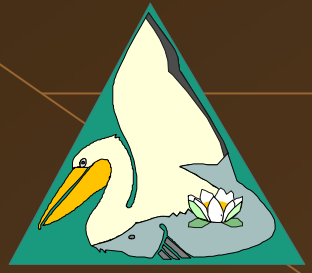

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# The diversity of zooplankton in two restored wetlands in the Danube Delta.

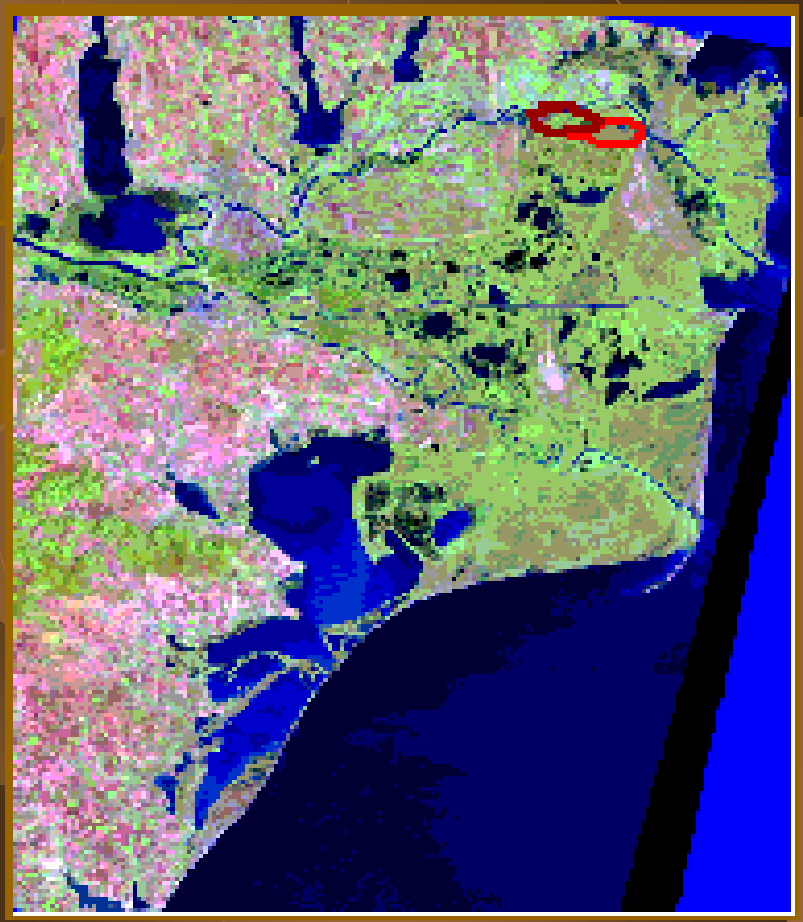
By
Mihaela Tudor

"Anthropogenic influence on wetlands biodiversity and sustainable management of wetlands"
23 September 2004

# Geografical situation

1. Babina polder (2200 ha) is situated in the Northern part of the Danube Delta in Romania. This polder was the first one that was reconnected to the flood regime of the Danube in April 1994.

2. Cernovca polder (1580 ha) is situated near Babina polder and was reconnected to the flood regime of the Danube in May 1996).



# Why is zooplankton an important component of water quality assessment ?

- Zooplankton is a good bioindicator for water quality because:

