

# Species Diversity of Soil Protozoa

- Ciliates 400 species (Couteux y Darbyshire, 1997)
  - 35 to 200 microns
- Flagellates 260 species (Folsner, 1991)
  - <5 (nanoflagelados) to 50 microns
- Naked Amoebae 60 species (Couteux y Darbyshire, 1997)
- 140 at Villa del Carbón, Mex. (Rodríguez-Zaragoza 2000) 90 in the Negev Desert (Rodríguez-Zaragoza et al., 2005) and 59 in Tehuacan, Mex. (Rodríguez-Zaragoza et al., 2005)
- 2 microns (nanoamoebae?) to 2 mm

Species identification of all of these groups is very difficult

Flagellates and Amoebae are scarcely studied  
(there are many species to describe)

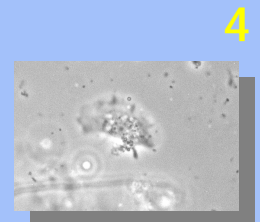
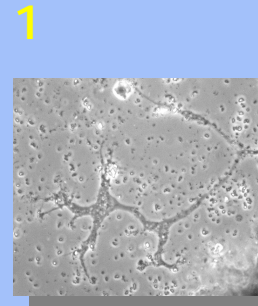
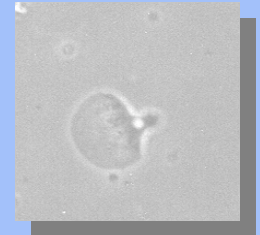
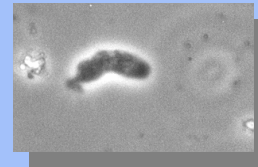
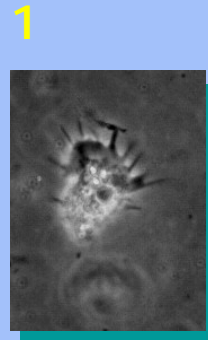
Alternative: Morphological groups of soil  
protozoa are easier to study than species



