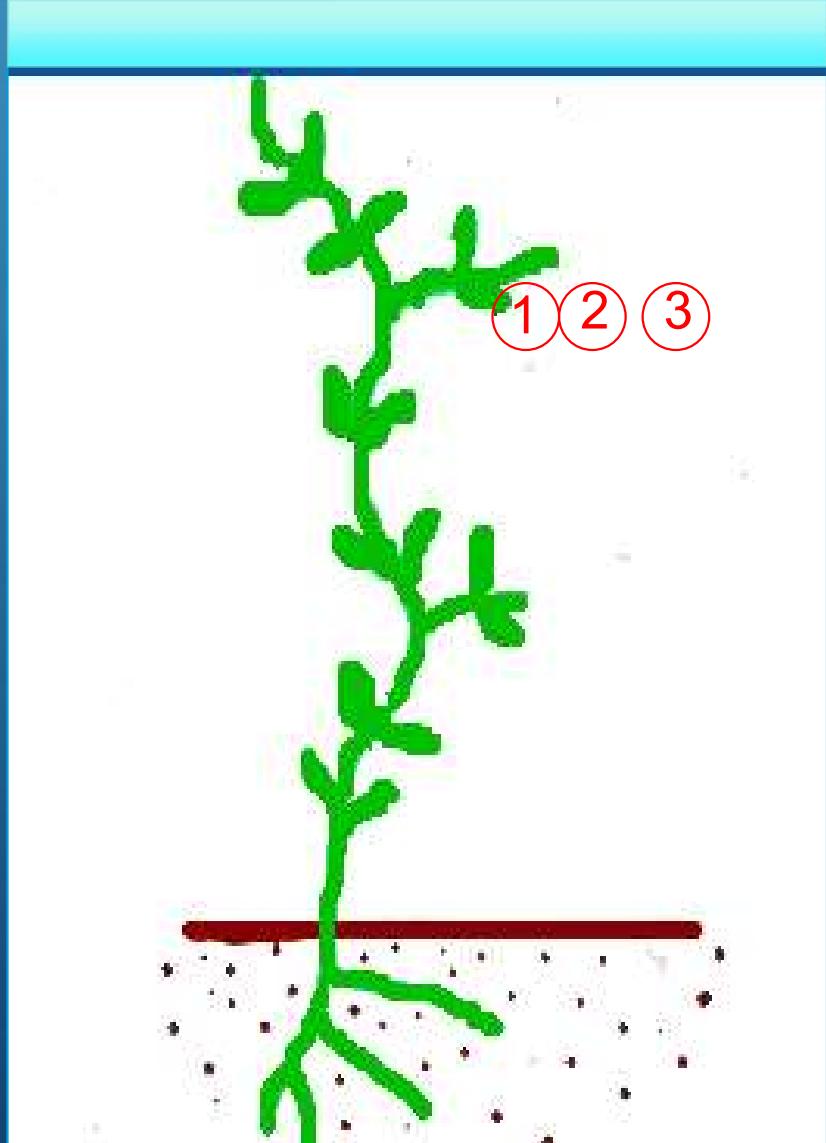
Foto:G.Danzer



*Stephanocerus* sp.