**Changes in environmental conditions**

→ the community is strongly influenced

→ has a fast response

Gannon et al., 1978

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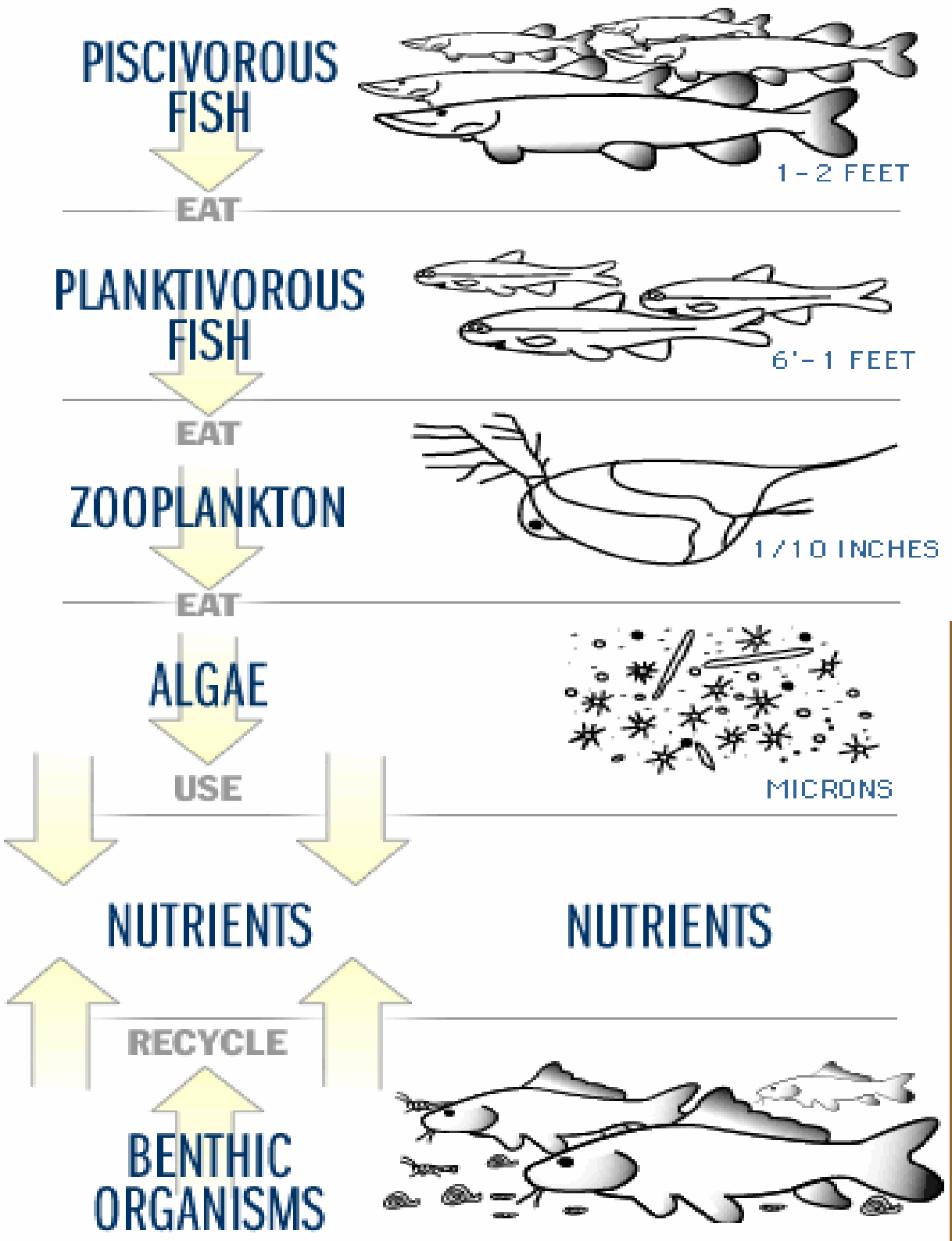
# TYPICAL FOOD CHAIN

- Zooplankton community compartment of aquatic trophic equilibrium, repr of energy flux from the p consumers.



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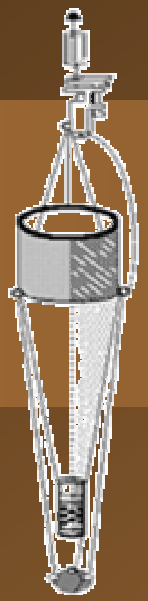
# Sampling stations: most of the sampling station were chosen in open-water


Satellite image (July 1999) of Babina and Cernovca wetlands

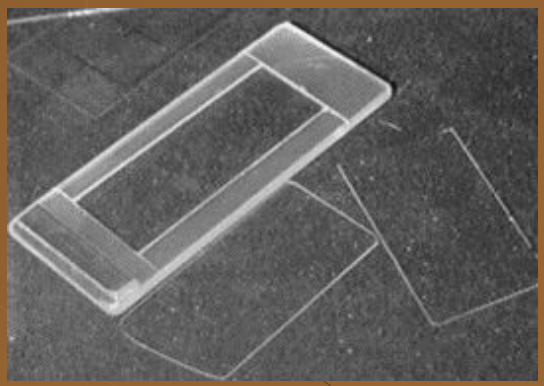
# Methods of sampling



Daphnidae - *Simocephalus expinosus*

- Samples were collected in June every year (1997-2003).
- Used a vertical, conical plankton net (55 µm);
- 30 L of water was filtered
- 85% ethanol is added in the sample - plastic bottles (100ml)

- Counts were performed using a counting cell (Sedgwick-Rafter)



