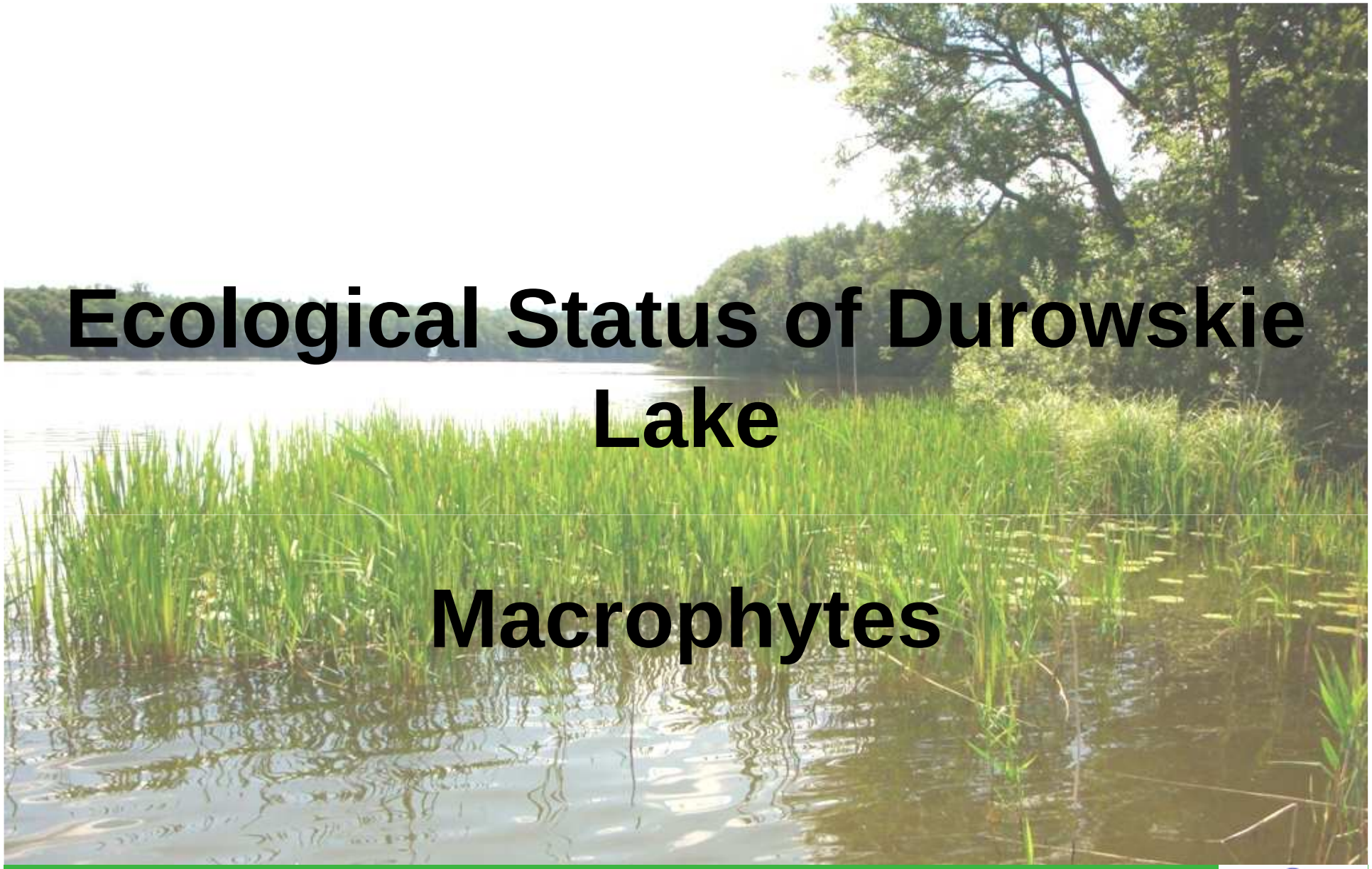


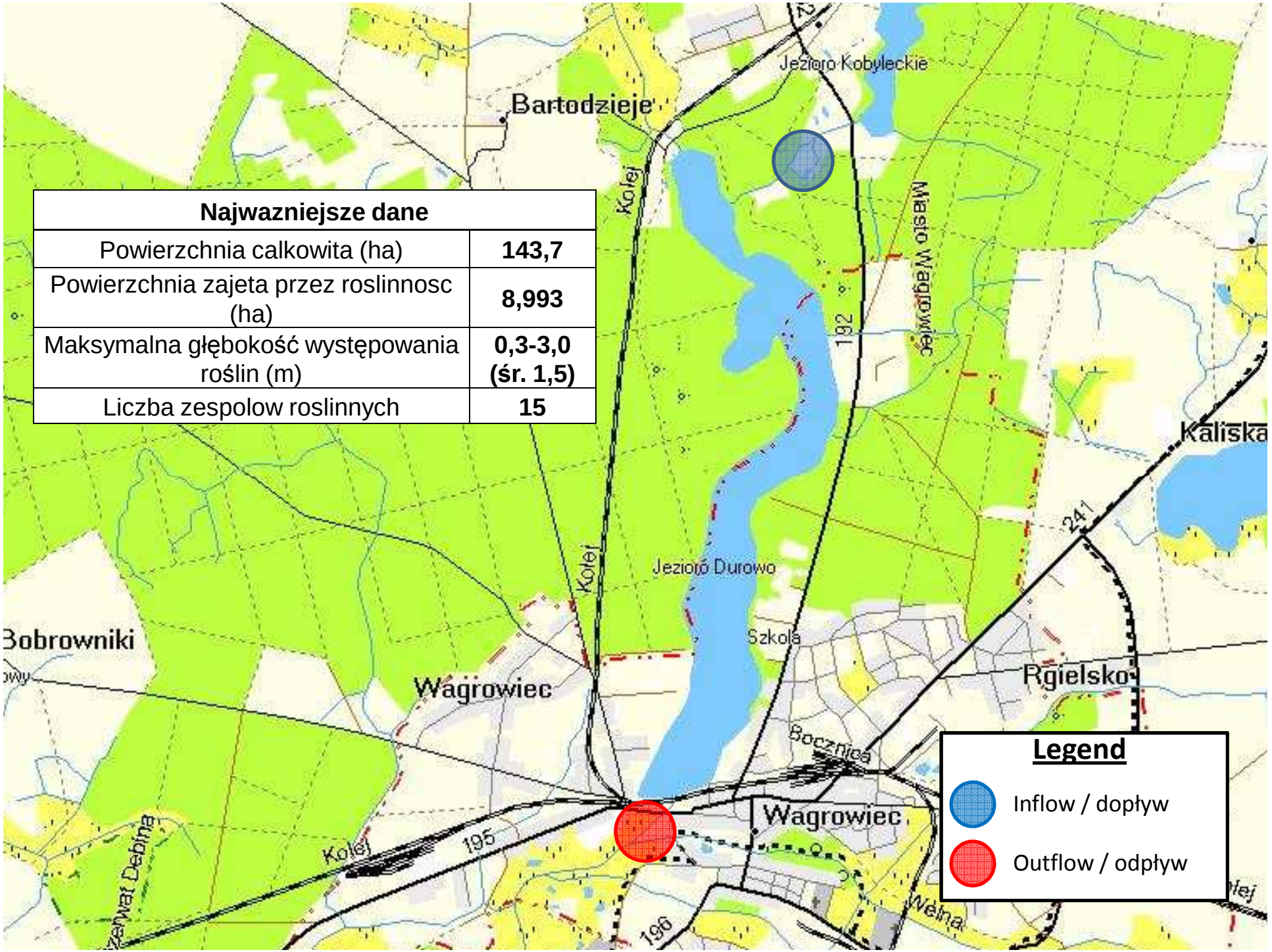
Ecological Status of Durowskie Lake

Macrophytes

Marzia Rossi
Charlotte Seifert