Foto:G.Danzer

# Life form types in the littoral zone



1 miners

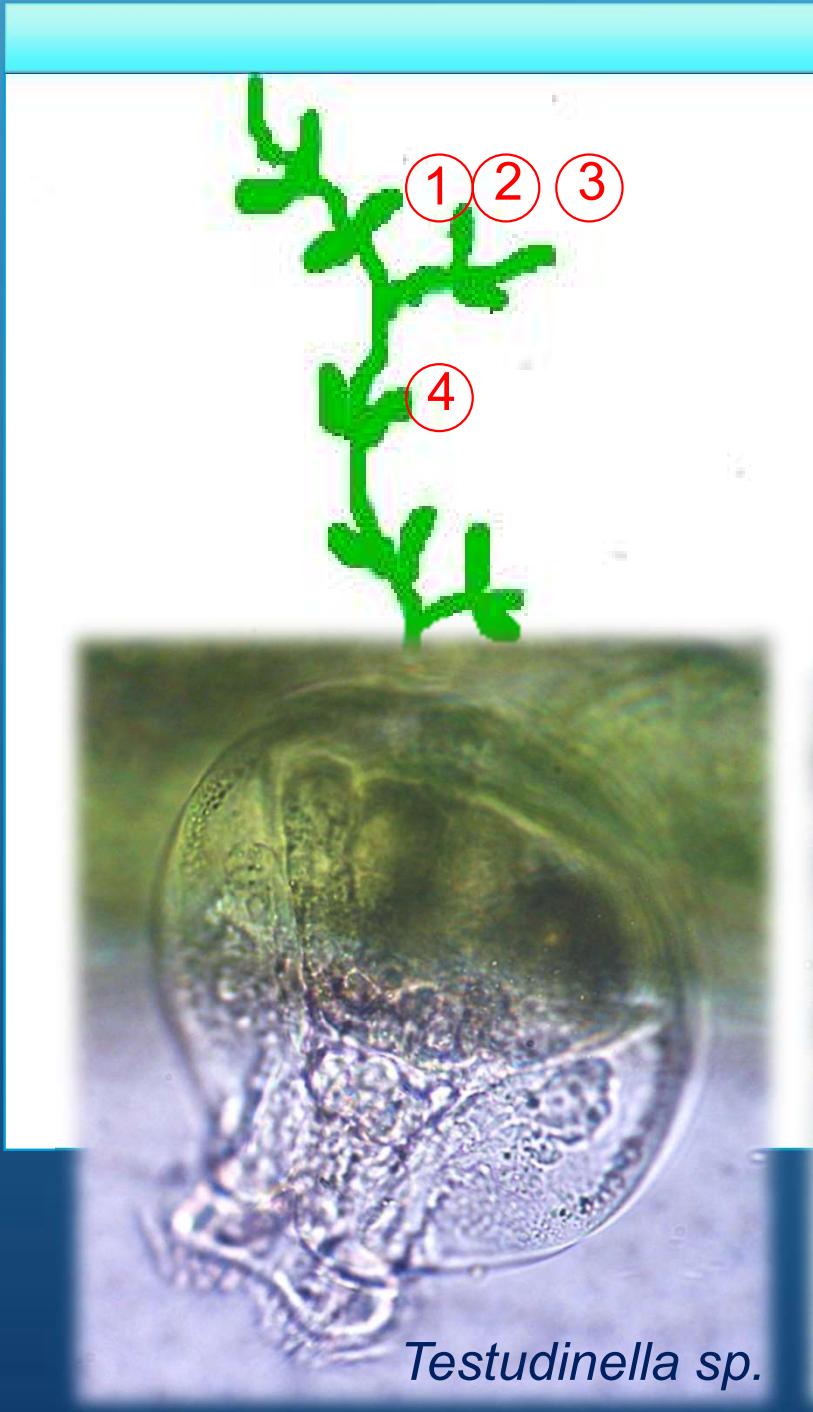
2 sessiles

3 vagile substrate bound forms



Turbellaria

# Life form types in the littoral zone



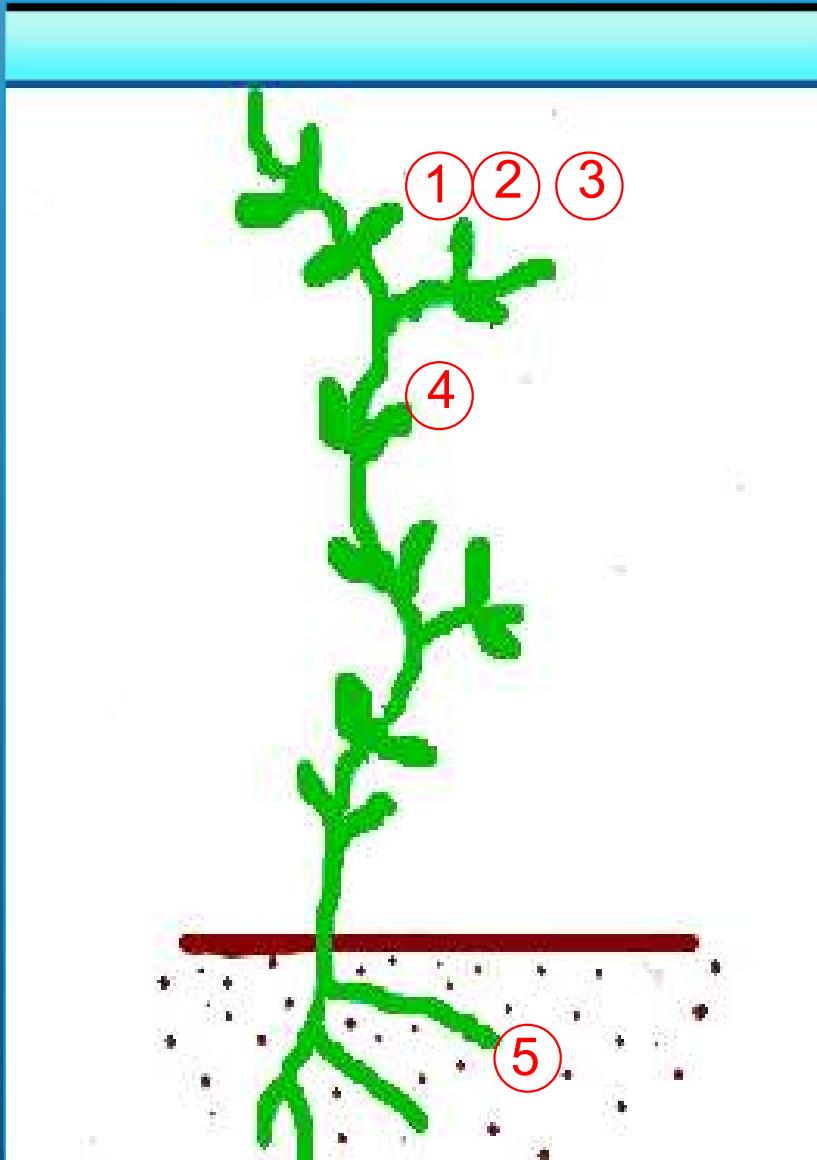
*Testudinella sp.*