Ciliates

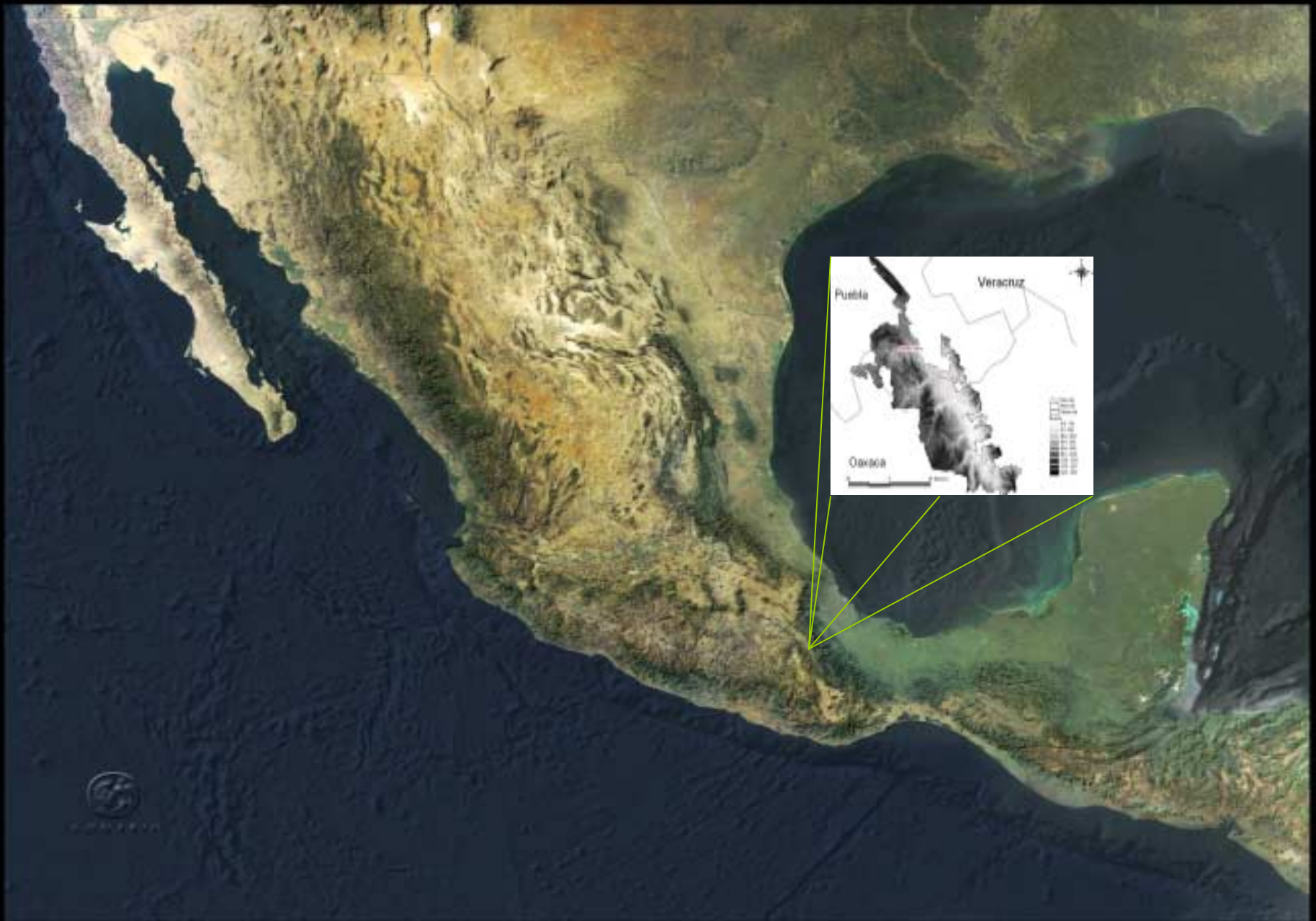


Flagellates



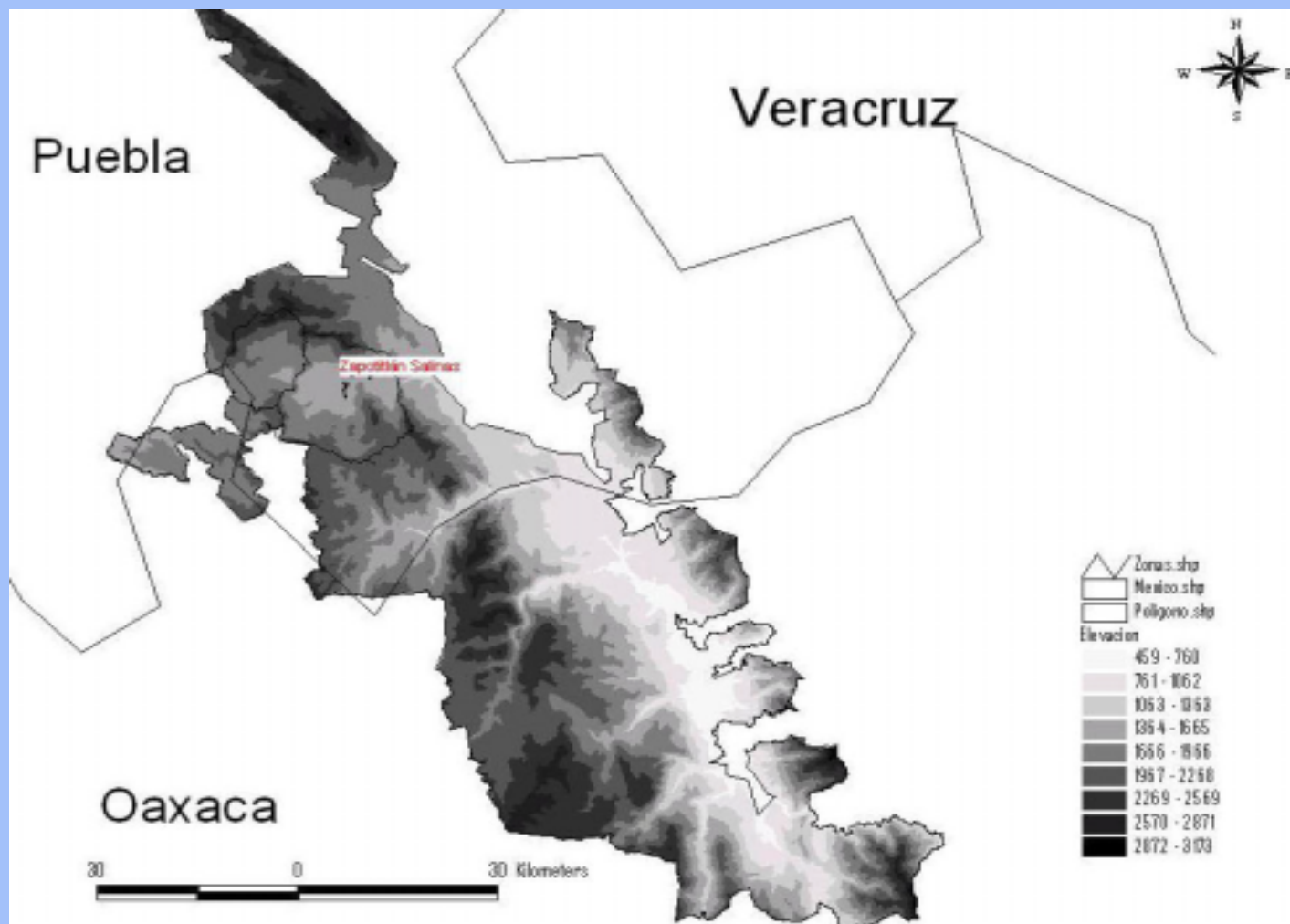
Amoebae

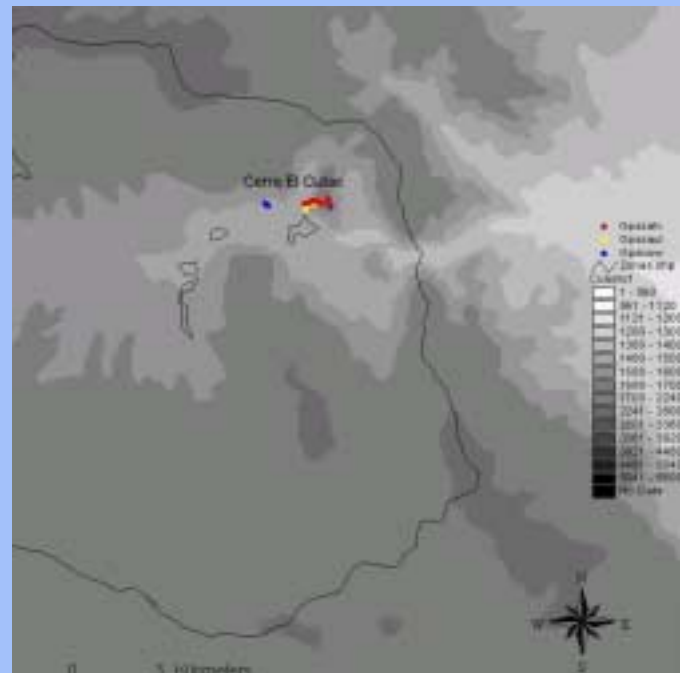




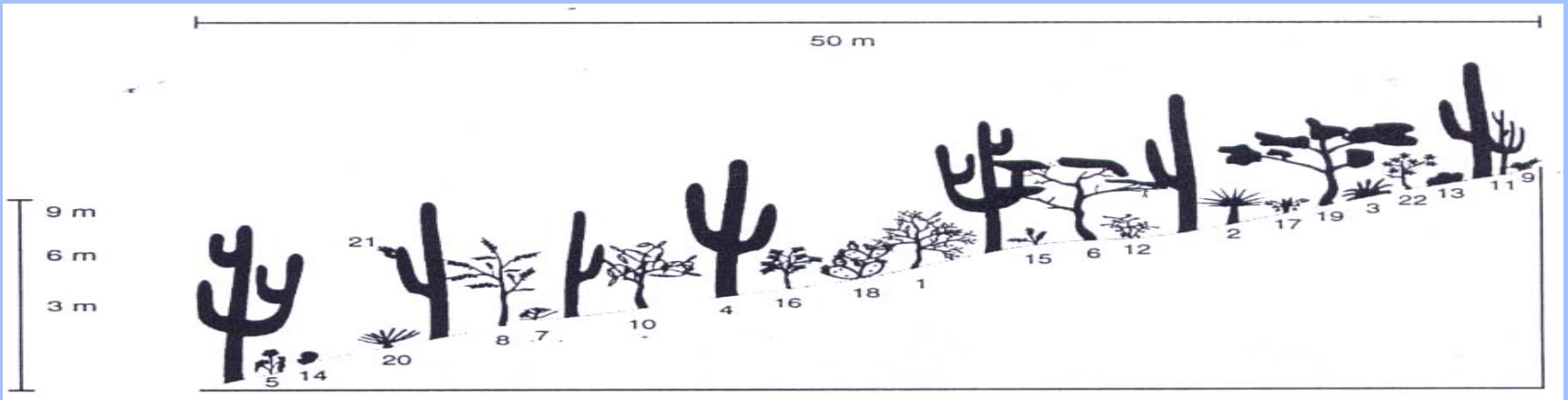
## México: Imagen desde el espacio

Comisión Nacional para el Conocimiento y Uso de la Biodiversidad  
Mosaico 2002 de imágenes Modis sin nubes del satélite Terra,  
bandas 1, 4, 3 (RGB), resolución espacial 250 metros,  
sobre un modelo digital de terreno.