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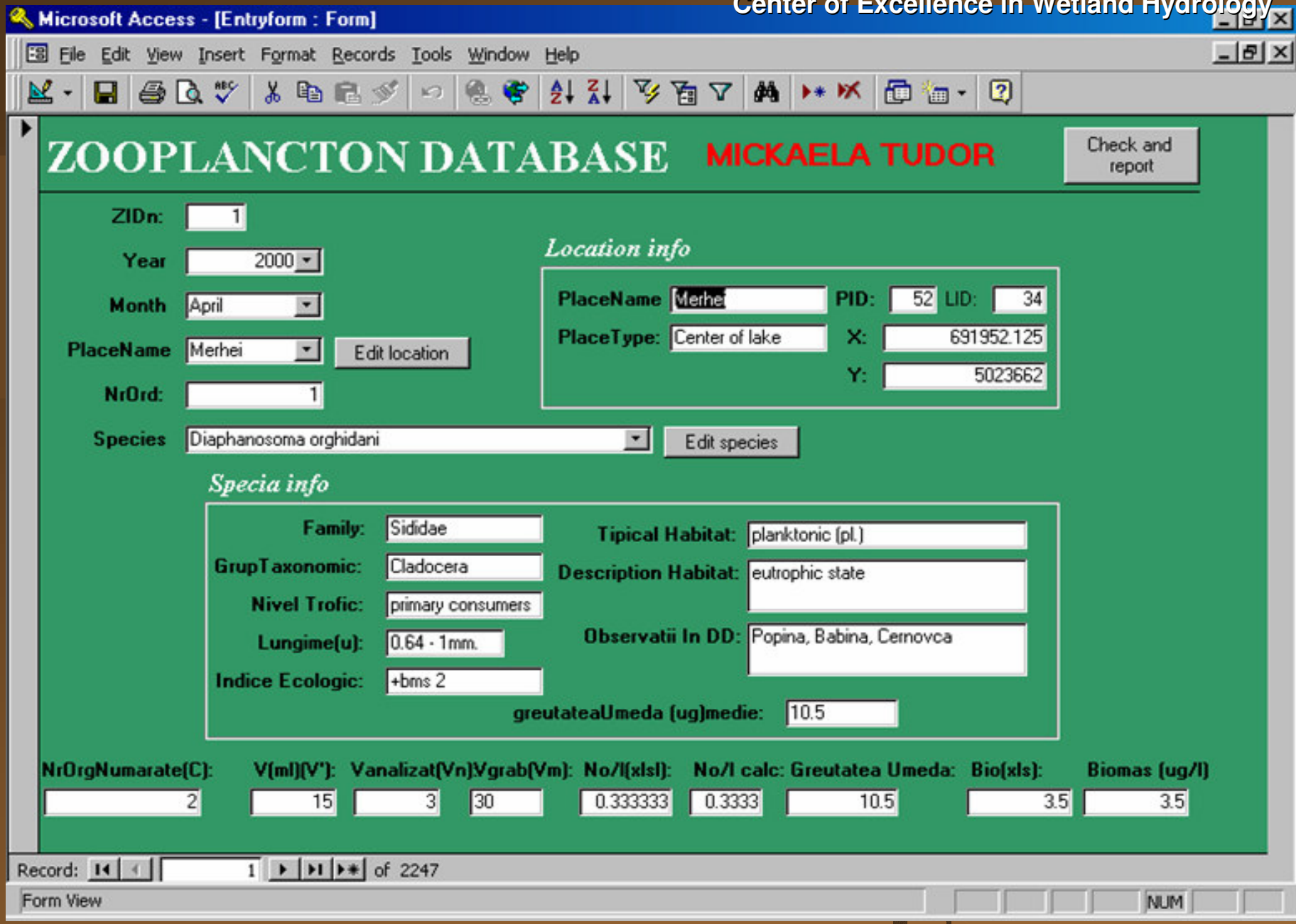
- All zooplankton samples were archived after they have been analysed.



# Babina & Cernovca wetlands situation

- All the zooplankton family found in Babina wetland in 2001-2003 is specific for permanent eutrophic water.
- The most abundant taxonomic groups recorded during the study were the *rotifer* species dominated by *Brachionus spp.* >50%.
- Starting with 2000-2003 the zooplanktonic density is high (hundreds ex $L^{-1}$) presented significantly by Cladocerans and Copepods reprezented by species who are living in open water around aquatic vegetation.