Alberto Arcos

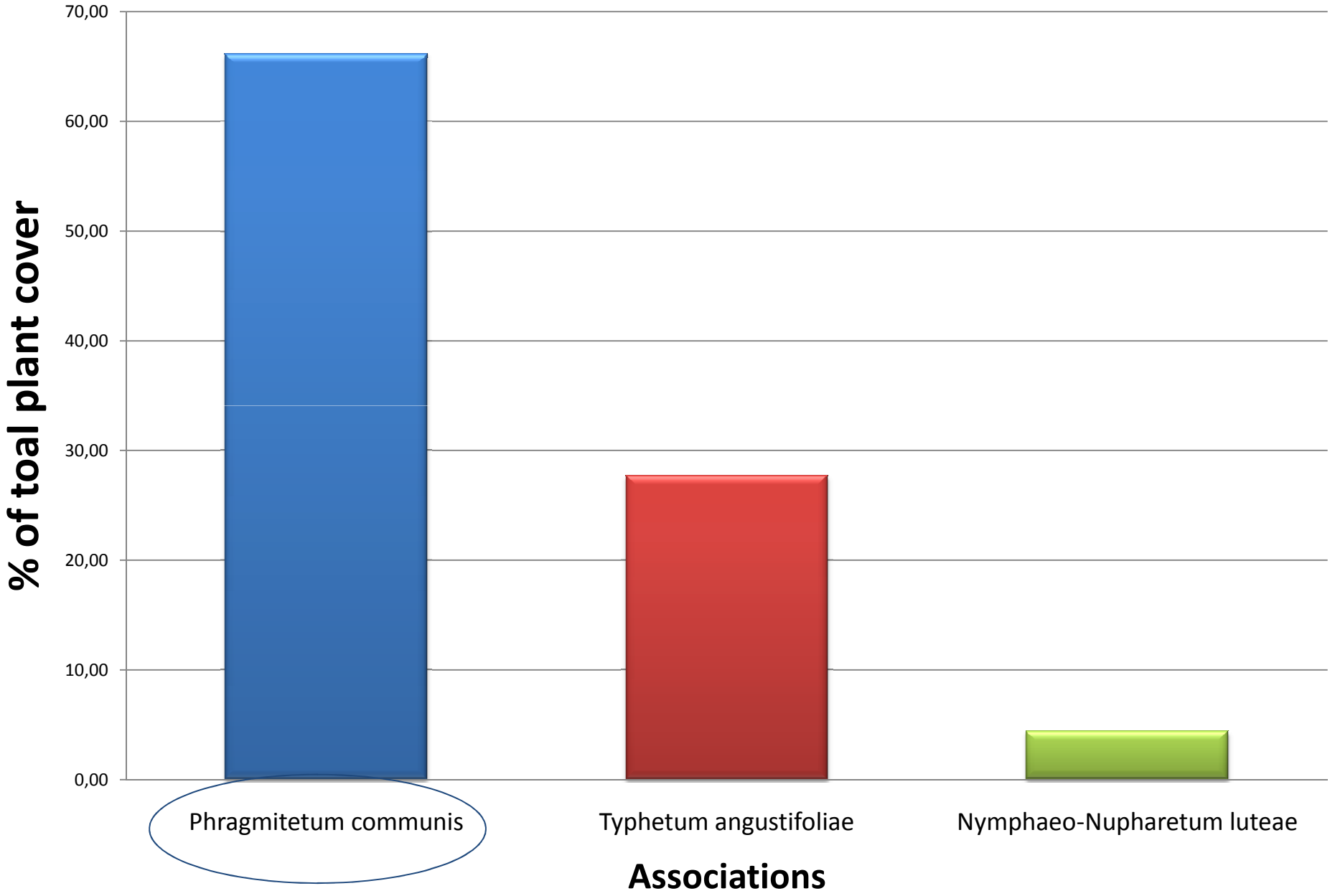
Lidia Szendzina
Marta Pikosz

Wągrowiec-Poznań
Lipiec -2009



Najwazniejsze dane	
Powierzchnia calkowita (ha)	**143,7**
Powierzchnia zajeta przez roslinnosc (ha)	**8,993**
Maksymalna głębokość występowania roślin (m)	**0,3-3,0 (śr. 1,5)**
Liczba zespolow roslinnych	**15**