- 1 miners
- 2 sessils
- 3 vagile substrate bound forms
- 4 swimmers



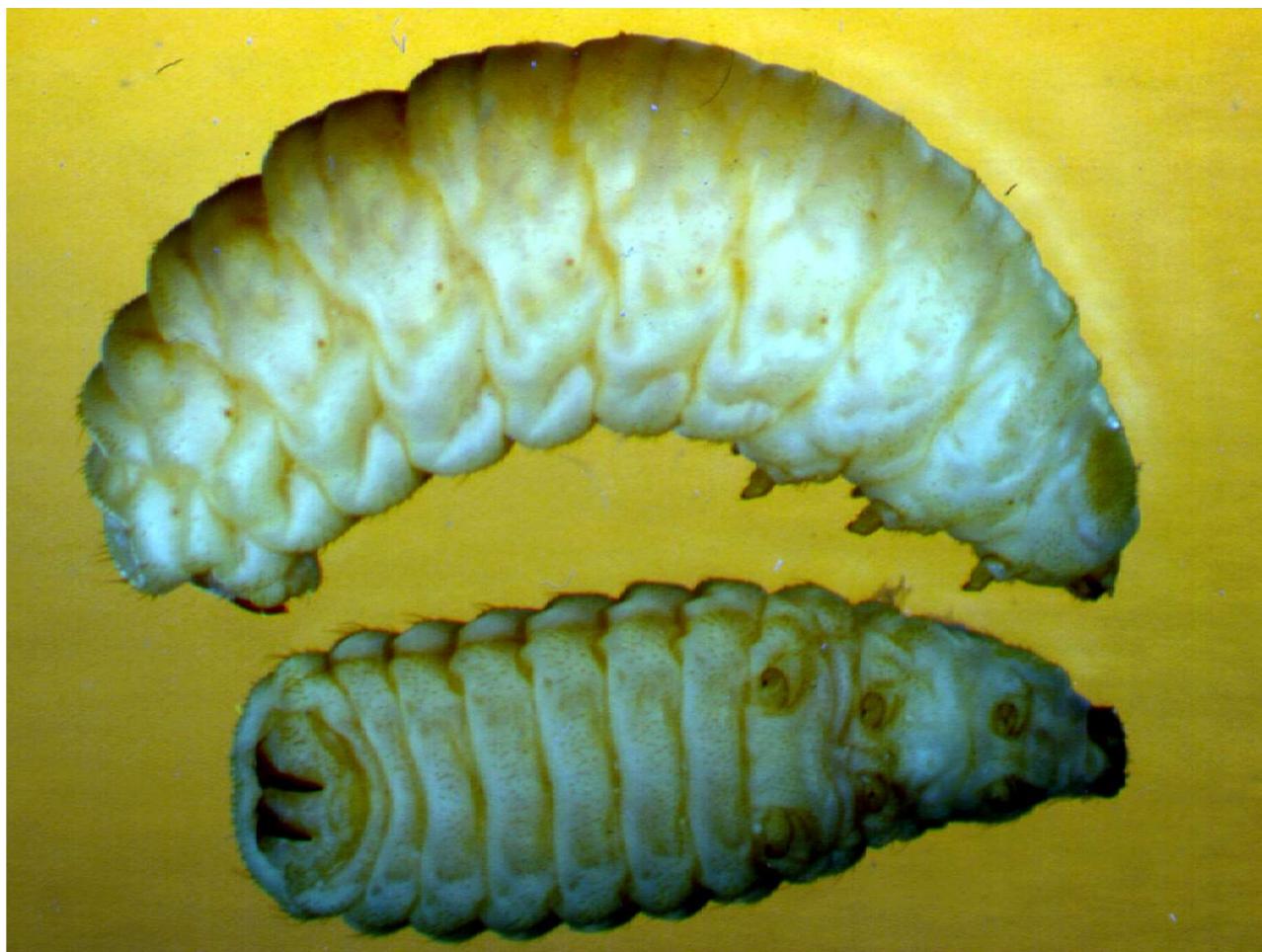
*Acroperus harpae*

# Life form types in the littoral zone

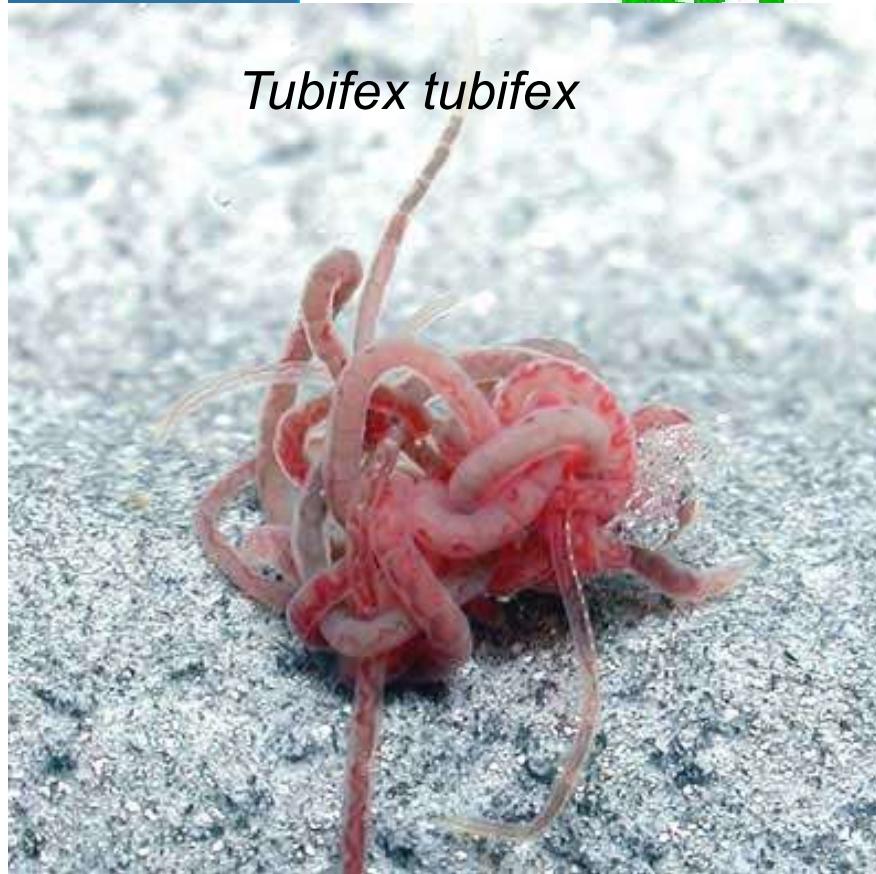
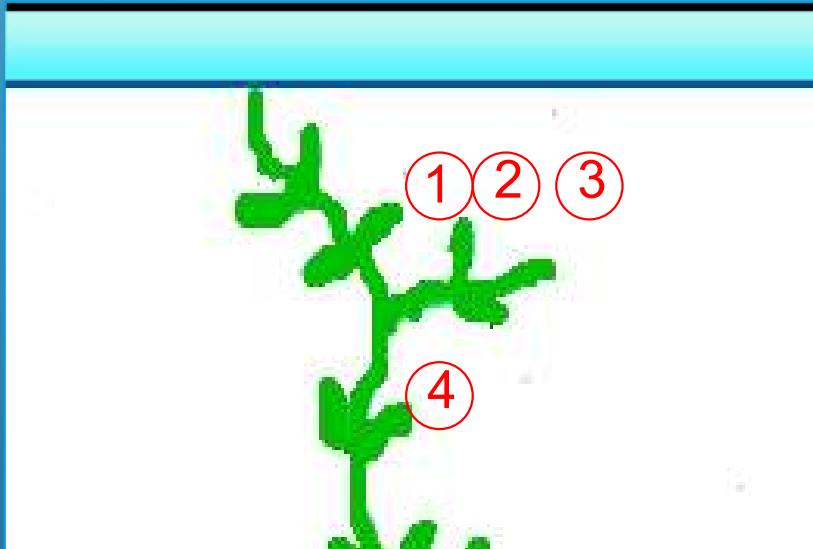


- 1 miners
- 2 sessiles
- 3 vagile substrate bound forms
- 4 swimmers
- 5 root parasites

*Donacia crassipes*  
Chrysomelidae



# Life form types in the littoral zone



- 1 miners
- 2 sessiles
- 3 vagile substrate bound forms
- 4 swimmers
- 5 root parasites
- 6 sediment dwellers