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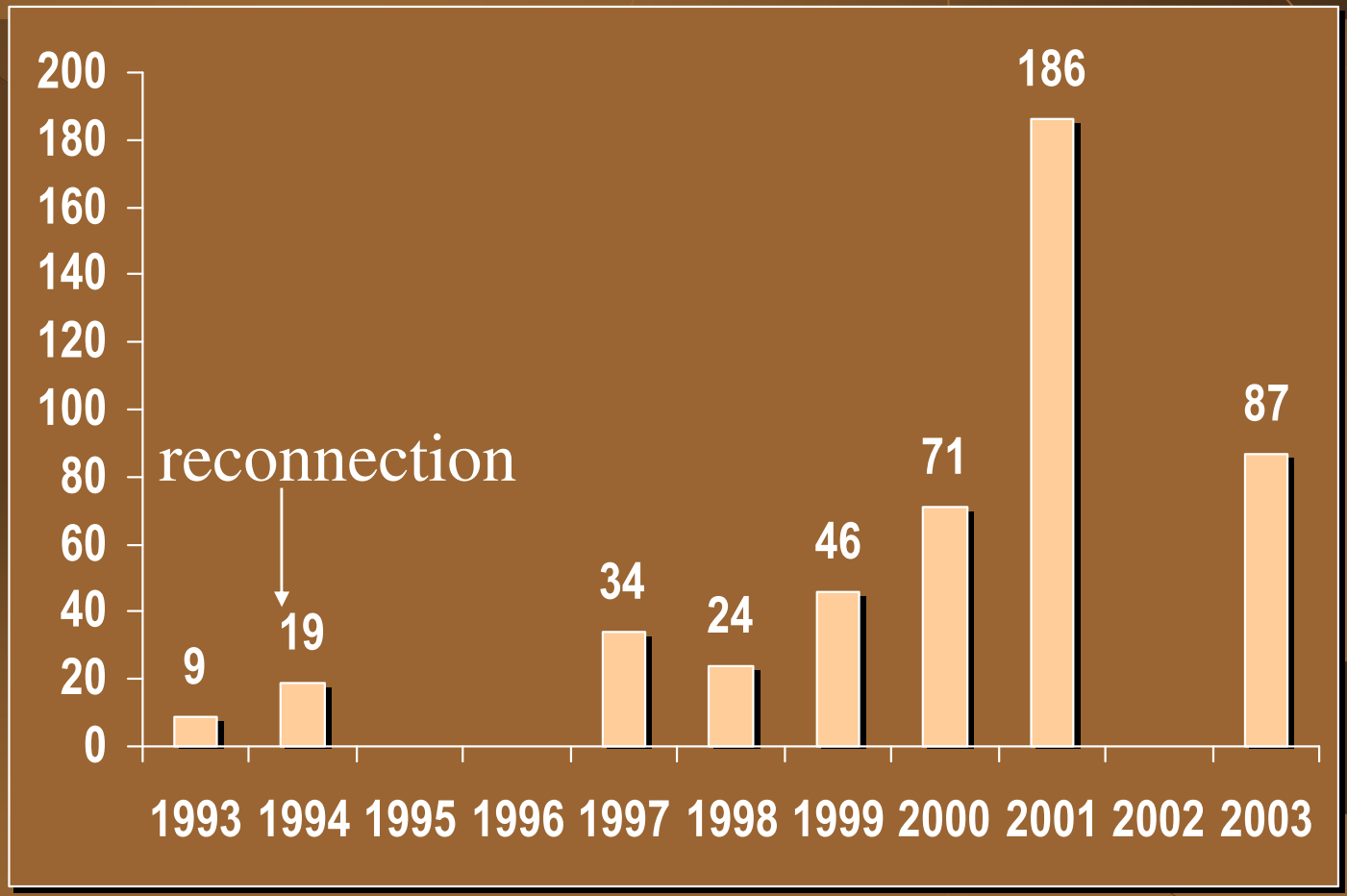
# Babina & Cernovca wetlands situation: description of the communities