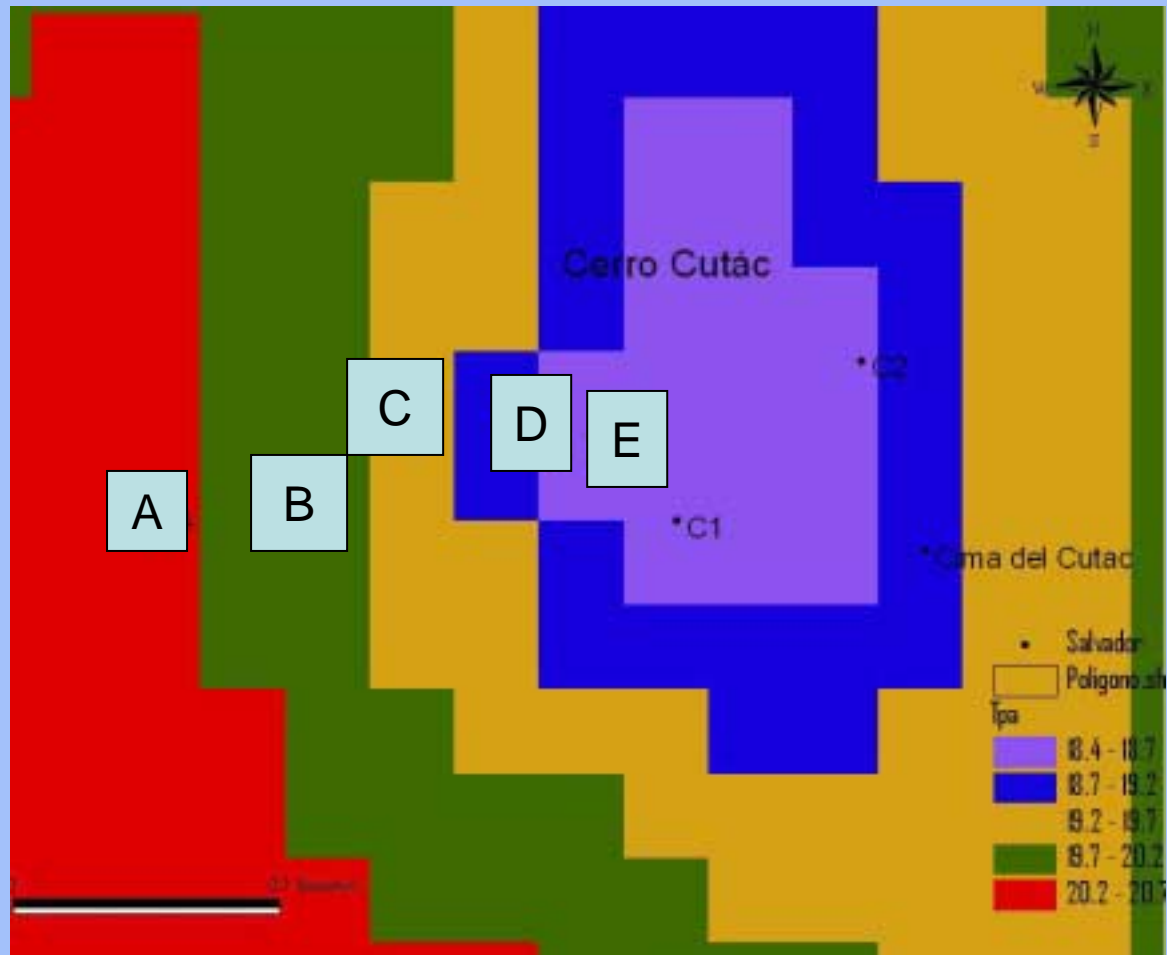




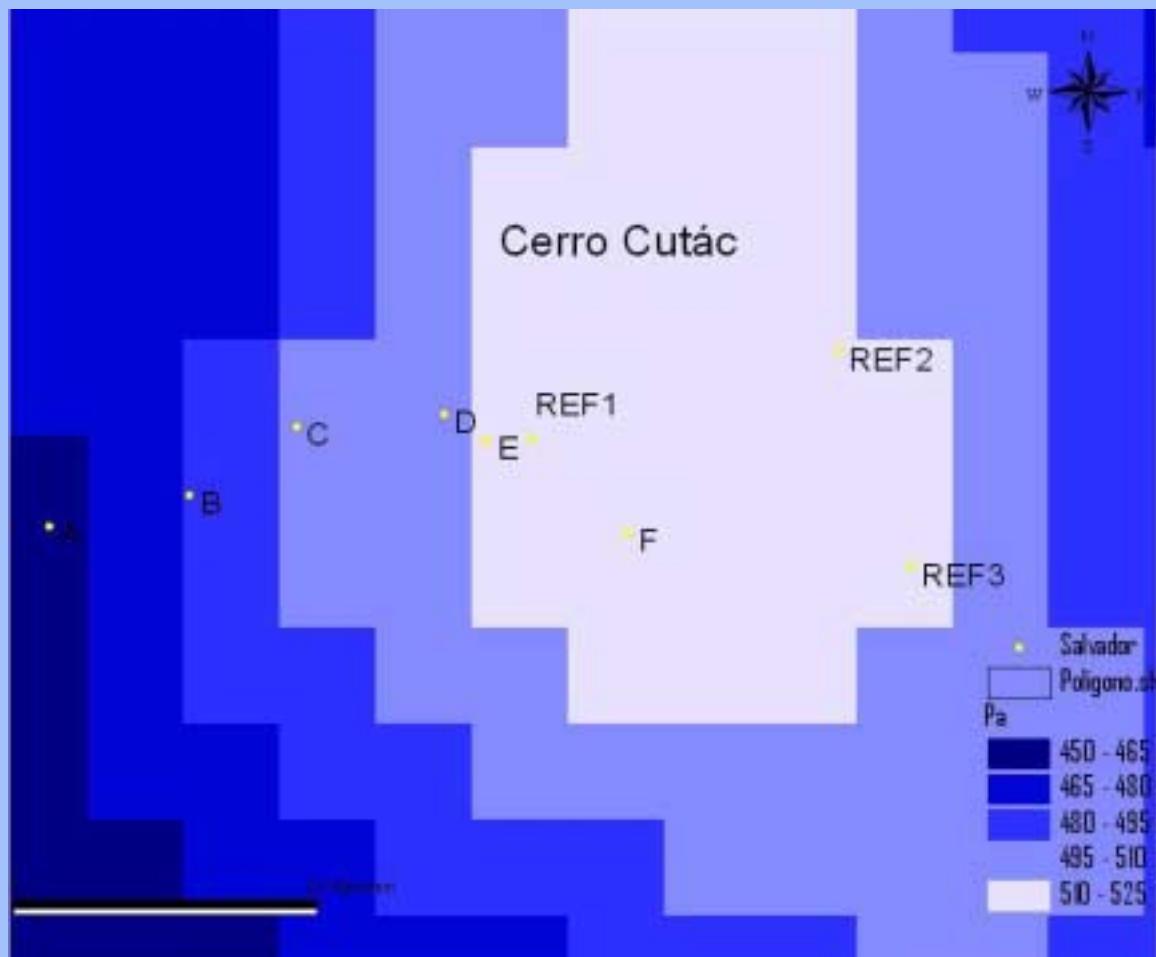




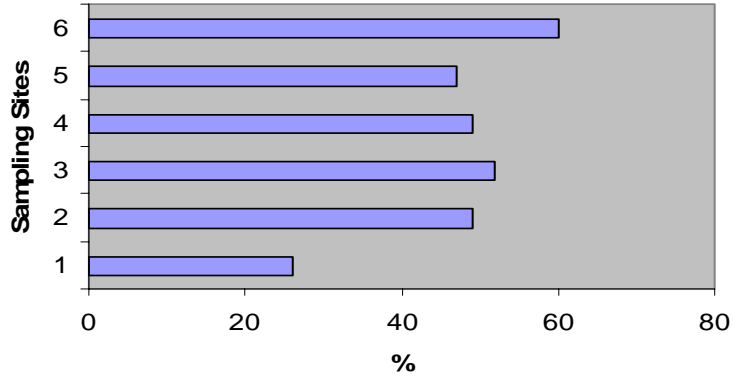
# Temperature



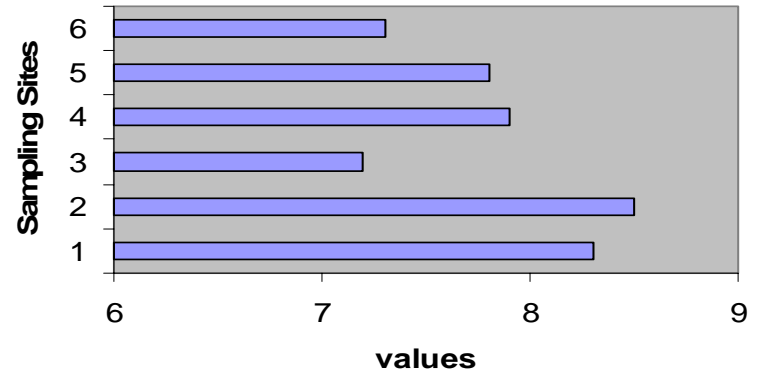
# Precipitation



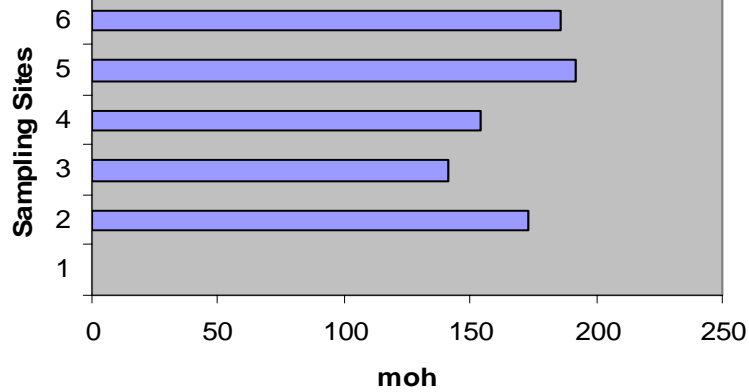
### Porosity



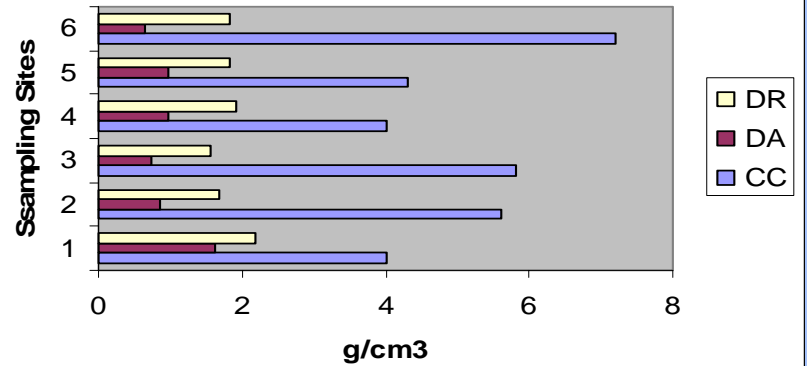
### pH



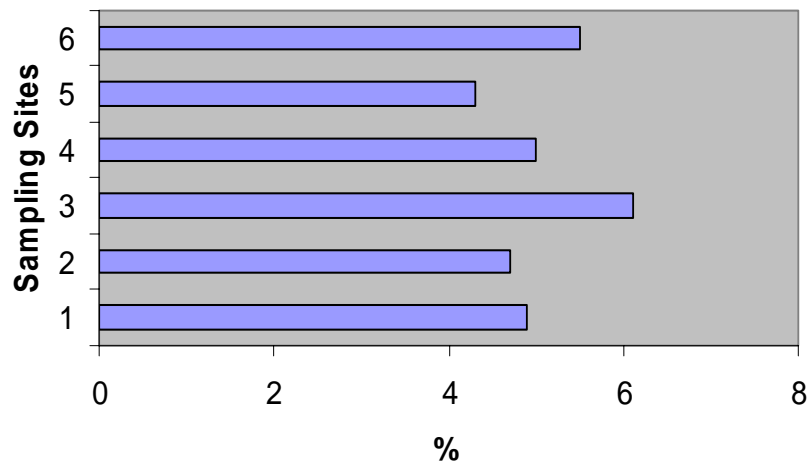
### Conductivity



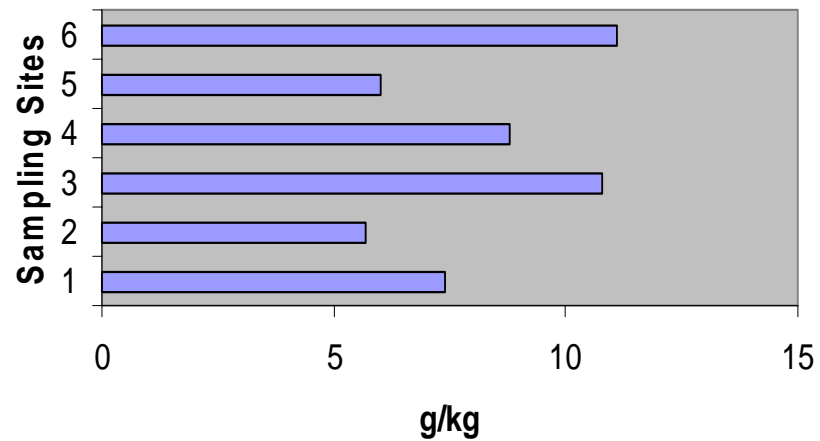
### Water Holding Capacity, Real and Apparent density