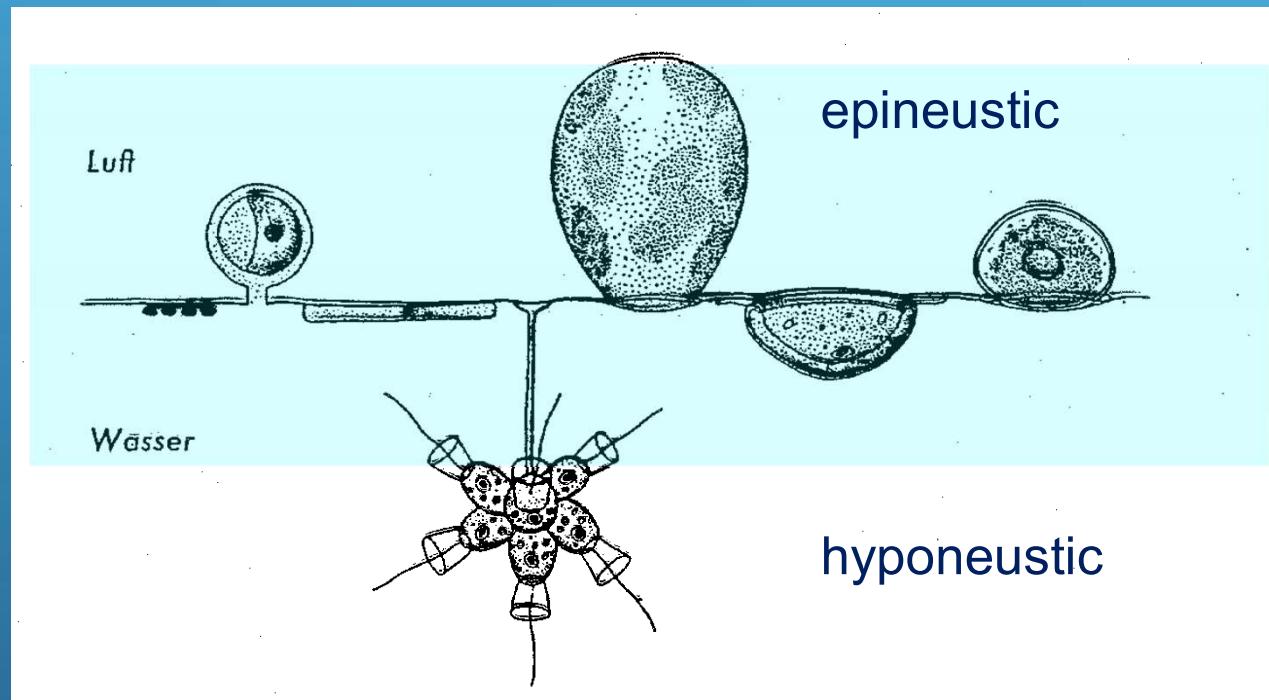
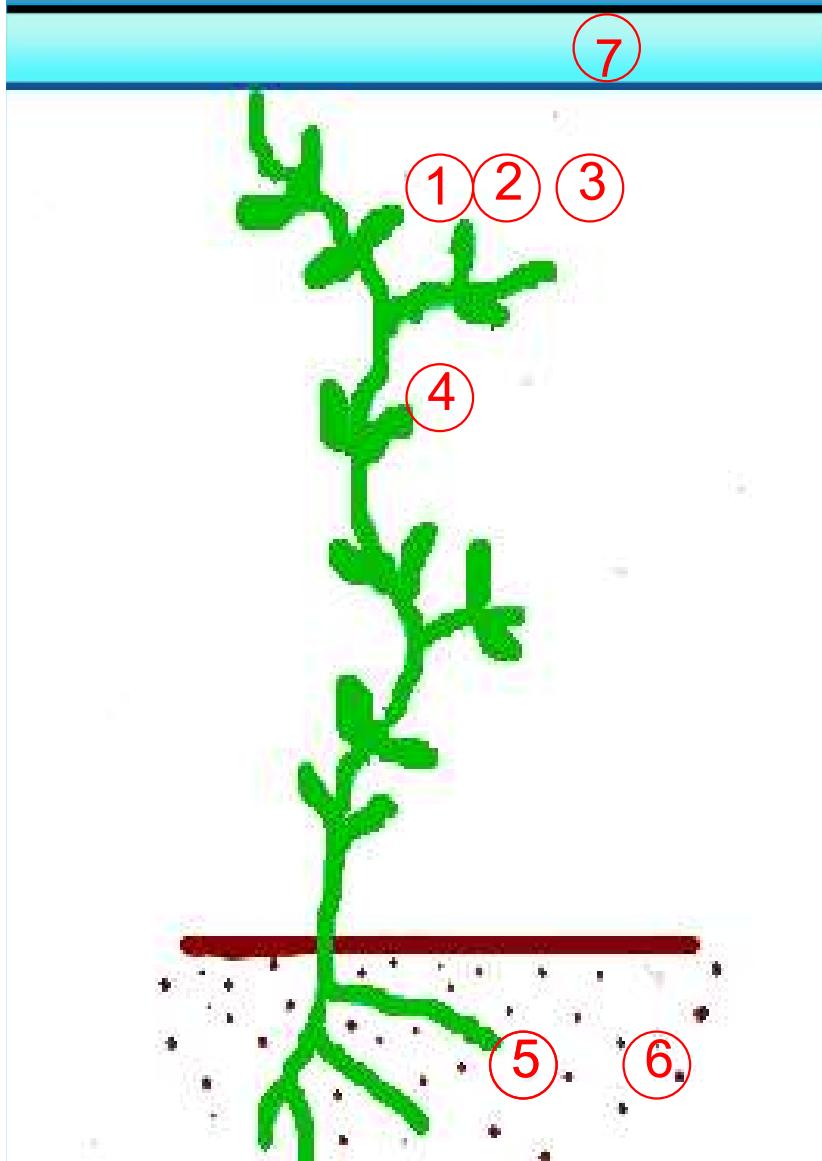


