Assessment of bottom sediment toxicity using Phytotoxkit and Rapidtoxkit biotests

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Aim of study

Rożnów Reservoir

The aim of the study was to:

- **assessment of toxicity of bottom sediments with two biotests,**
- **determinine the spatial distribution of toxicity,**
- **determine of the relationship between the reaction of test organisms**

Methods

Rożnów reservoir	
Rivers	Dunajec
Catchment area	4874 km^2
Surface of flooding	1600 ha
Capacity	170 mln m^3
Function	energy flood control, recreation

The samples were collected from 53 set locations
The sediment was collected from 0-15 cm.
The samples were collected using an Ekman sampler.

Fig 1. Rożnów Reservoir [maps.google.pl]

Ecotoxicity test

Trophic level	Test	Organisms
Producer	Phytotoxkit™	*Sinapis alba*, *Lepidium sativum*, *Sorghum saccharatum*,
Consumers	Rapidtoxkit™	*Thamnocephalus platyurus*

Results

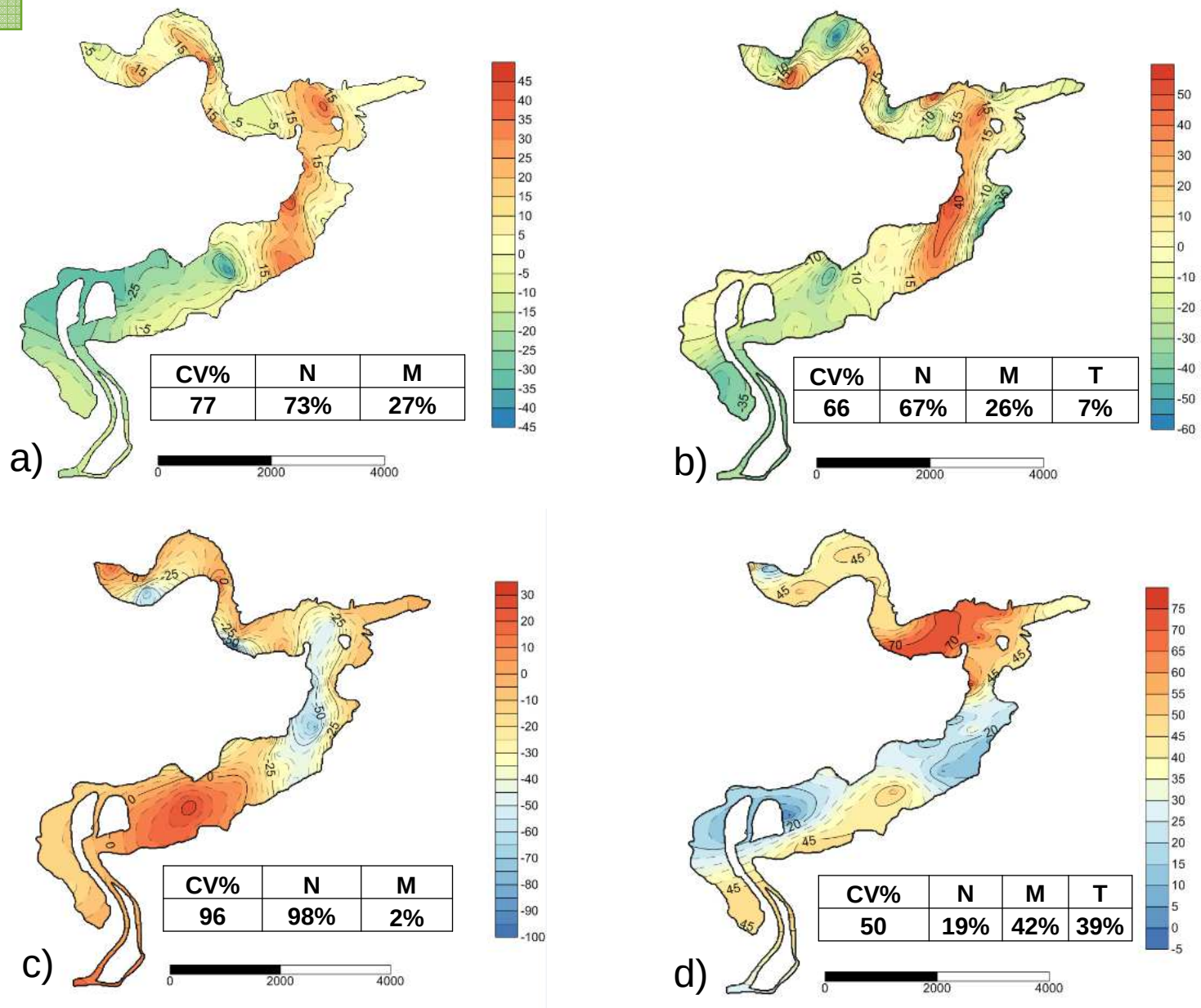
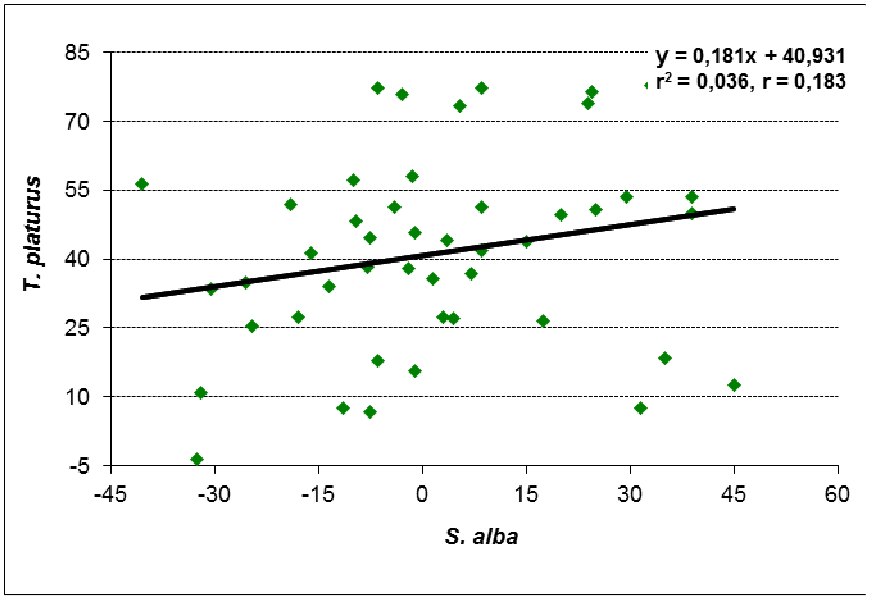
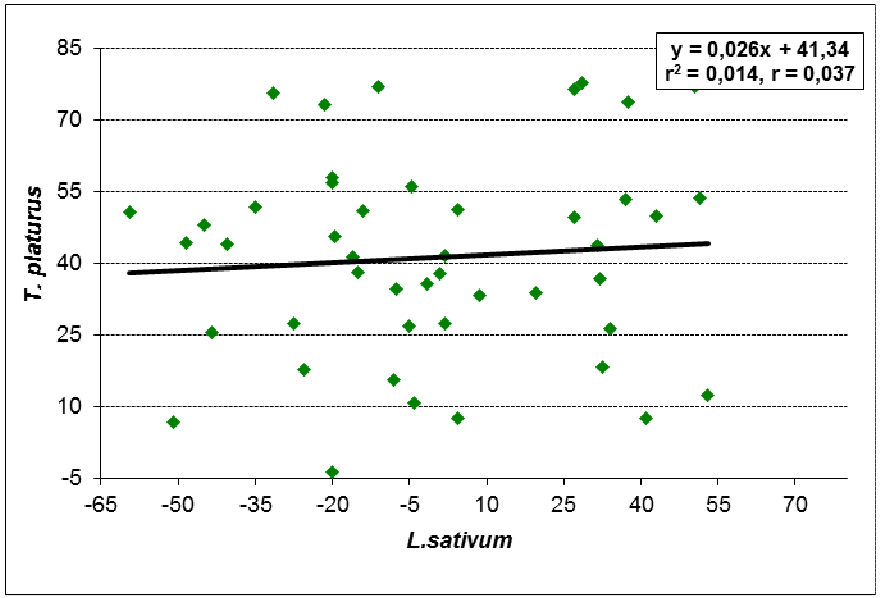