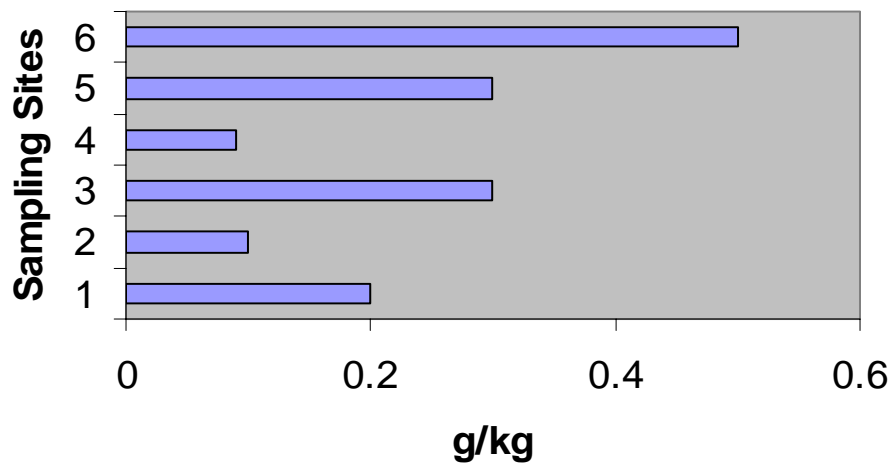
### Organic Matter



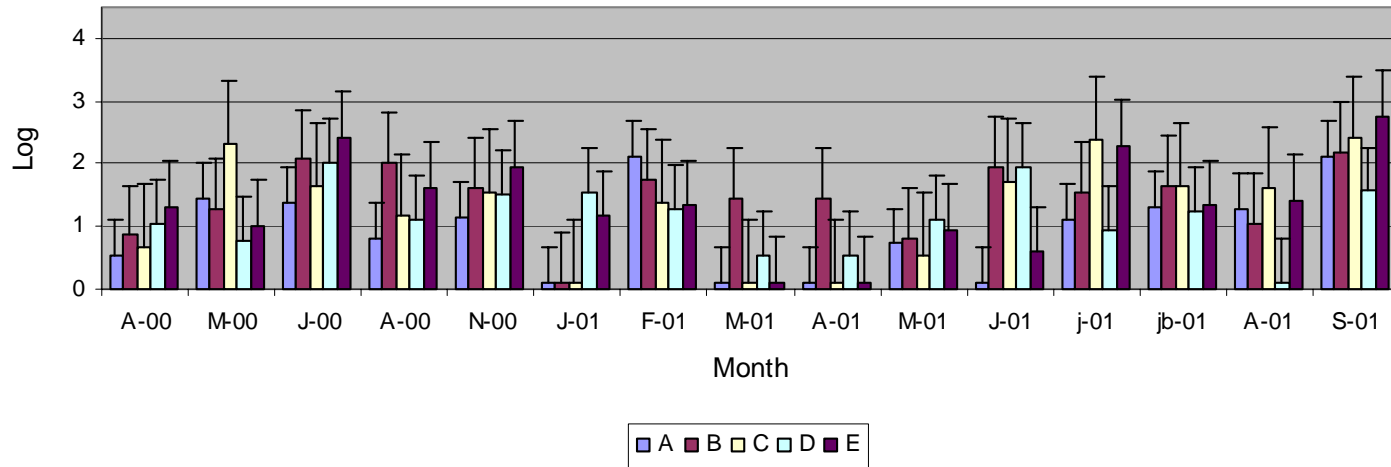
### Microbial Carbon



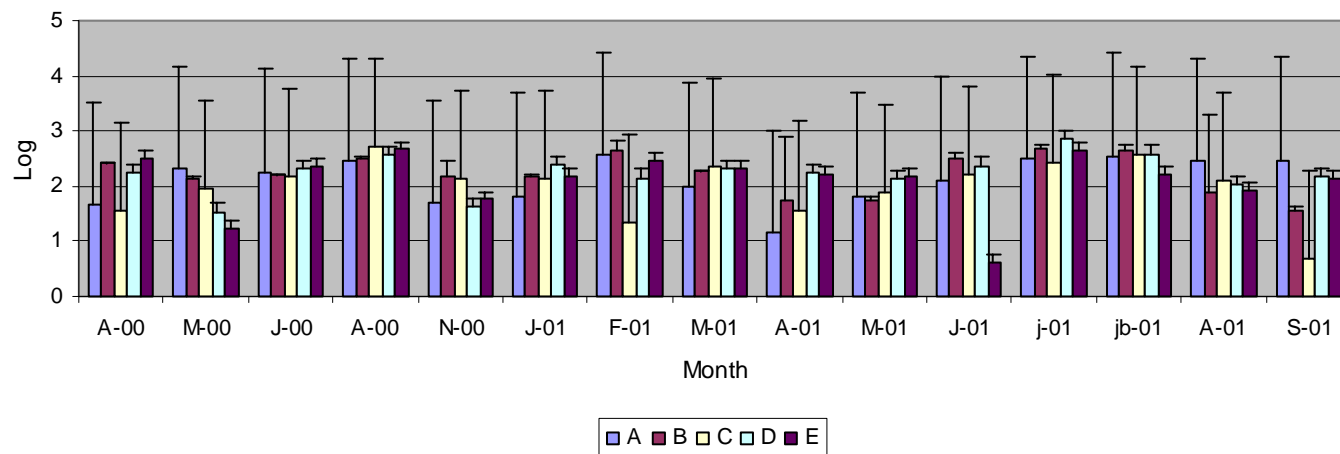
### Microbial Nitrogen



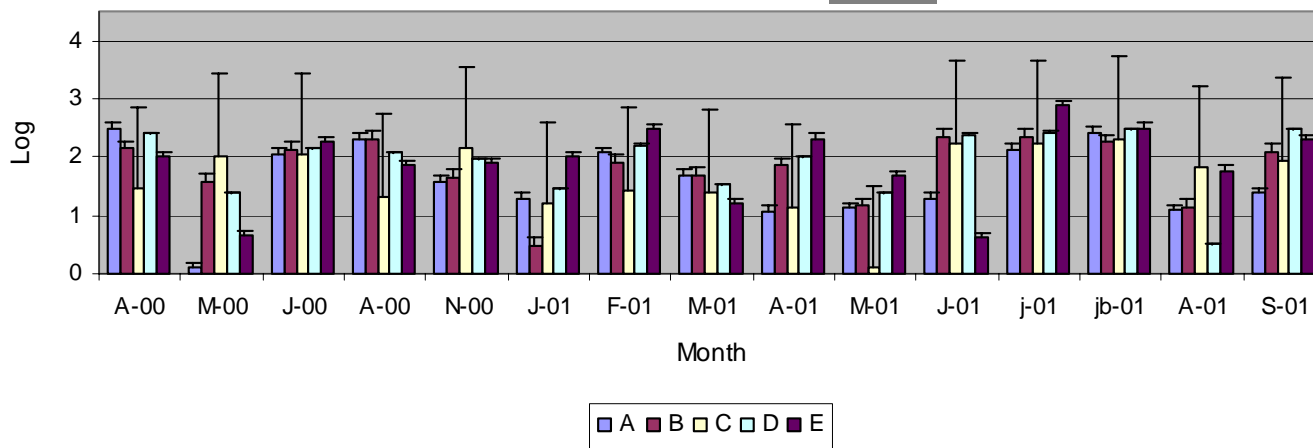
### Ciliates



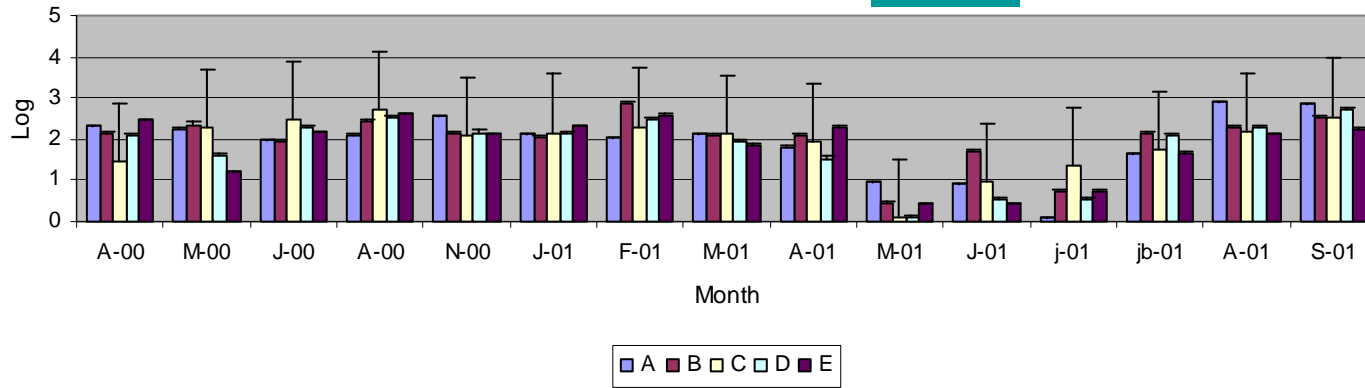
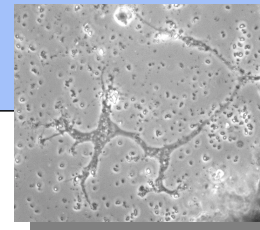
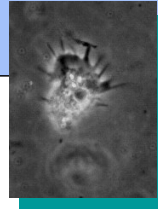
### Nanoflagellates



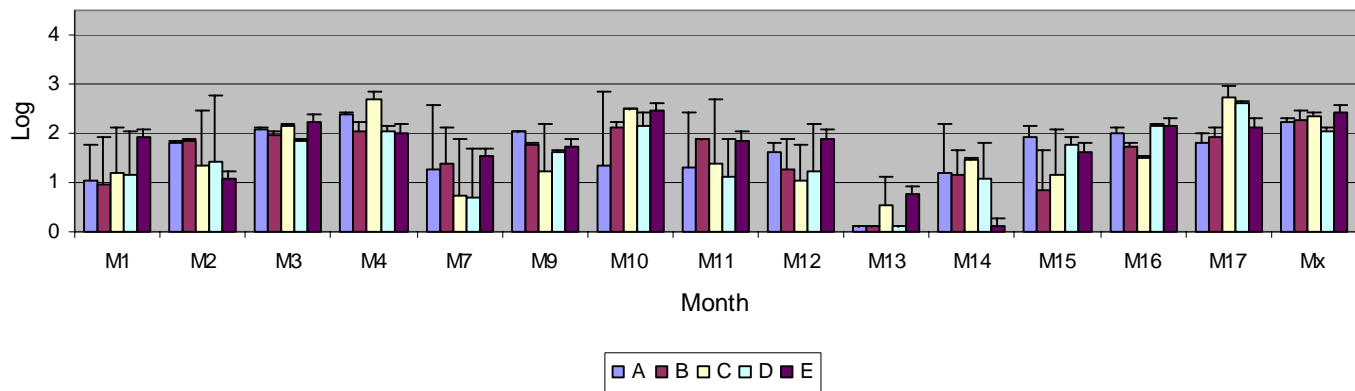
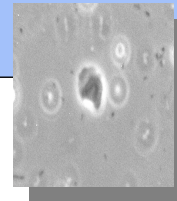
### Flagellates



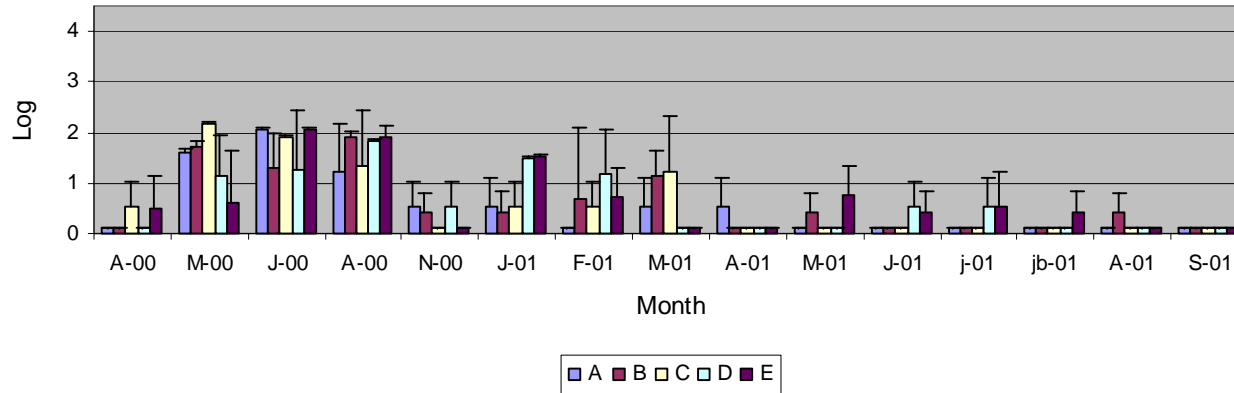
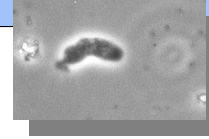
### Amoebae Type 1