Main plant species associations

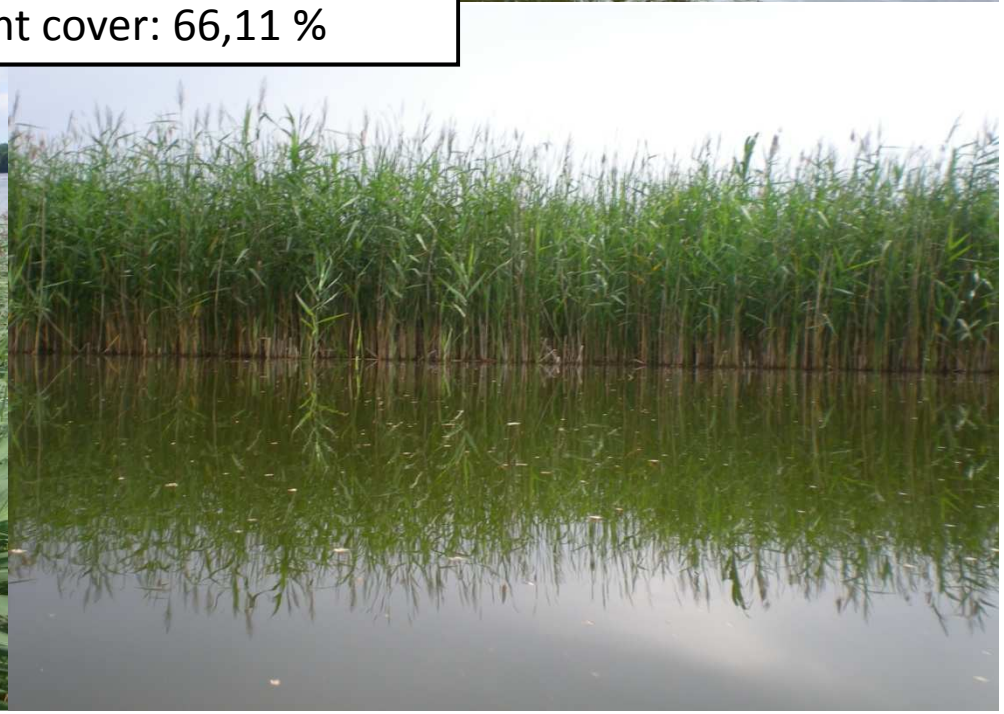


Phragmitetum communis

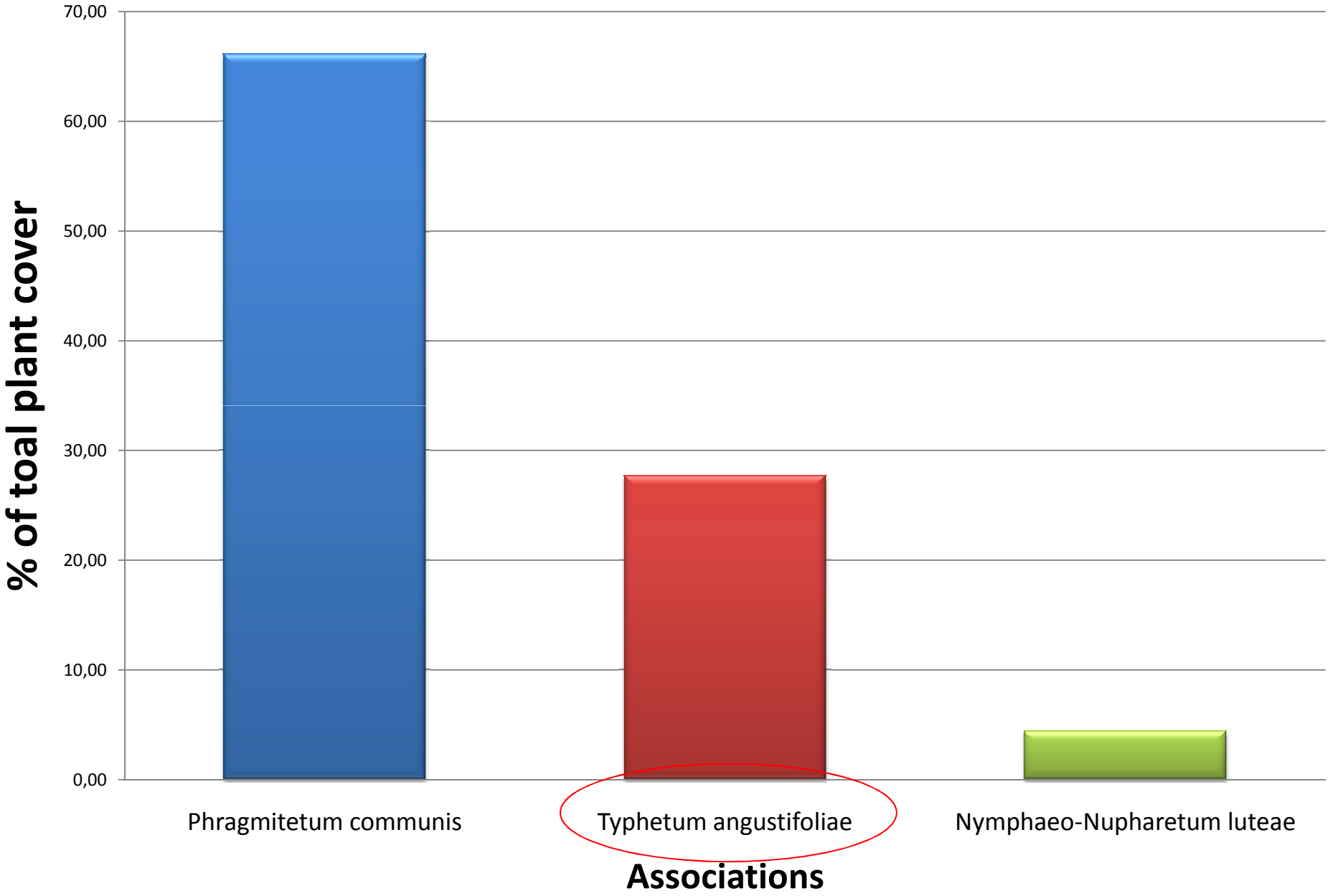
Trzcina pospolita

Cover: 5,945 ha.