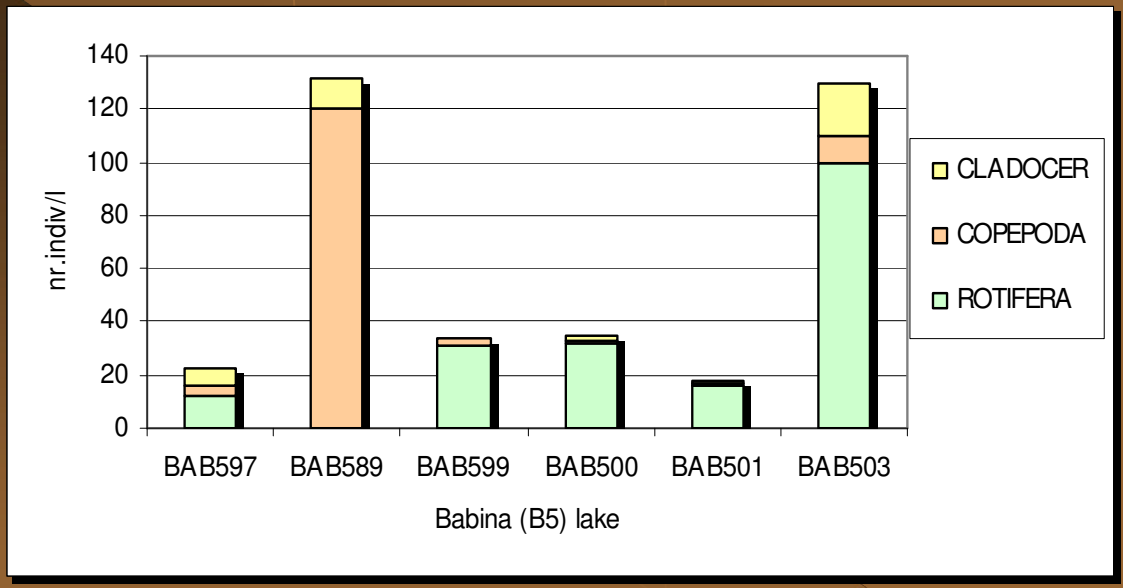
- Evolution of zooplankton diversity in Babina wetland 1993 – 2003 (June).



