



Seeking the best practice for cleaning waters from cyanobacterial and macroalgal blooms

Prototype AS-S



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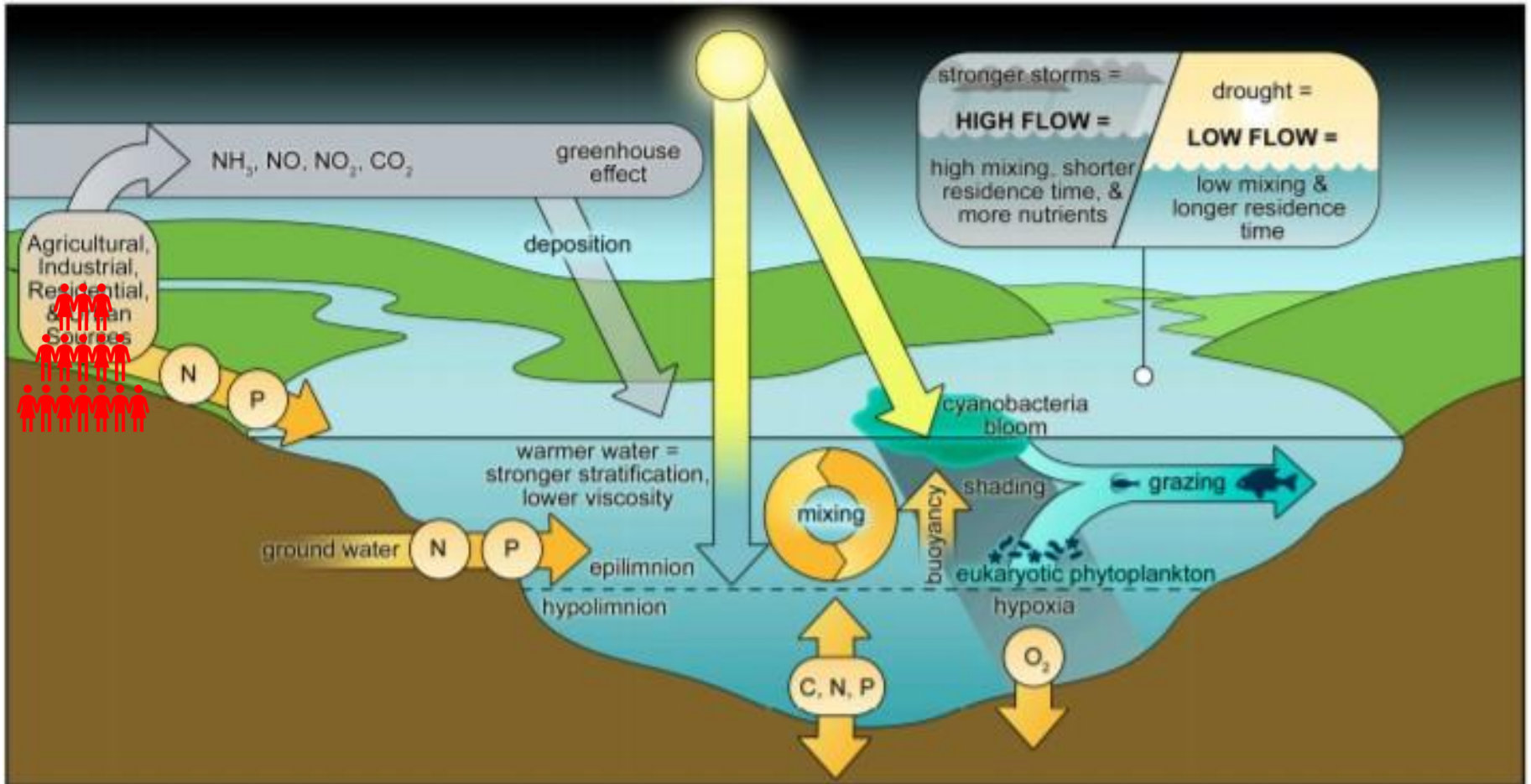
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Institute of Nature Conservation, Polish Academy of Sciences

Cyanobacteria, macroalgae, eutrophication and climate change.....



What is the problem?

WARNING

Avoid Harmful Blue-green Algae Blooms while swimming, fishing and boating



Keep kids and pets away from areas with blooms or scum.
Swim, fish and boat in areas with no blooms or scum.

Contact can make people and animals sick.
If contact occurs, rinse with clean water.
If symptoms occur, contact a medical provider.



Blooms can look like streaks, spilled paint, pea soup, floating clumps or dots.
Learn more: www.health.ny.gov/HarmfulAlgae and on.ny.gov/hab

UWAGA SINICE!
NIE KĄP SIĘ!
TO GROZI CHOROBA.
Sinice wydzielają substancje toksyczne dla ludzi!