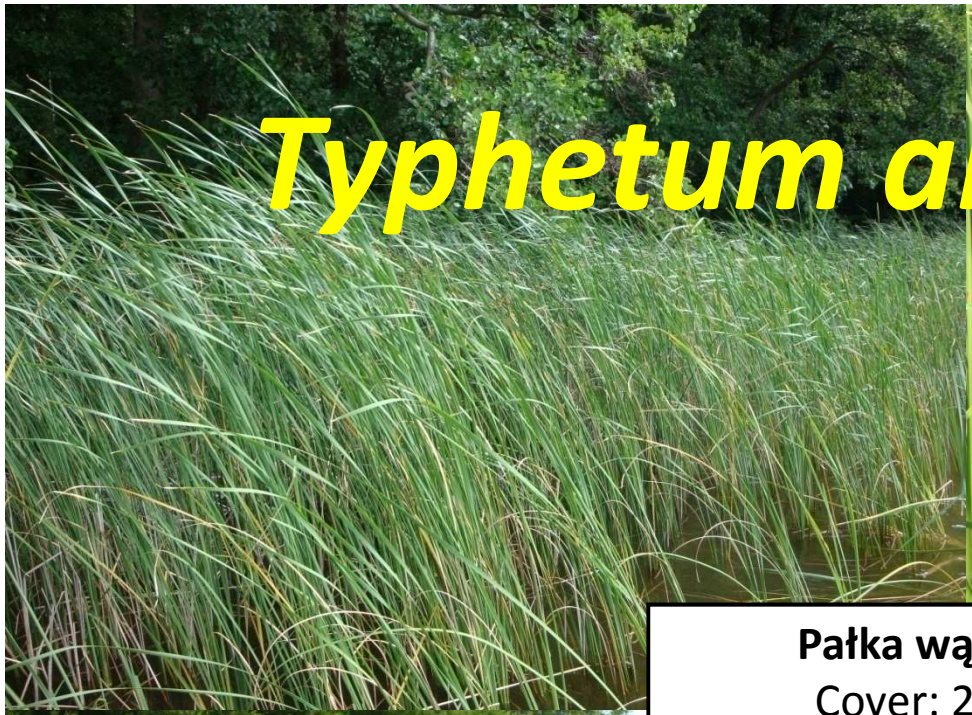
% of total plant cover: 66,11 %



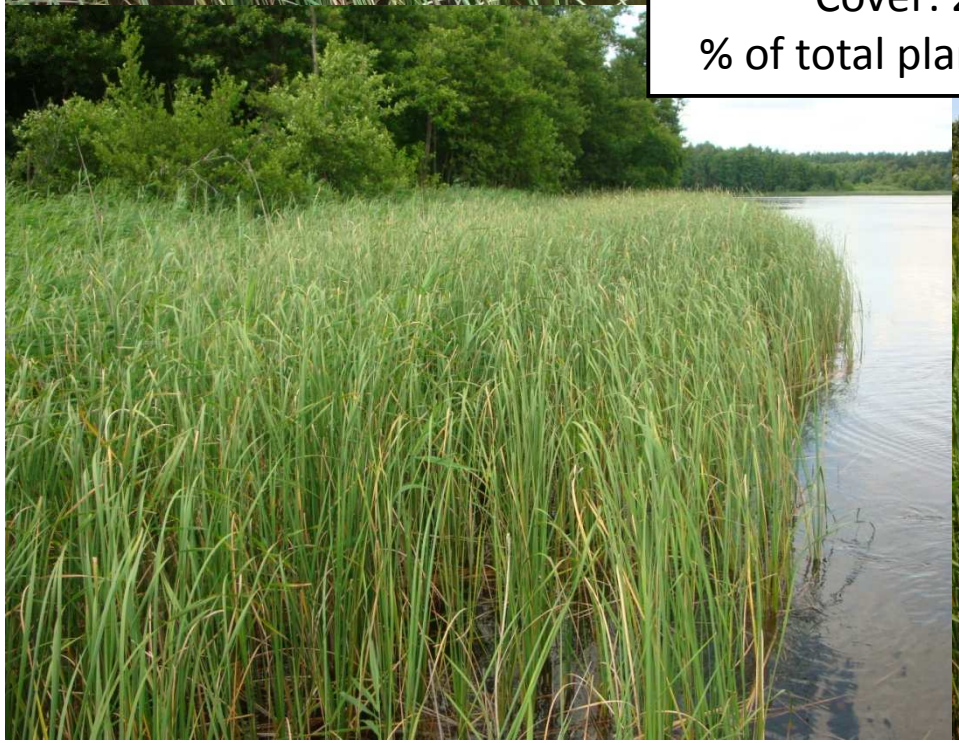
Main plant species associations