6 sediment dwellers



*Anodonta cygnea*  
Unionidae

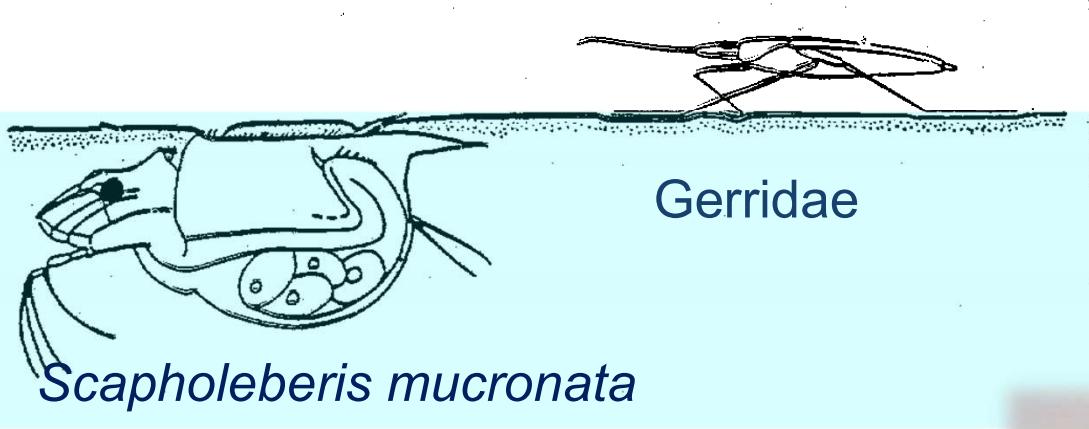
# Life form types in the littoral zone



6 sediment dwellers

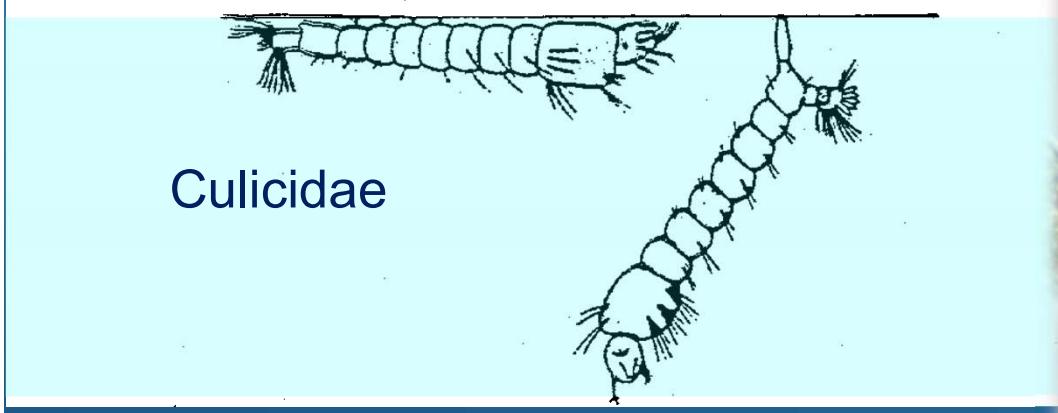
7 water surface dwellers  
= neuston: epineustic  
hyponeustic