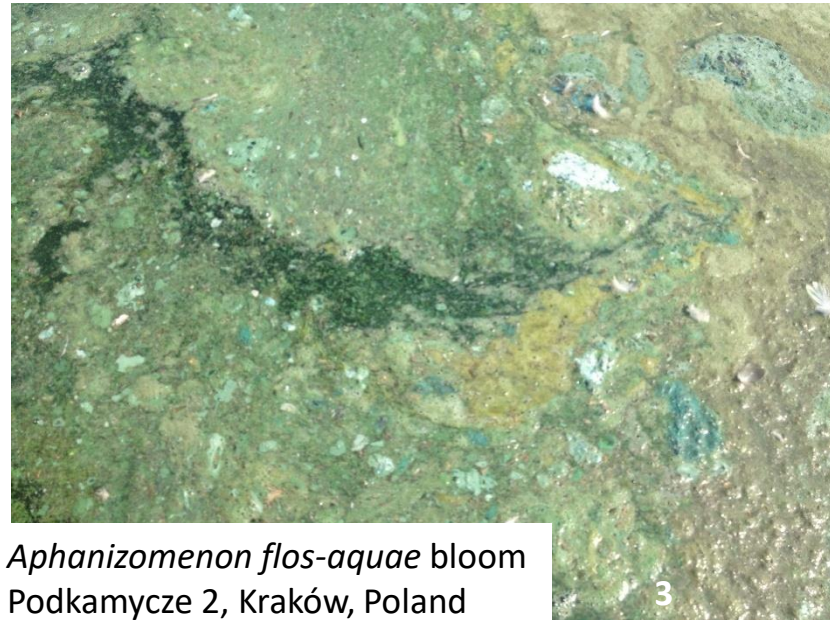
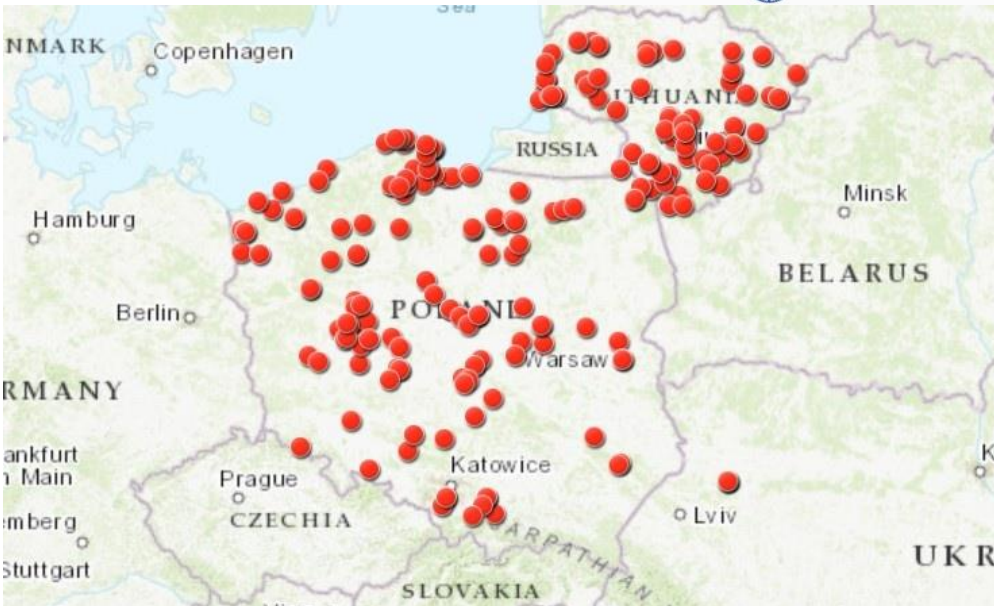


Występują przy powierzchni wody i zmieniają jej barwę. Można wyraźnie zaobserwować gęste smugi wyglądające jak rozlana farba, a nawet grube kożuchy piany o galaretowatej konsystencji.

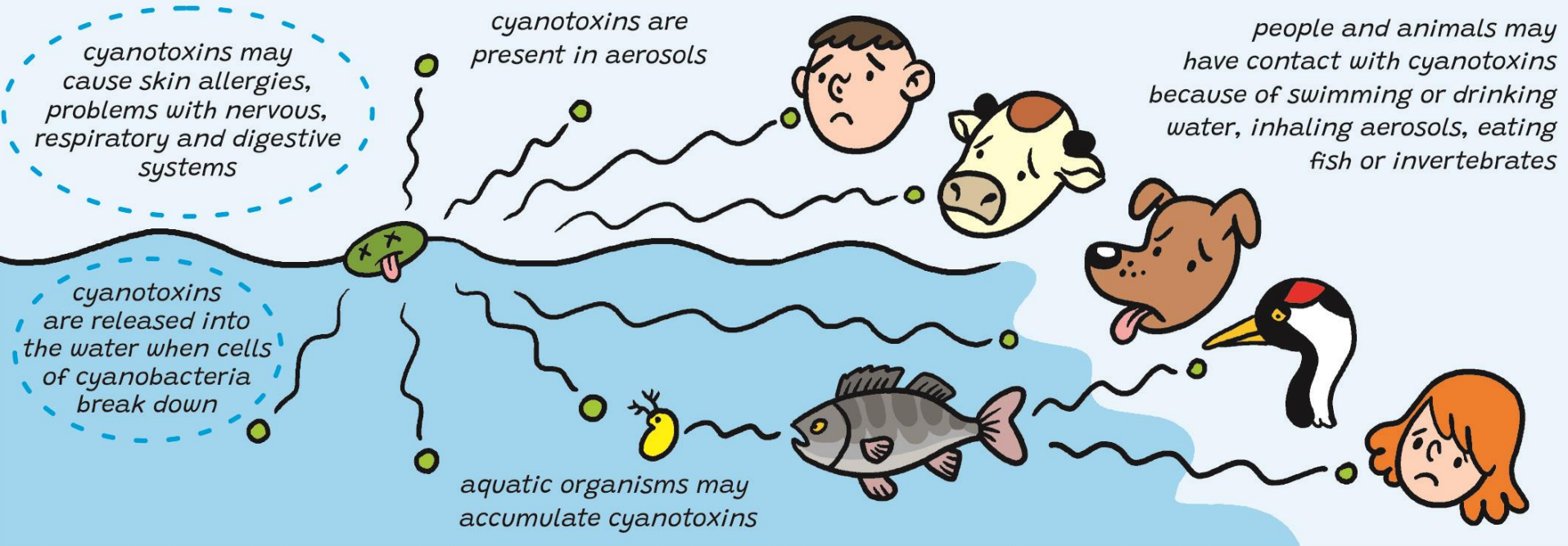
Kąpiel w zakwitniętej wodzie może powodować:

- wysypkę na skórze
- swędzenie i łzawienie oczu
- wymioty
- biegunkę
- gorączkę
- bóle mięśni i stawów

Dowiedz się więcej na www.gis.gov.pl



What is the problem?



Rys. T. Samojlik

What is the problem?