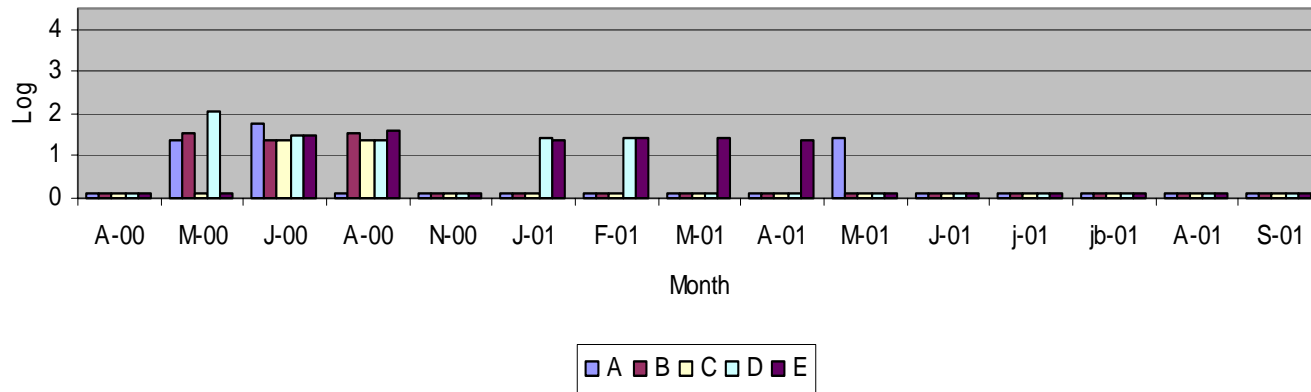
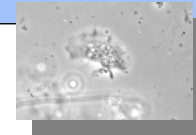
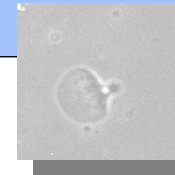
### Amoebae Type 3