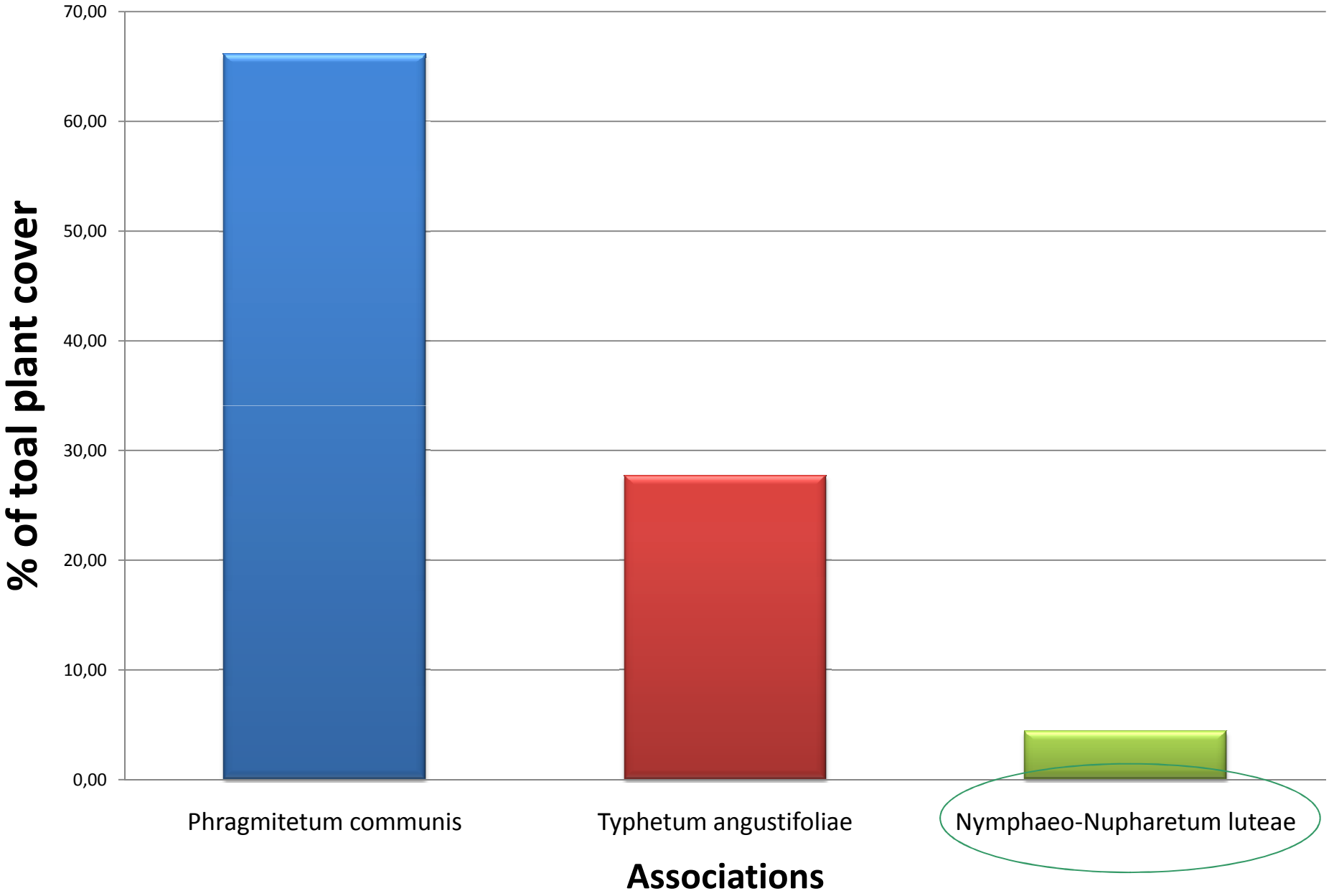
Typhetum angustifoliae



Pałka wąskolistna
Cover: 2,491 ha.
% of total plant cover: 27,70