- **SHADING - INHIBITED GROWTH OF OTHER ORGANISMS**
- **ANAEROBIC CONDITIONS IN THE BOTTOM ZONE**
- **DISTRUPTION OF THE NUTRIENTS CYCLE**

intensive uptake during mold growth

secretion of mineral and organic substances

SOLUTIONS




Clean and protect of catchments



Educate of society




Keep away from polluting



Apply the principles of sustainable agriculture



Restore of lakes and reservoirs

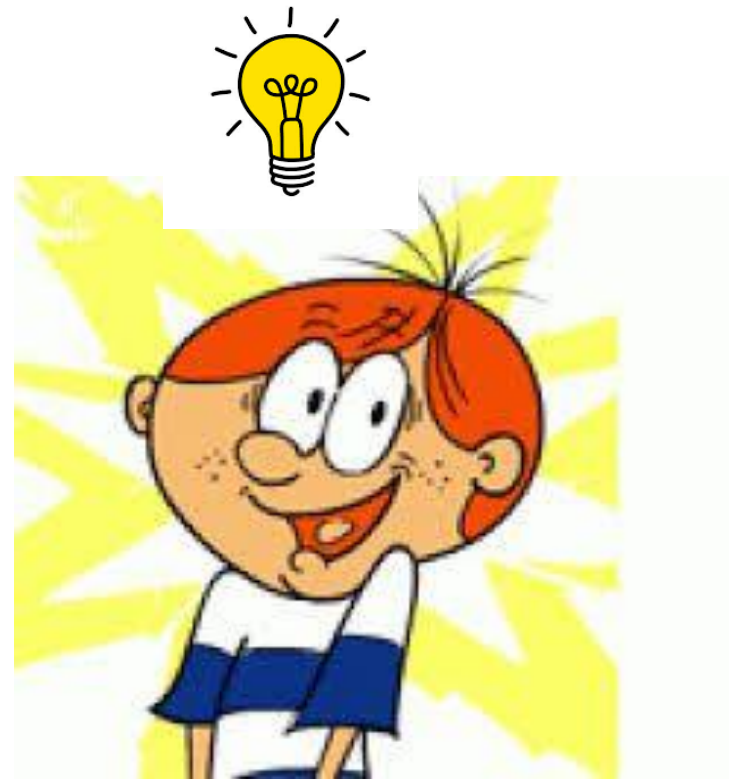


Punish of polluters

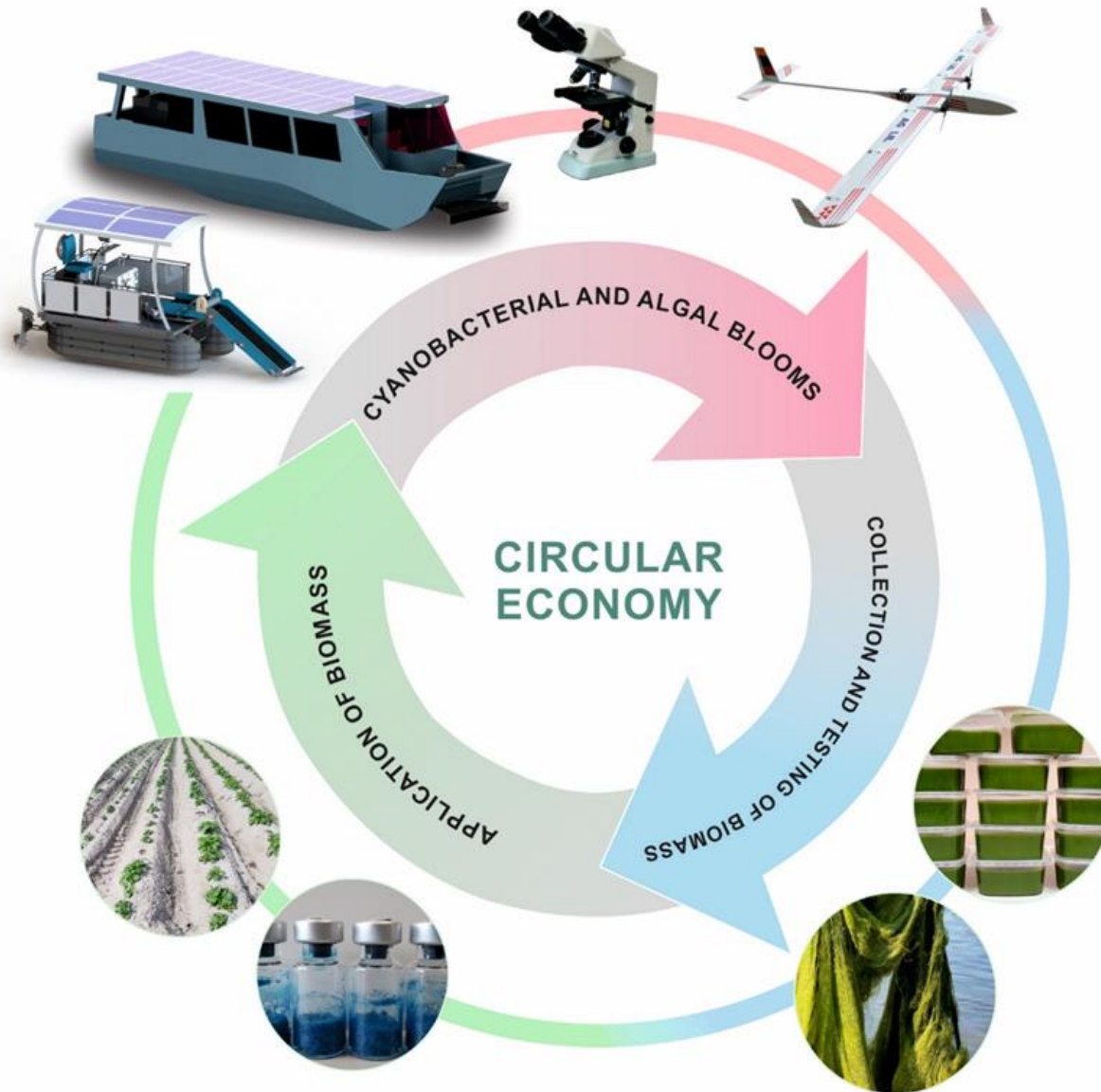
BUT



...