### Amoebae Type 2



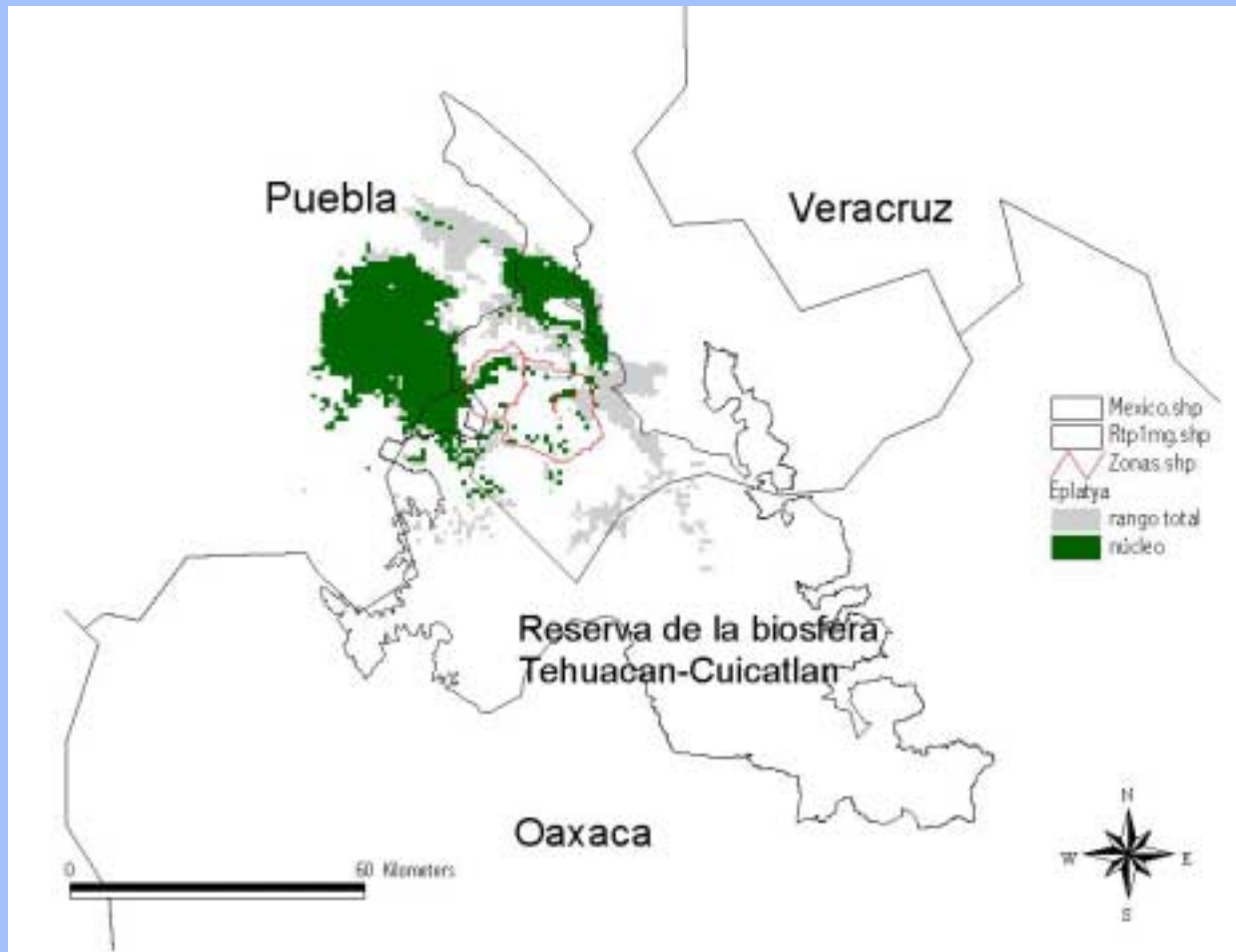
### Amoebae Type 4



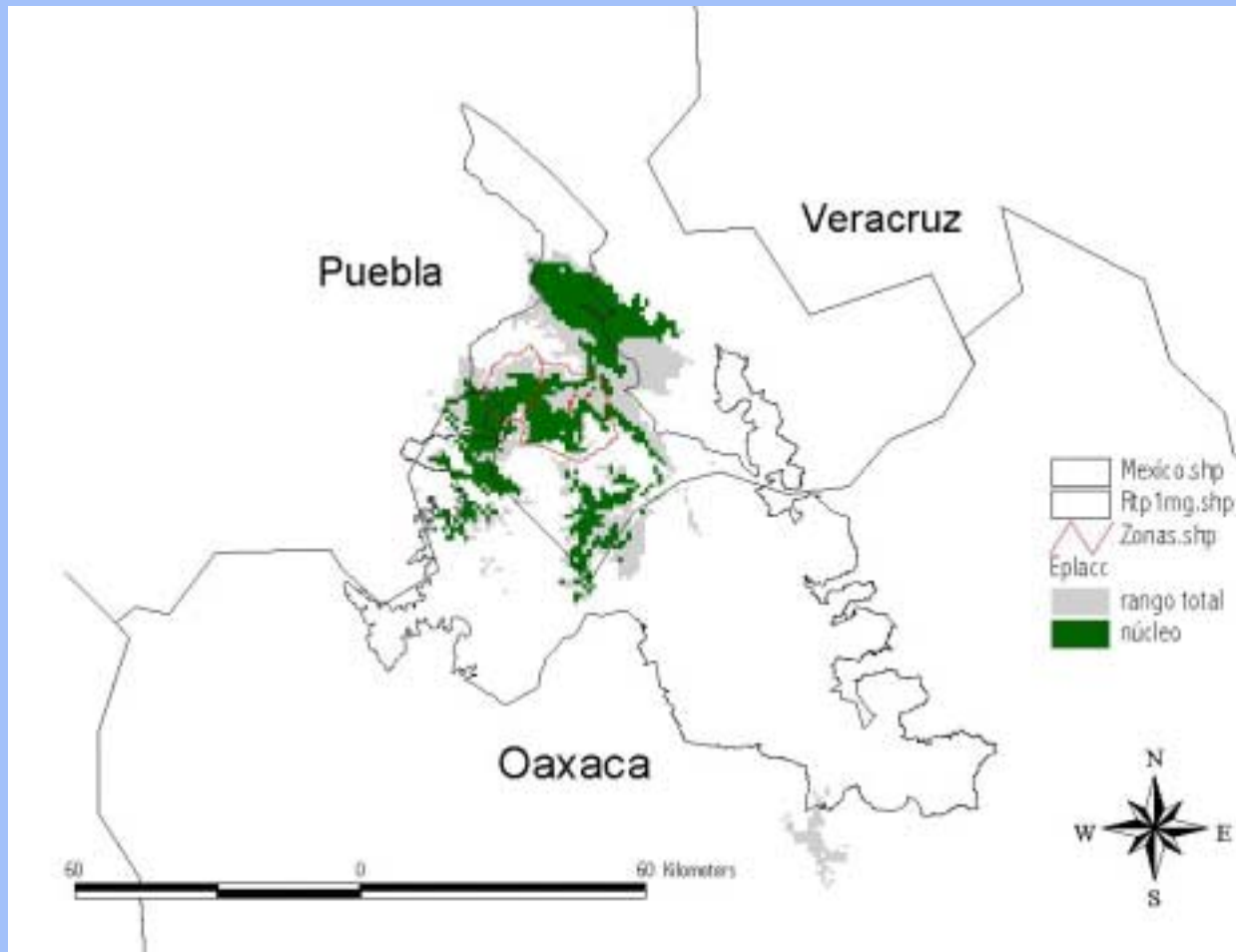




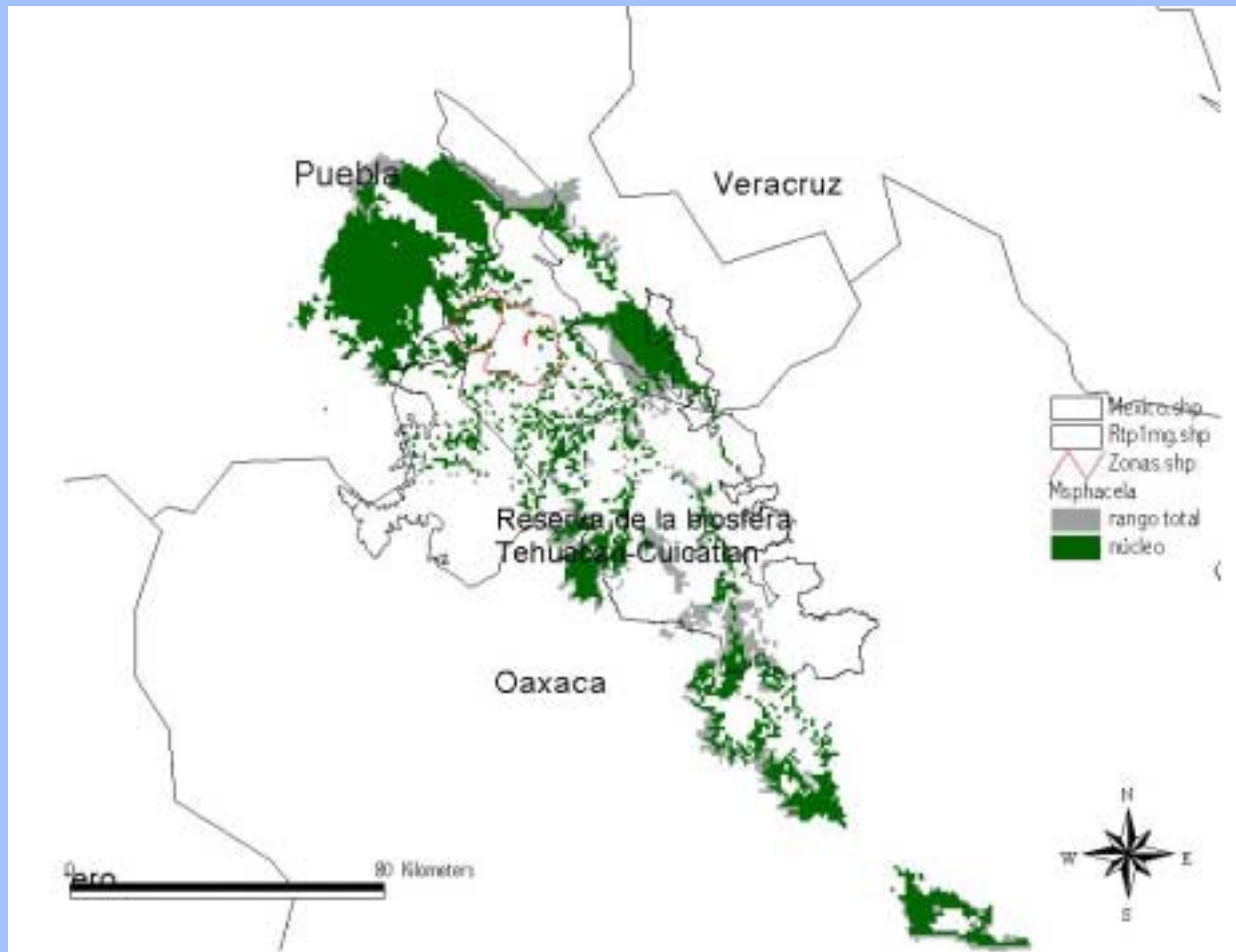
# Distribution of *Echinocactus