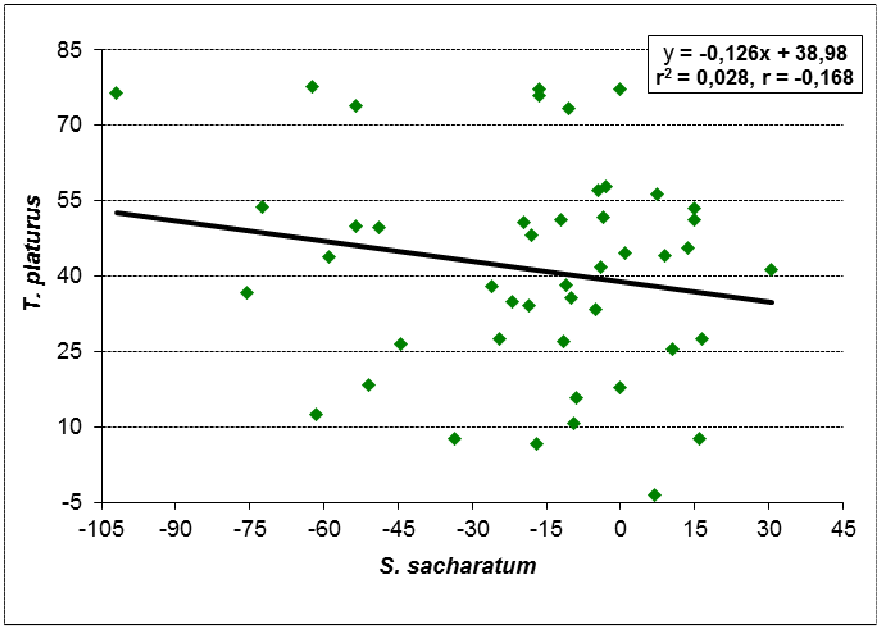
Fig. 2: Spatial distribution of root length inhibition a) *S. alba*, b) *L. sativum*, c) *S. saccharatum, and inhibition of food intake d) T. platyurus*

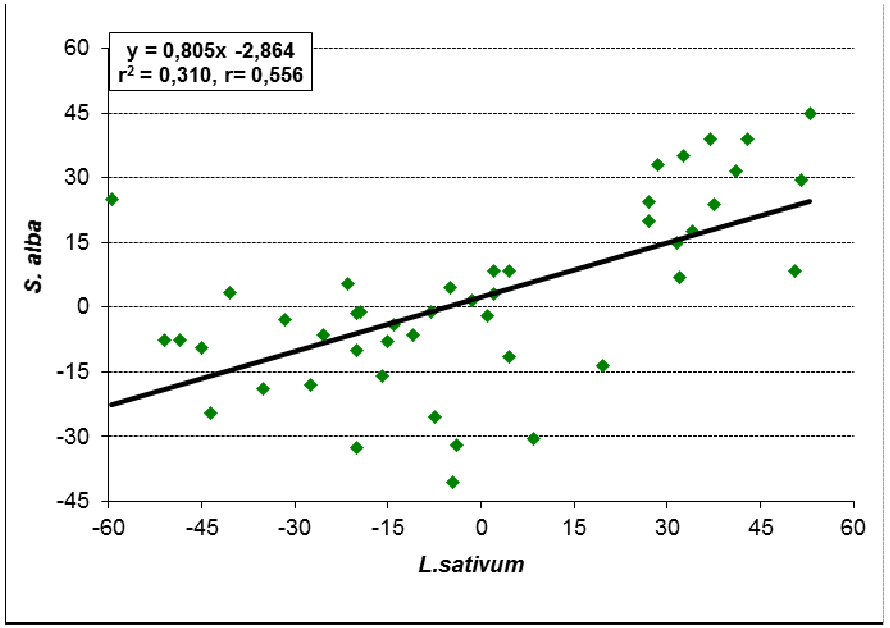
CV - coefficient of variation, samples: N – non toxic, M – slight toxic, T - toxic

Analysis of the relationship between the response of test organisms









Conclusions

1. **Plants showed a lower sensitivity to substances present in the sediment than crustacean T. platyurus.**

T. platyurus > L. sativum > S. alba > S. saccharatum

2. The effect may have resulted from:

- **testing procedures (Phytotoxkit - solid phase, Rapidtoxkit - sludge extract),**
- **test organisms came from different trophic groups**

3. **In each of the plants, the dominating effect of bottom sediments on root growth was dominated, and for T. platyurus, 80% of the samples were found to be toxic.**

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