Circulated economy



PLACES – artificial, phytoplankton

Tyniec oxbow lake, Podgórze Tynieckie

50°01'32.0"N 19°48'45.1"E



Podkamycze ponds

50°05'07.5"N 19°49'58.4"E



Paprocany, Tychy

50°05,02.3"N 18°58,52.5"E



PLACES – natural, „macromats”



Łękno Lake

52° 9' 15.15" N, 17° 8' 56.39" E



Nielba River

52°48'10.7"N 17°12'33.2"E

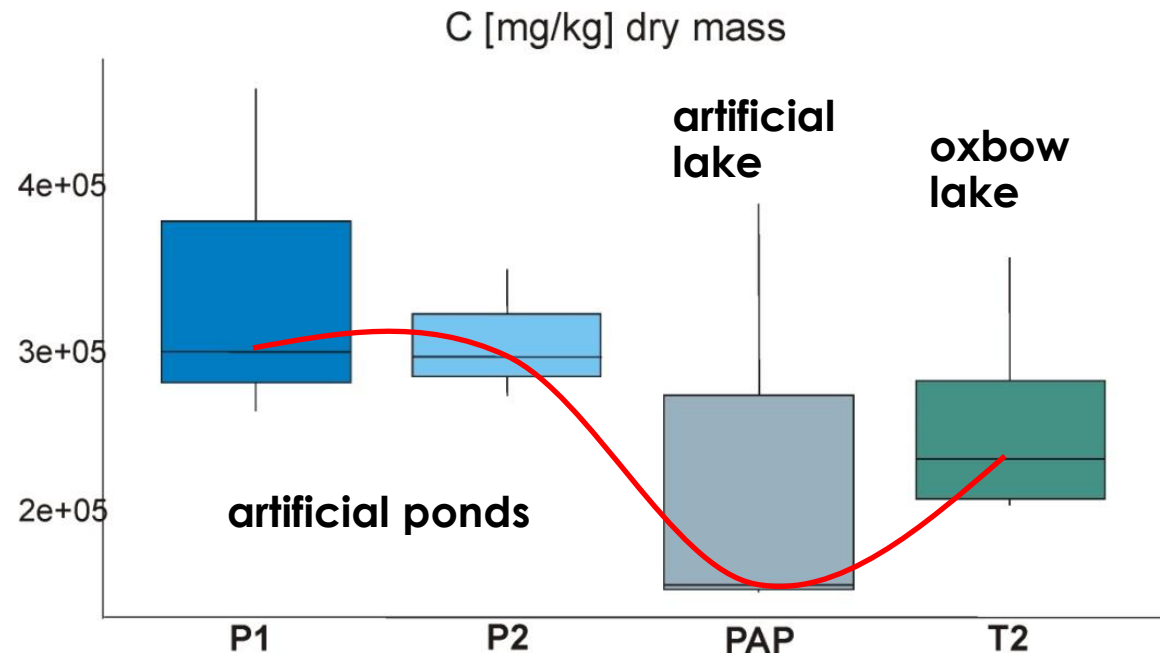
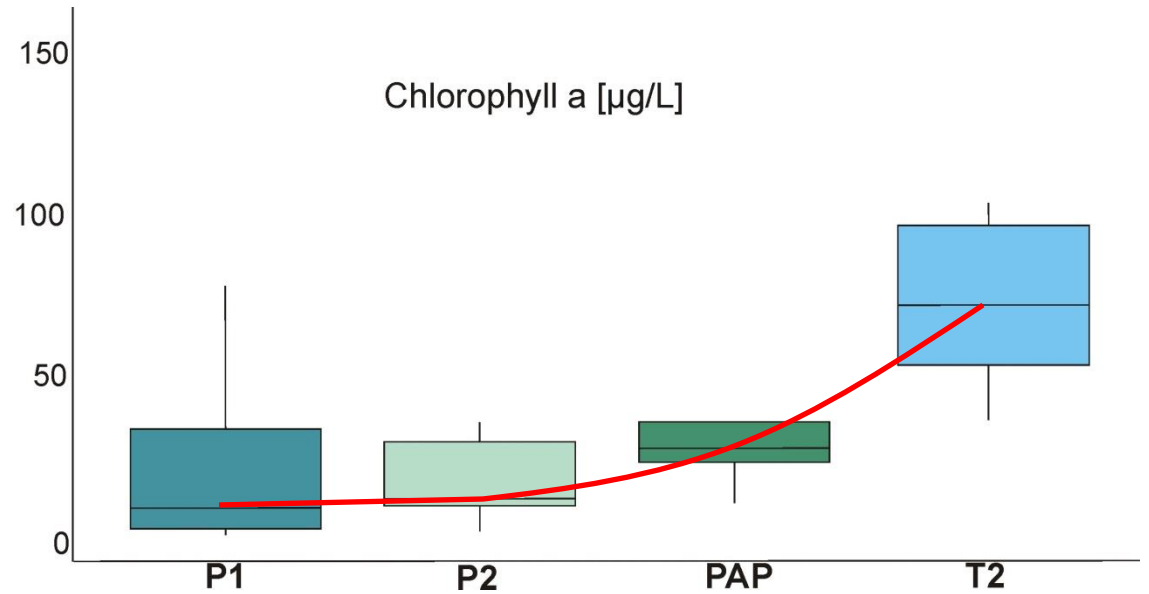