# Babina wetland situation: description of the communities

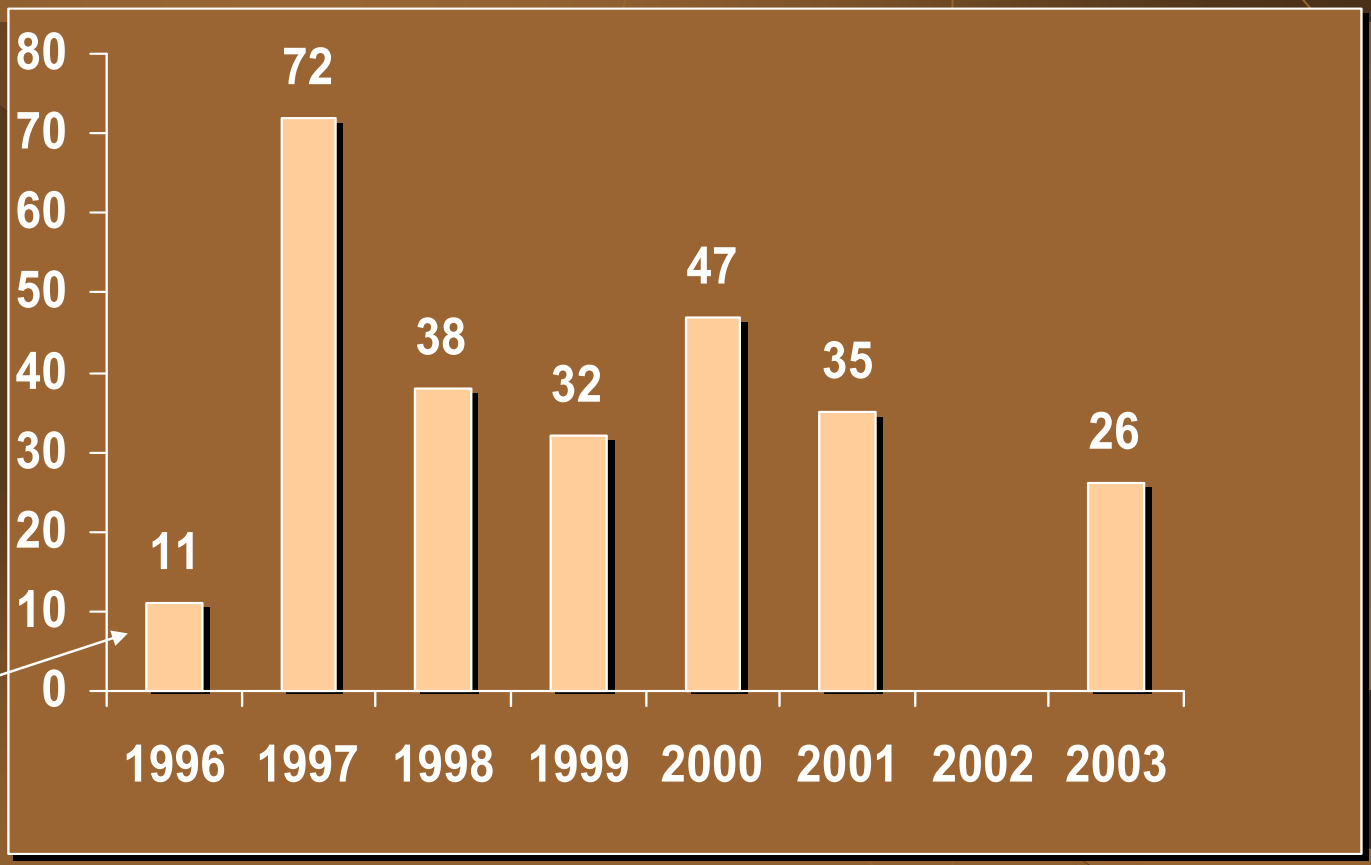

- "Babina lake" is a small shallow open water on N-E Babina wetland:

- This lake has organic-rich substrate
- high transparency
- abundant aquatic vegetation typical to natural permanet shallow lake



# Cernovca wetland situation: description of the communities

- Evolution of zooplankton diversity in Cernovca wetland 1996 – 2003 (June).




reconnection

## Conclusions

- The reestablishment of the flood regime induced a process of reabilitation of the planktonic fauna similar to permanent eutrophic waters.
- There is a significant increasing of the zooplankton species number since the Babina wetland was flooded (1994), more interesting in the period 1998 - 2001 when the species number almost got doubled every year: 24 sp.