platyacanthus* f. *grandis* at present (Davila et al 2004)



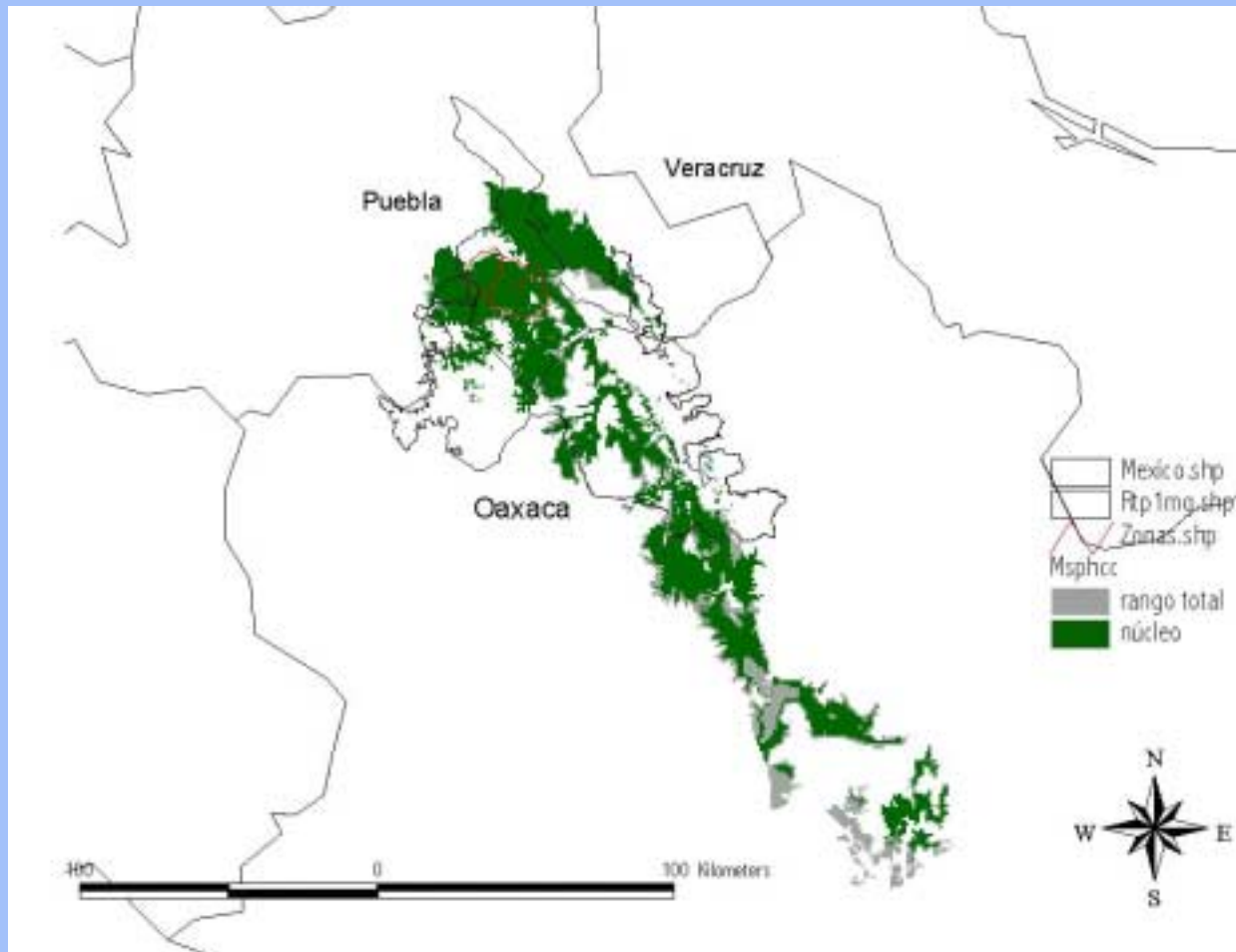
Distribution of *Echinocactus platyacanthus* f. *Grandis* in 100 years (scenario +2° C, -10% mm) (Davila et al 2004)