Oporzyńskie Lake

52° 55' 34.464" N 17° 9' 34.344" E

CARBON

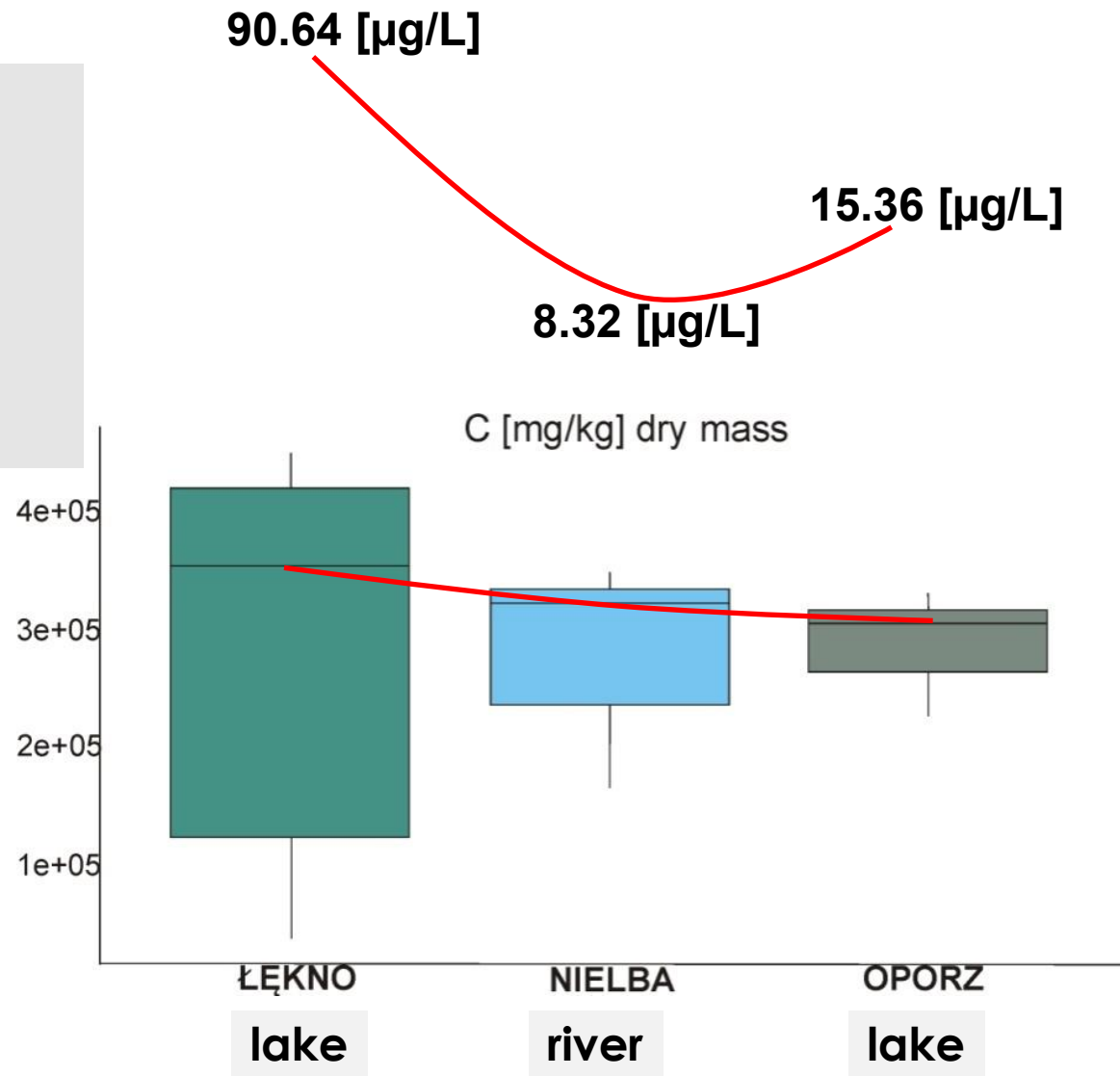
**Biomass quality
carbon (C),
[mg/1 kg dry mass
of phytoplankton]**