Main plant species associations

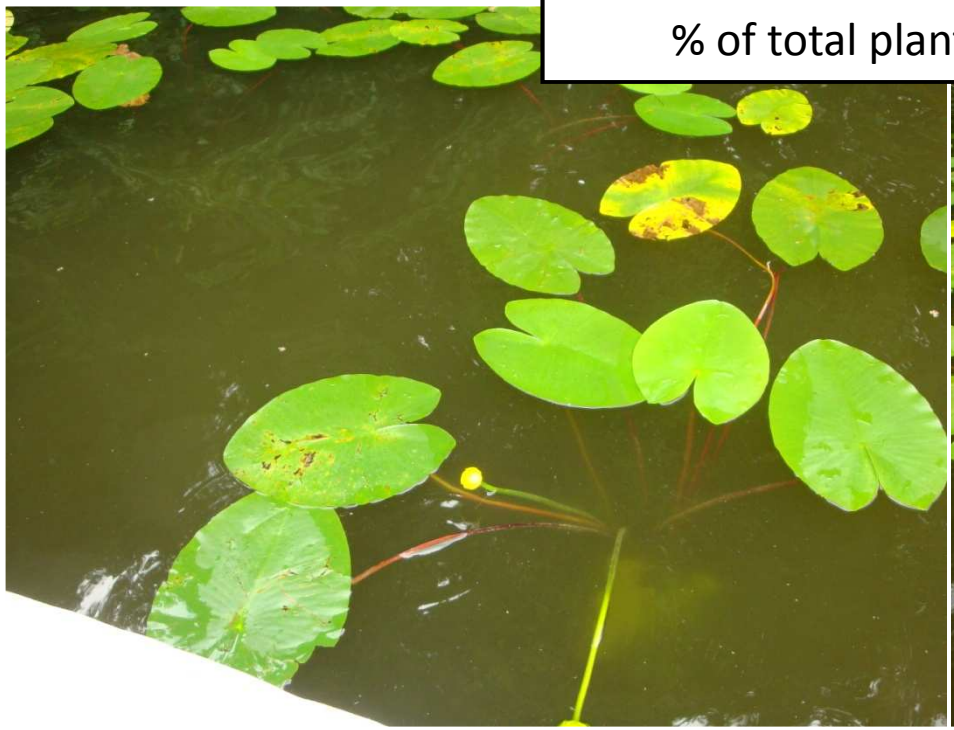


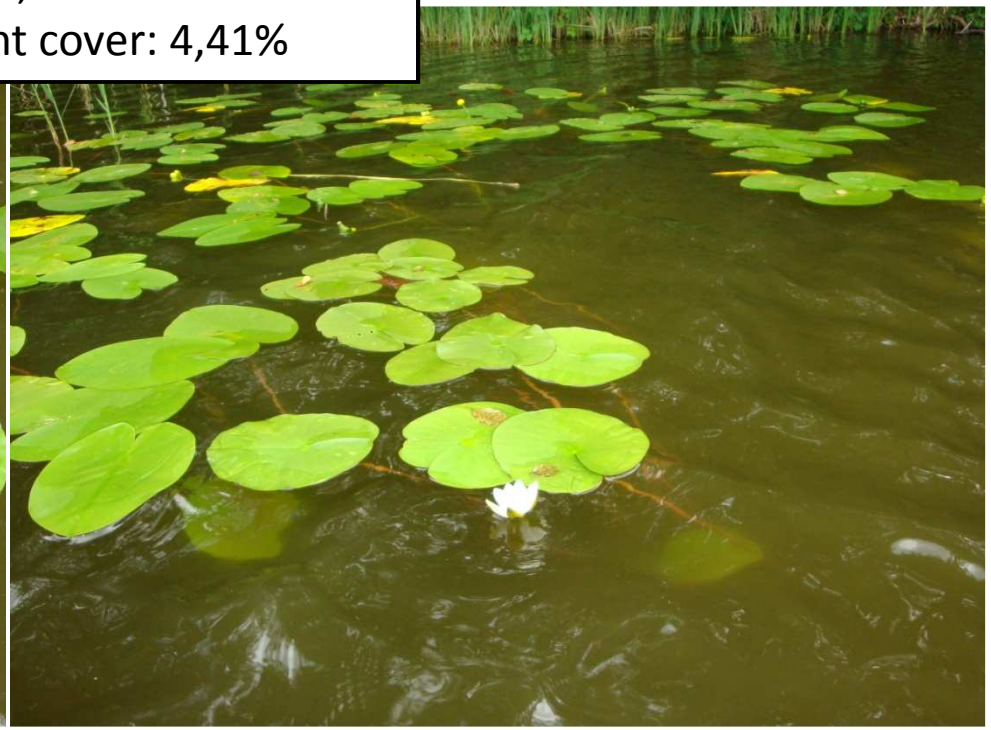
Nymphaeo - Nupharetum luteae