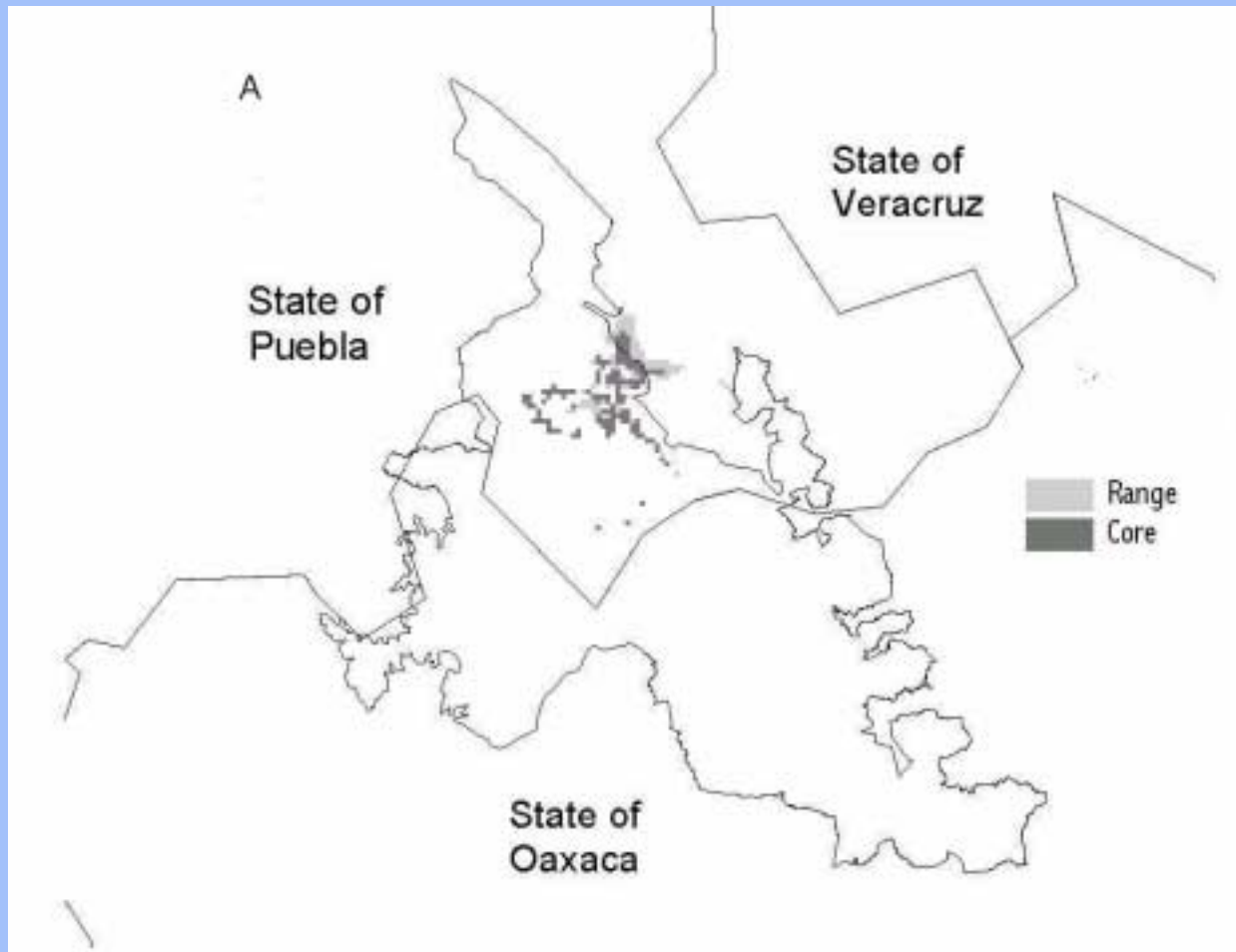
# Distribution of *Mammillaria sphacelata* at present (Davila et al 2004)



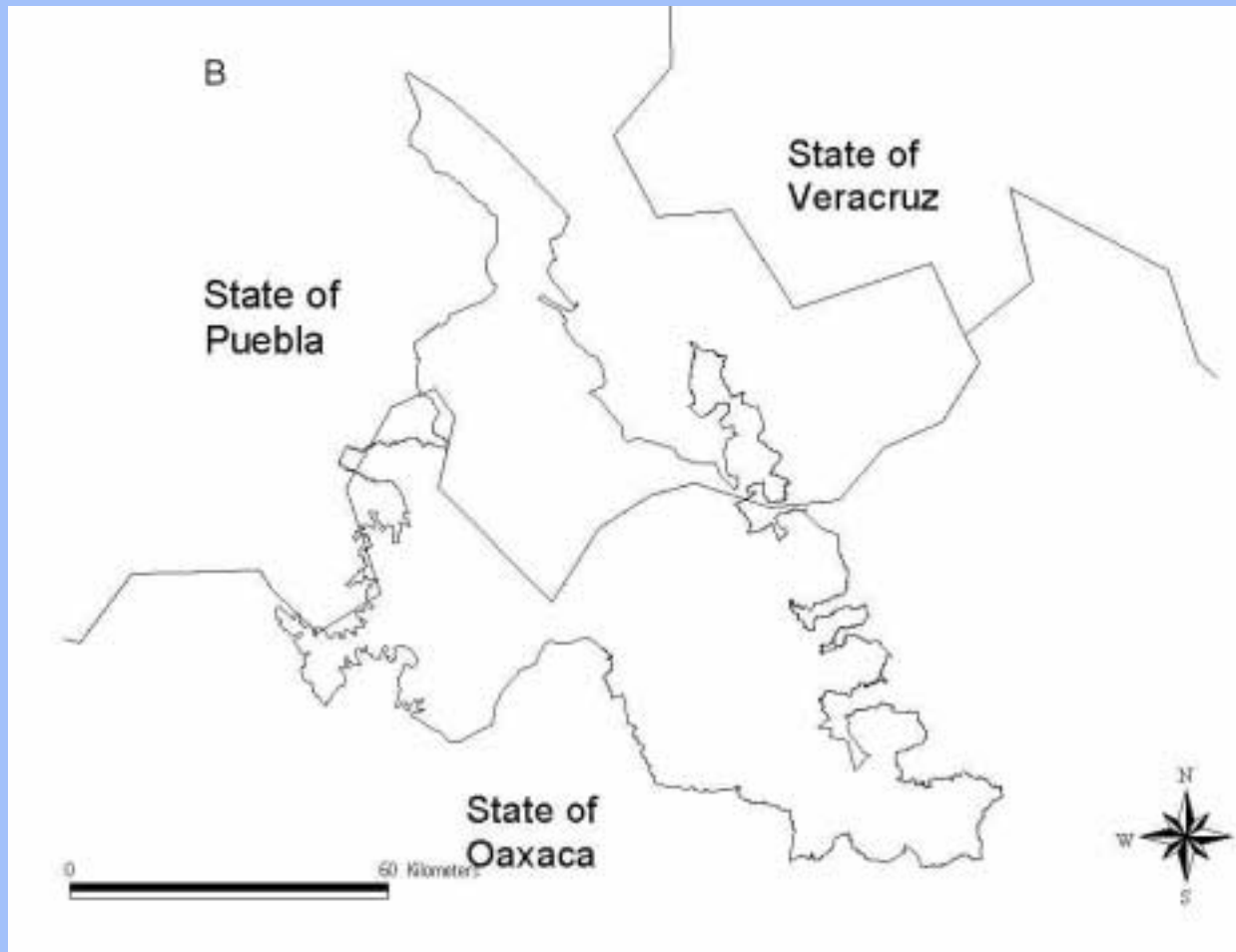
Distribution of *Mammillaria sphacelata* in 100 years  
(scenario +2° C, -10% mm) (Davila et al 2004)



# Distribution of *Cephalocereus columna-trajani* at present (Davila et al 2004)



*Potential distribution of Cephalocereus columna-trajani*  
in 100 years (scenario +2° C, -10% mm) (Davila et al  
2004)



After all, Microorganisms are also part of the plants'  
"environment"



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**THANK YOU VERY MUCH!!!**