CARBON

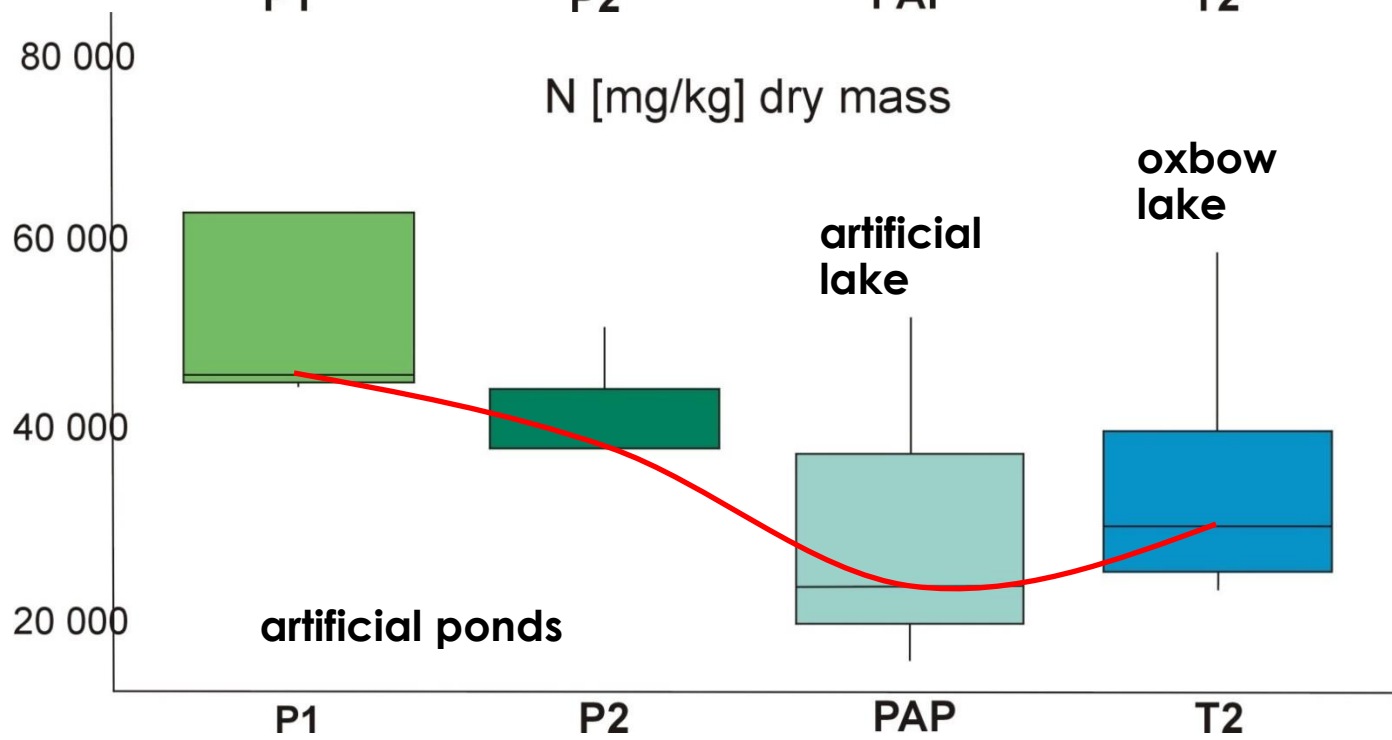
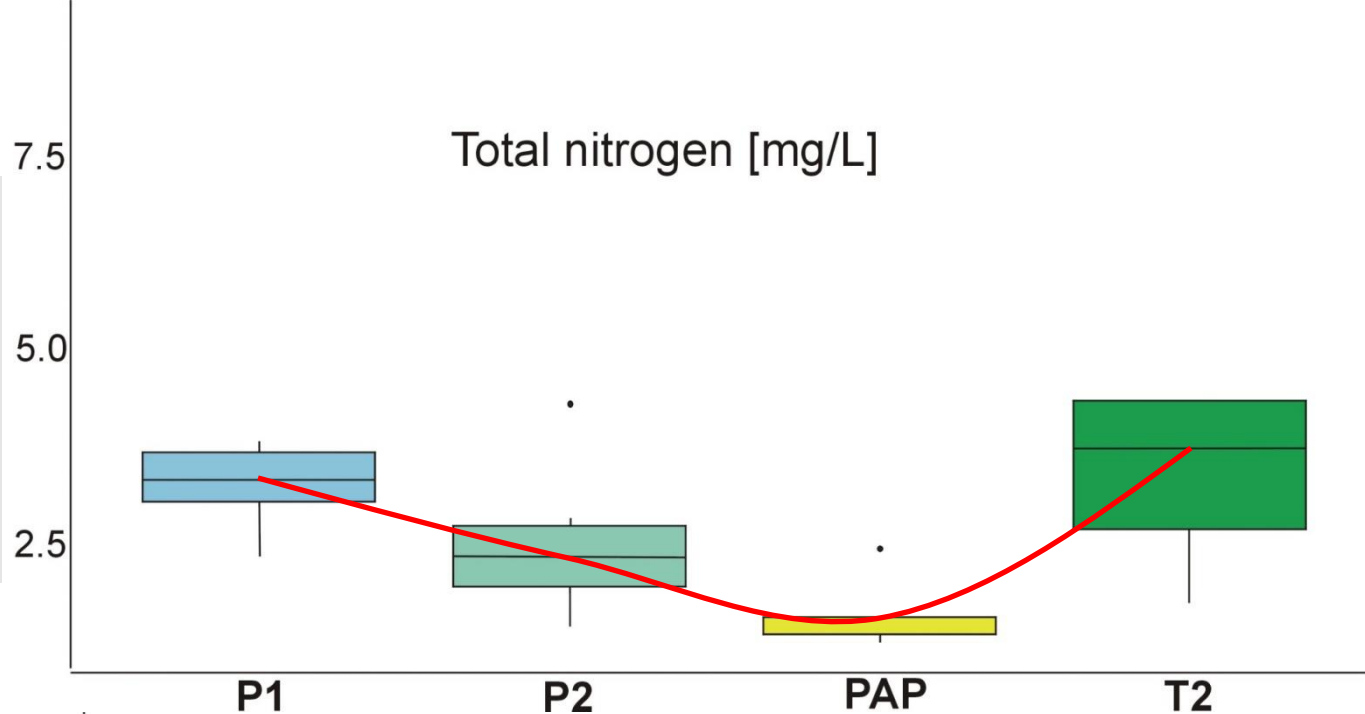
Biomass quality carbon (C), [mg/1 kg dry mass of cyanobacteria or macroalgae mats]