-1998, 46 sp.-1999, 71 sp. - 2000, 189 sp. - 2001. In 2003, 87 sp. were recorded.

# What are the characteristics of DD lakes ?

- Shallow
- trophic state :
  - moderately eutrophic ⟶ eutrophic
- Type 2: - high connectivity with the river
- Type 3: - isolated
  - low transparency
  - muddy substrat
  - abundant aquatic vegetation

- high connectivity with the river
- high transparency
- organic rich substrate
- abundant aquatic vegetation
- phytoplankton dominated

(oosterberg et al, 2000)

(oosterberg et al, 2000)

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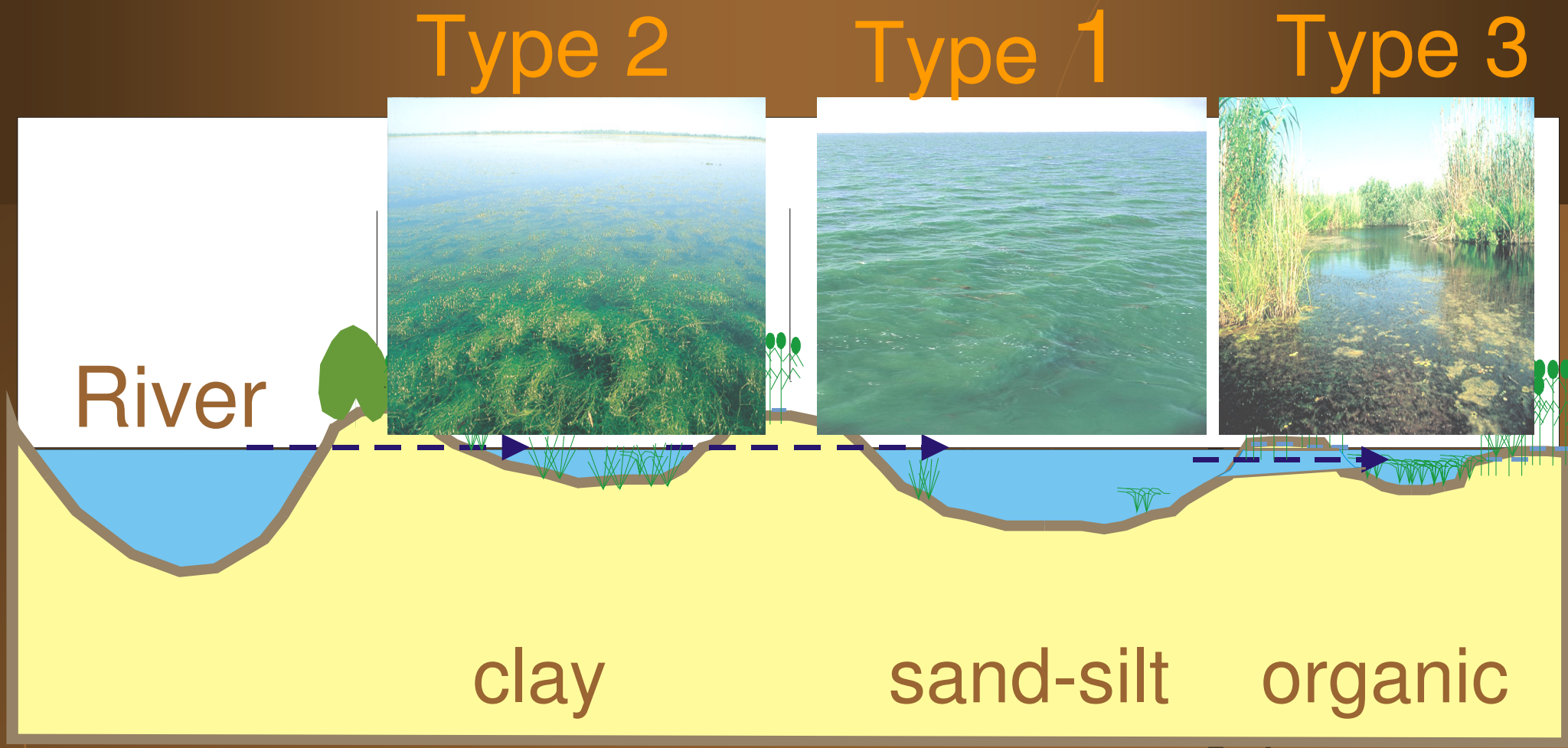
# DANUBE DELTA'S LAKE TYPOLOGY