# Life form types in the littoral zone



Gerridae

*Scapholeberis mucronata*



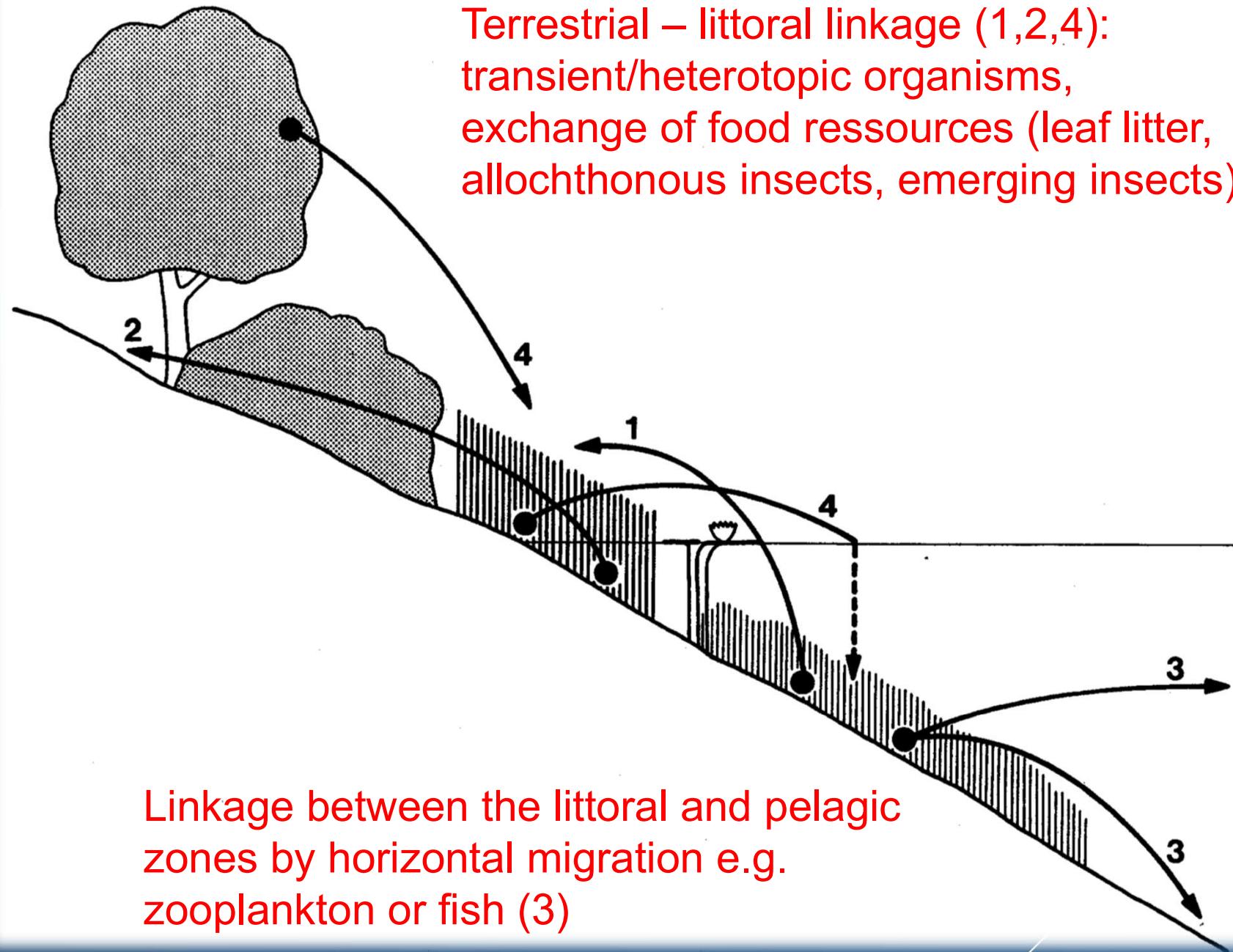
Culicidae

7 water surface dwellers  
= neuston: epineustic  
hyponeustic

*Scapholeberis mucronata*



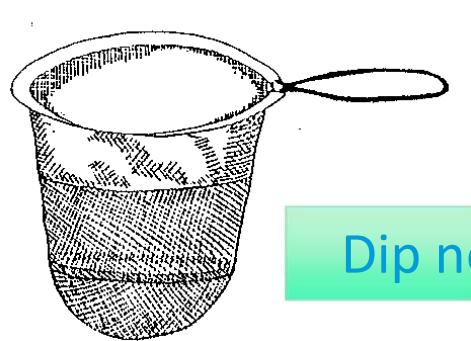
# Linkages of the littoral zone with the surrounding regions



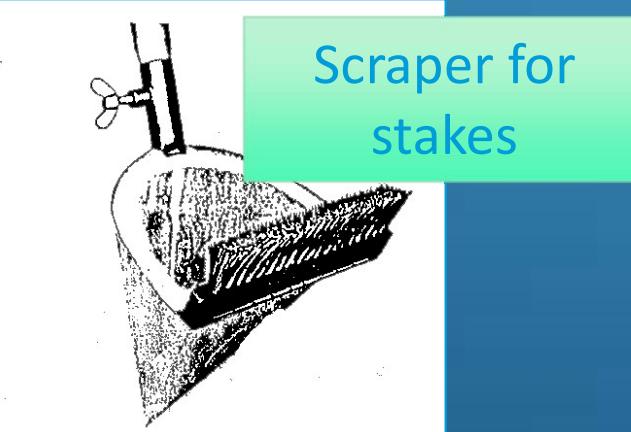
**Providing an abundance of habitats for heterotopic species e.g. invertebrates, amphibians, fish, waterfowl (site for nesting, hatching, reproduction):**