Chlorophyll a (average)



NITROGEN

**Biomass quality
nitrogen (N)
[mg/1 kg dry
mass of
phytoplankton]**

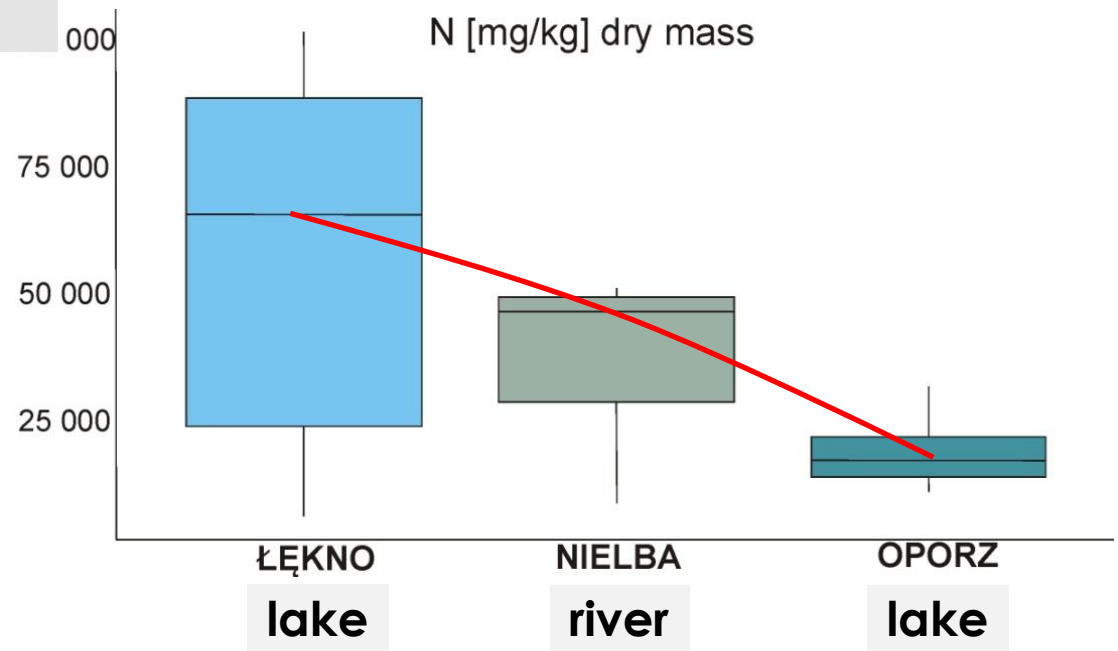


NITROGEN

Total nitrogen [mg/L] - average

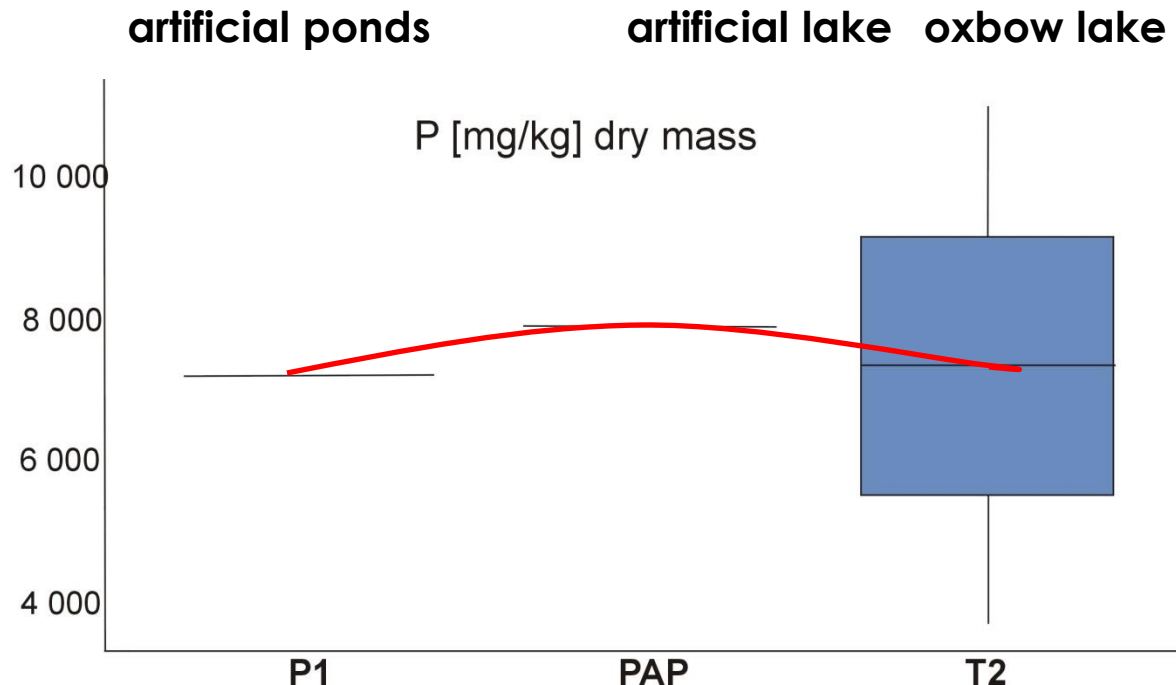
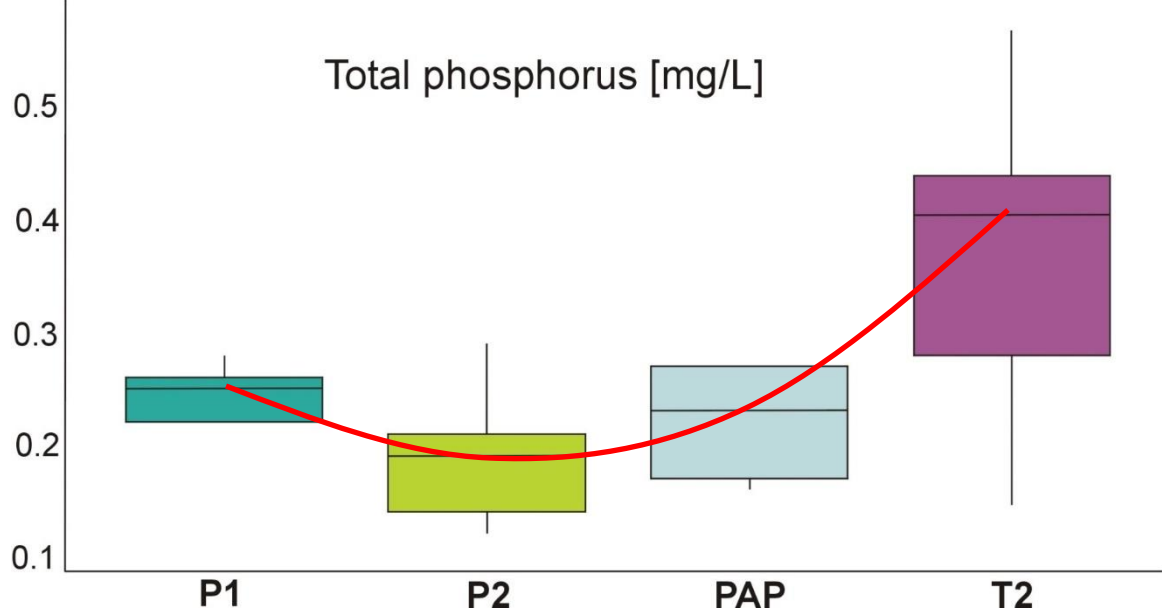
8.36 mg/L
7.12 mg/L
6.49 mg/L