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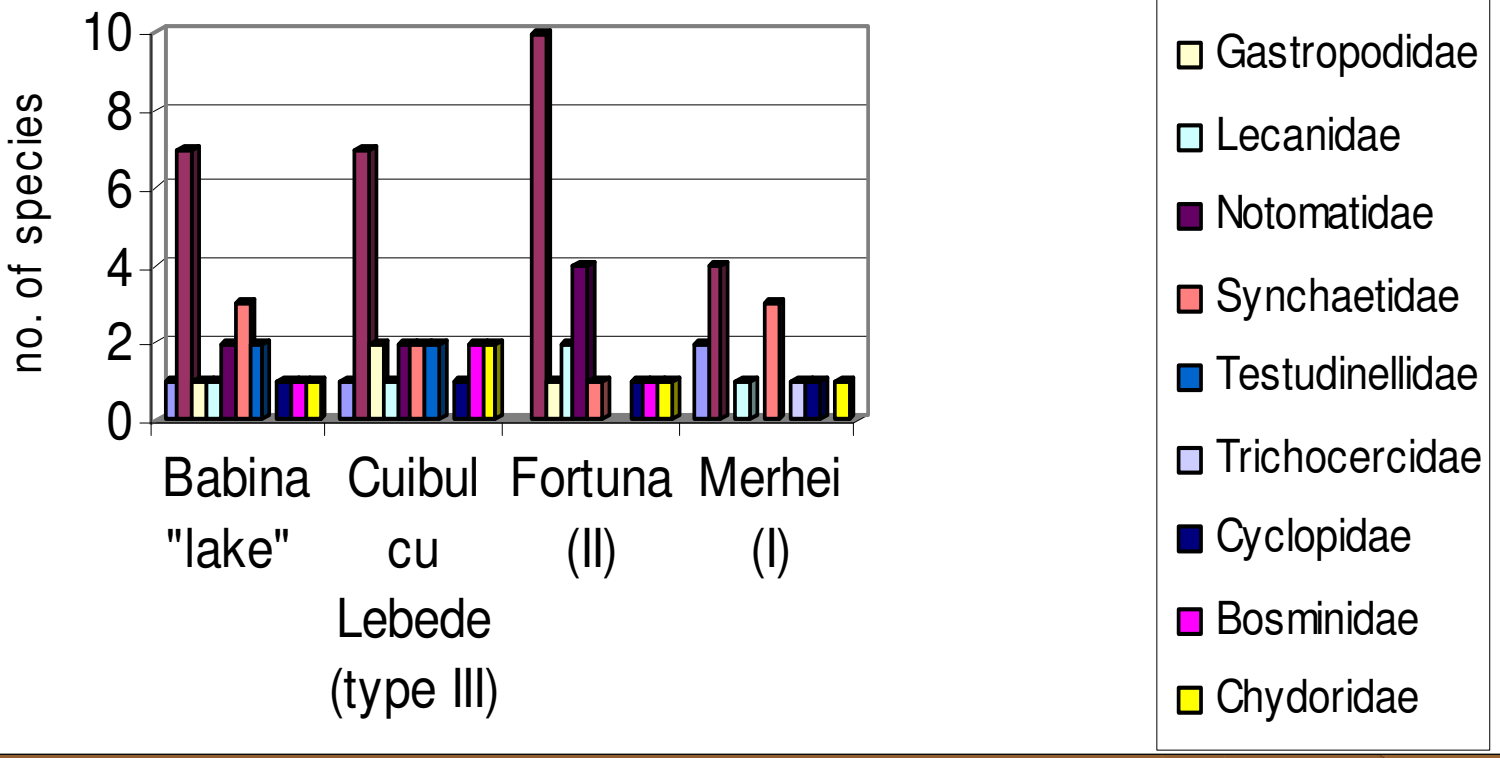
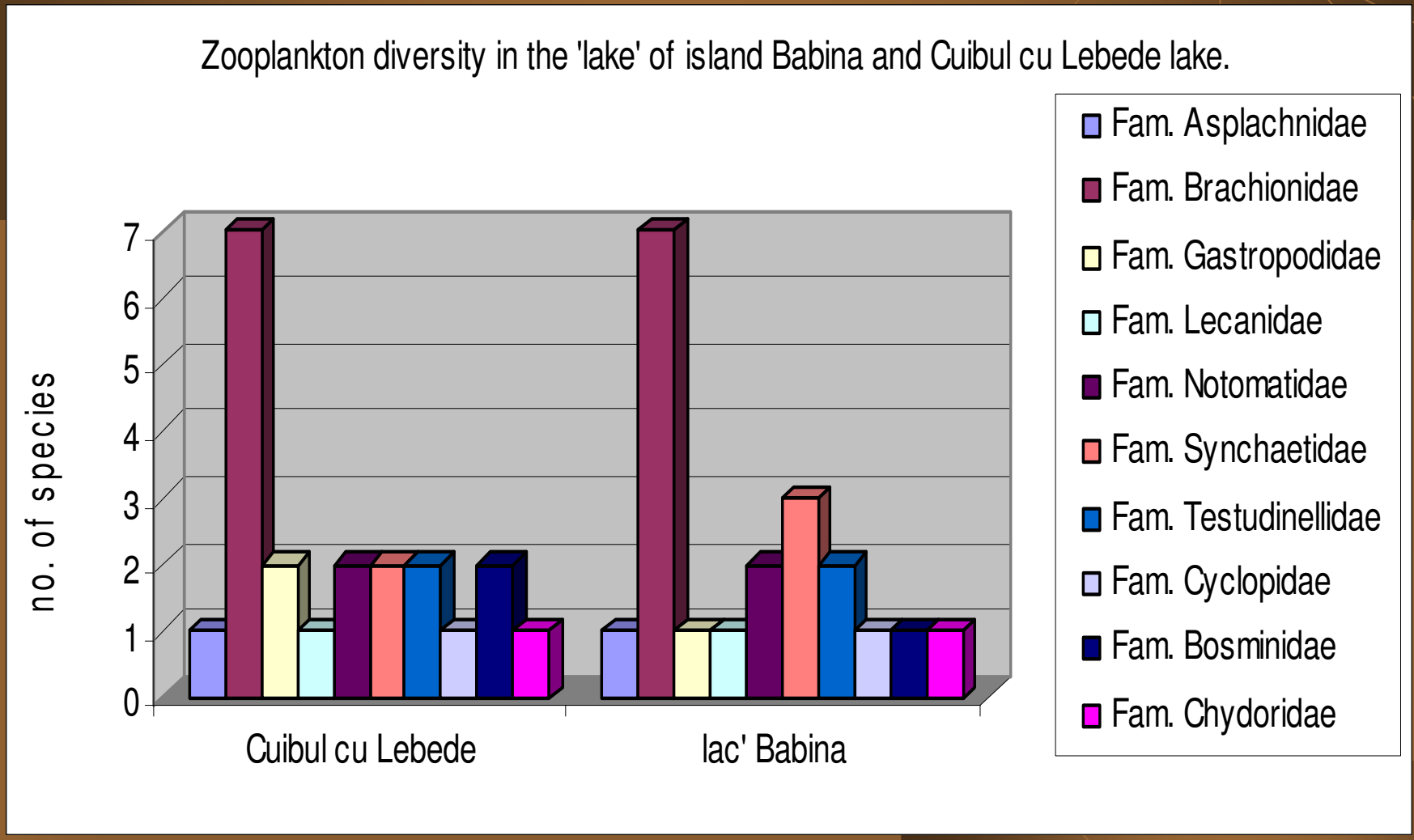
## Zooplankton diversity in the "lake" of island Babina and three different 3 types natural lakes in the same month and year (June 2001)






**From this figure it is obvious that the zooplankton community is represented by the same families and with small differences the same number of species.**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