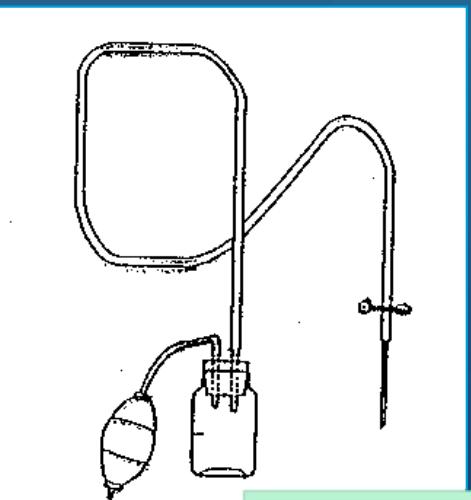
# Sampling methods



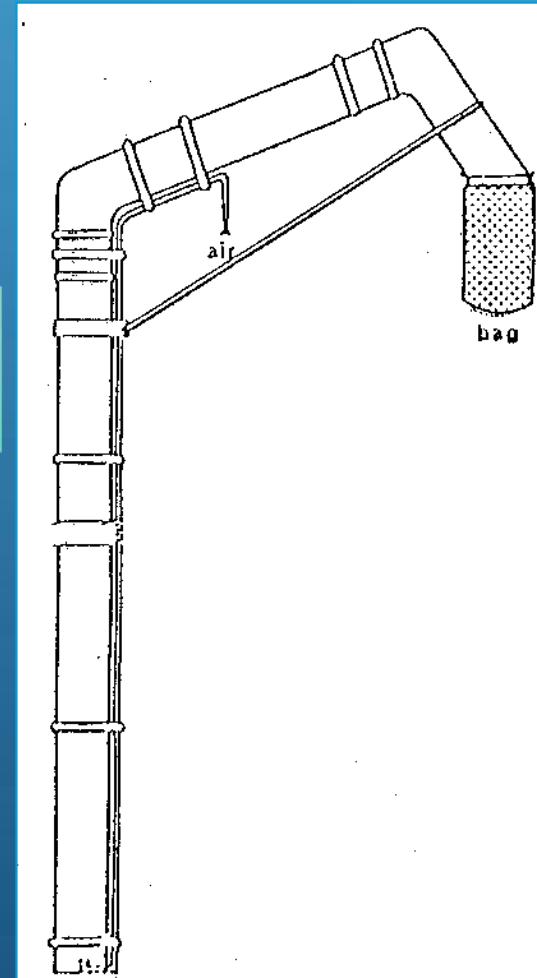
Dip net



Scraper for stakes

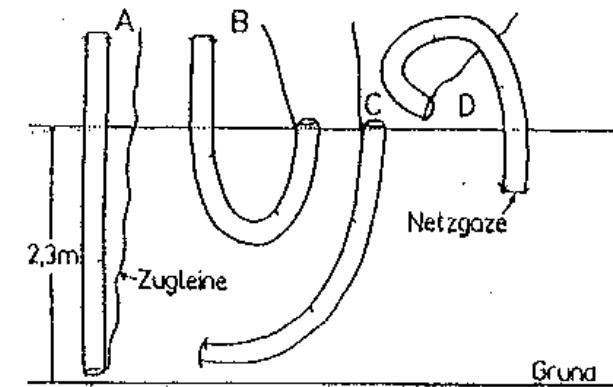


Hand pump

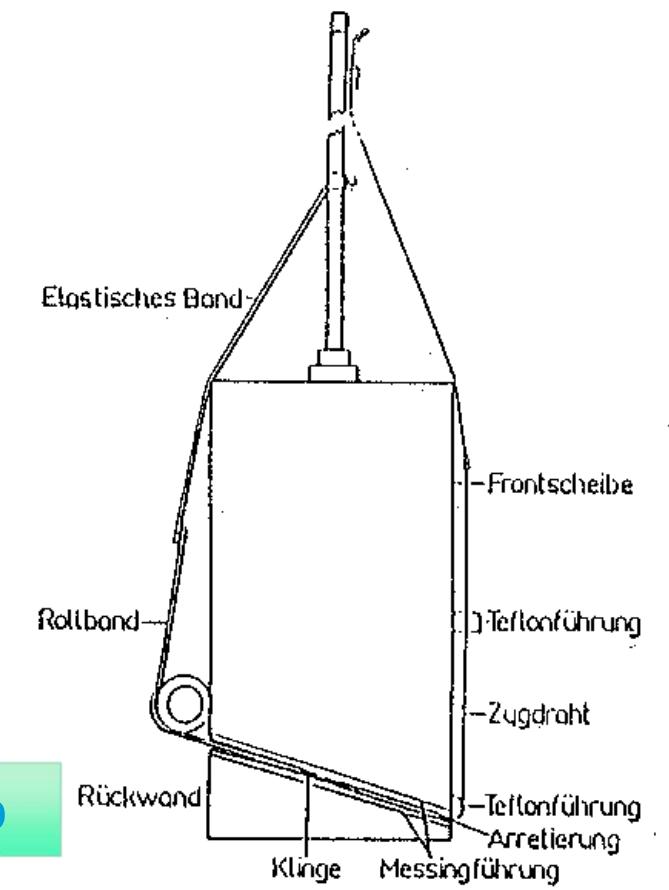


Airlift-Sampler

Plastic tube für plankton sampling

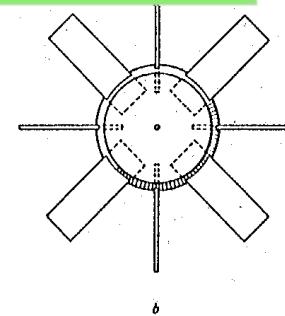
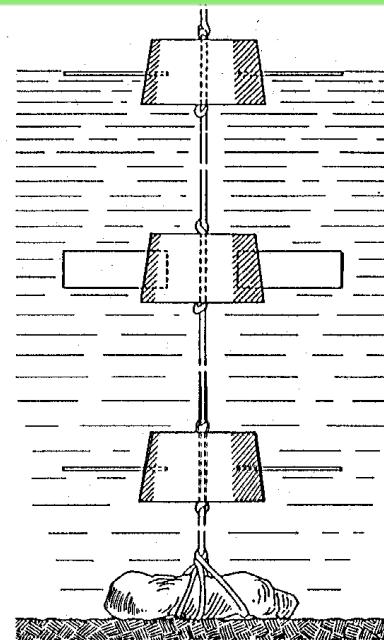


MINTO-grab

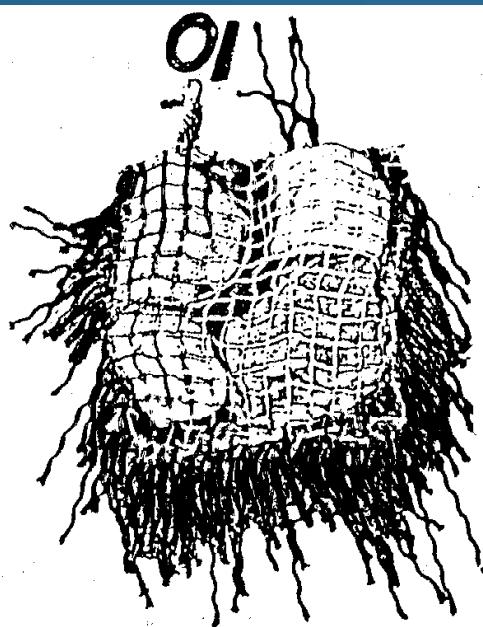


# Sampling methods

artificial substrate



Microscope slides in corks



Artificial plants made  
of polypropylen ropes

Emergence traps