**Biomass quality
nitrogen (N),
[mg/1 kg dry mass of
cyanobacteria or
macroalgae mats]**



PHOSPHORUS

**Biomass quality
phosphorus (P)
[mg/1 kg dry
mass of
phytoplankton]**



PHOSPHORUS

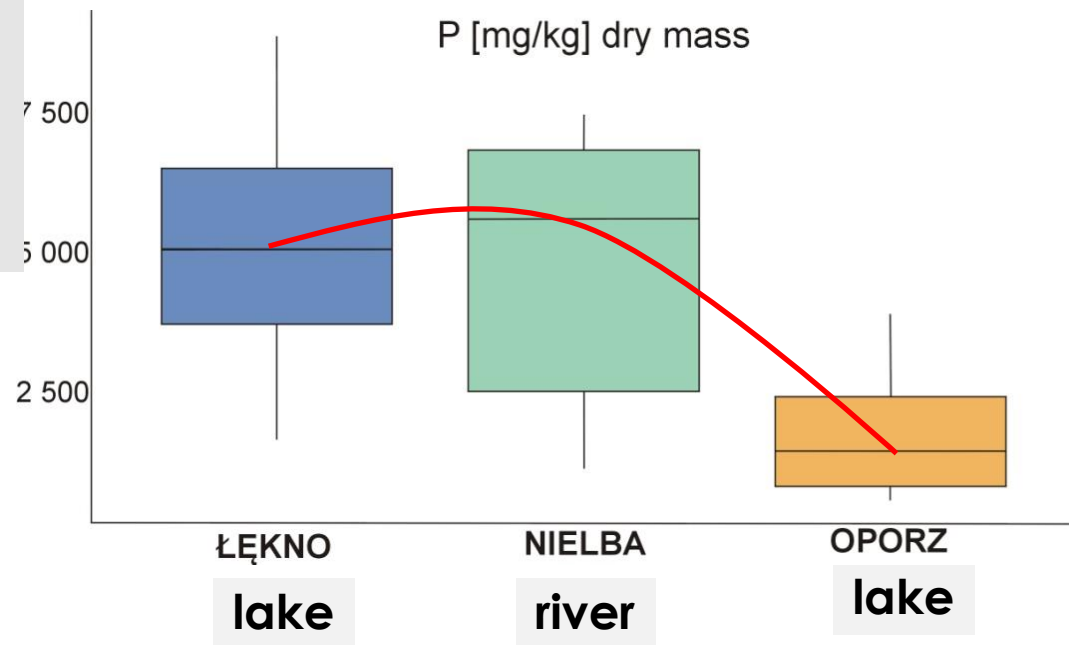
Total phosphorus [mg/L] - average

0.960 mg/L

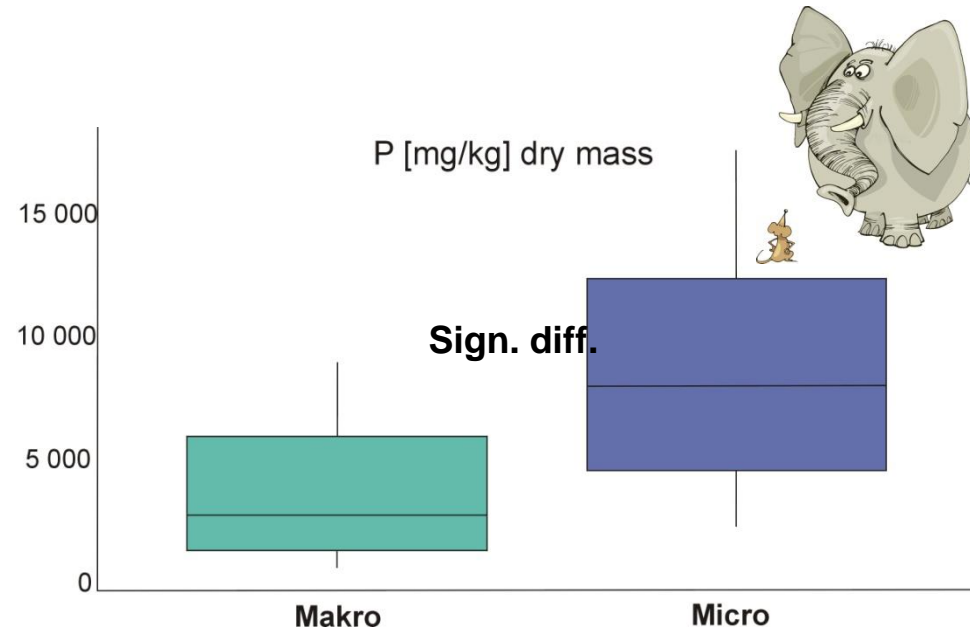
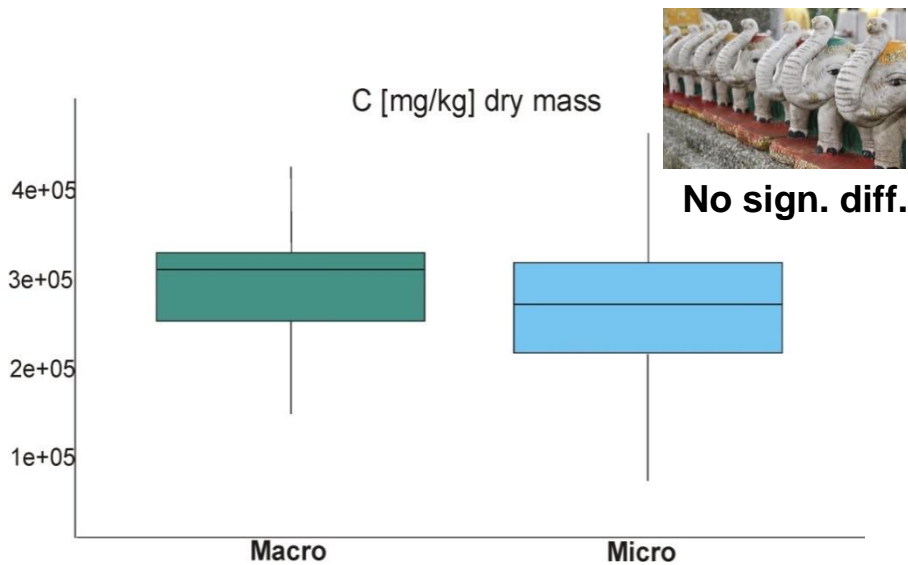
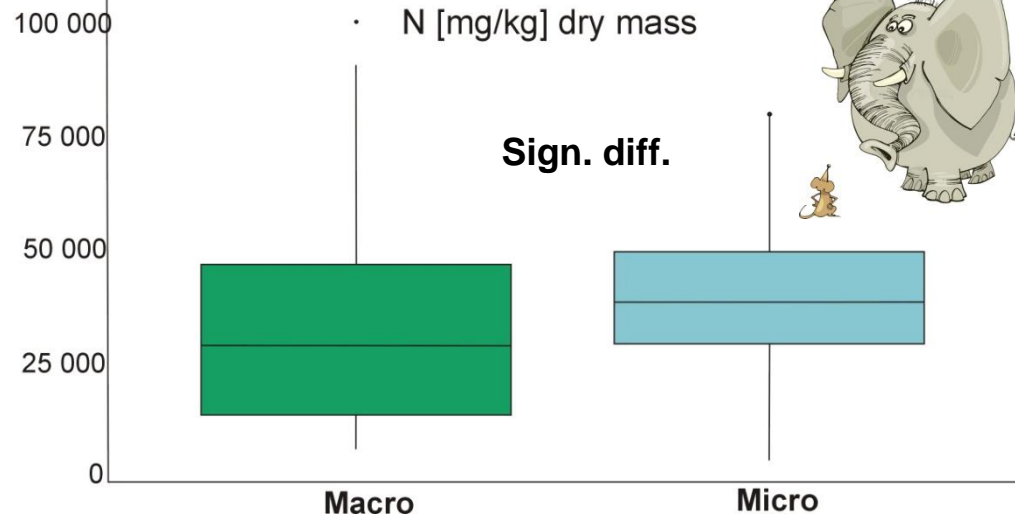
0.210 mg/L

0.125 mg/L

**Biomass quality
phosphorus (P)
[mg/1 kg dry mass of
cyanobacteria or
macroalgae mats]**



Biomass quality
carbon (C),
nitrogen (N),
phosphorus (P)
[mg/1 kg dry mass]
„macromats” vs. microalgae



<https://algaeservice.gamtostyrimai.lt/category/be-kategorijos-en/>

Questionnaire:

https://docs.google.com/forms/d/e/1FAIpQLSd3EemWUQLa2iGsos8azU0yO7WlsolzepfUZnnFP21WP_8a-A/viewform



THANK YOU!



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