Zespół grzybieni i grążela żółtego

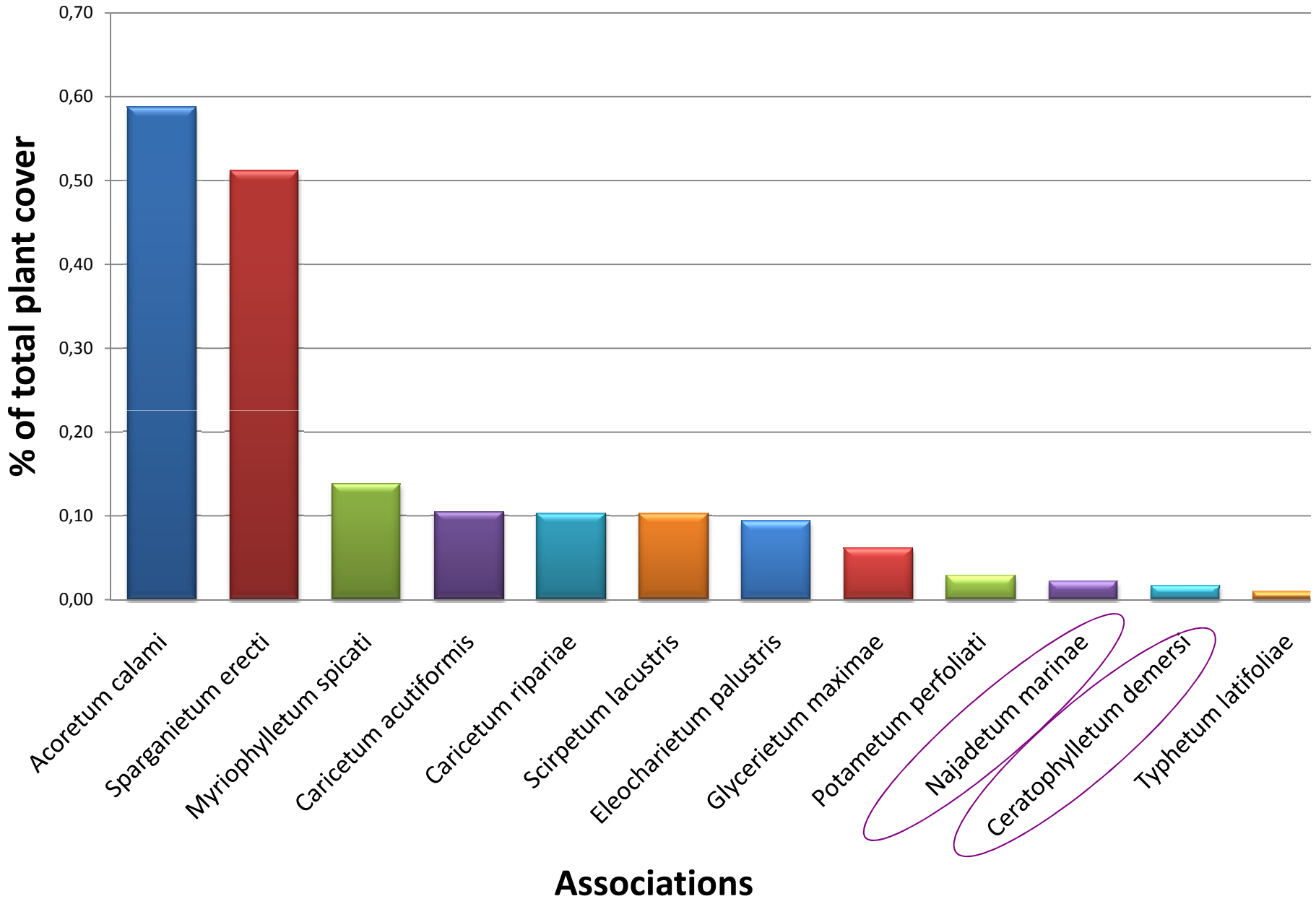
Cover: 0,397 ha

% of total plant cover: 4,41%

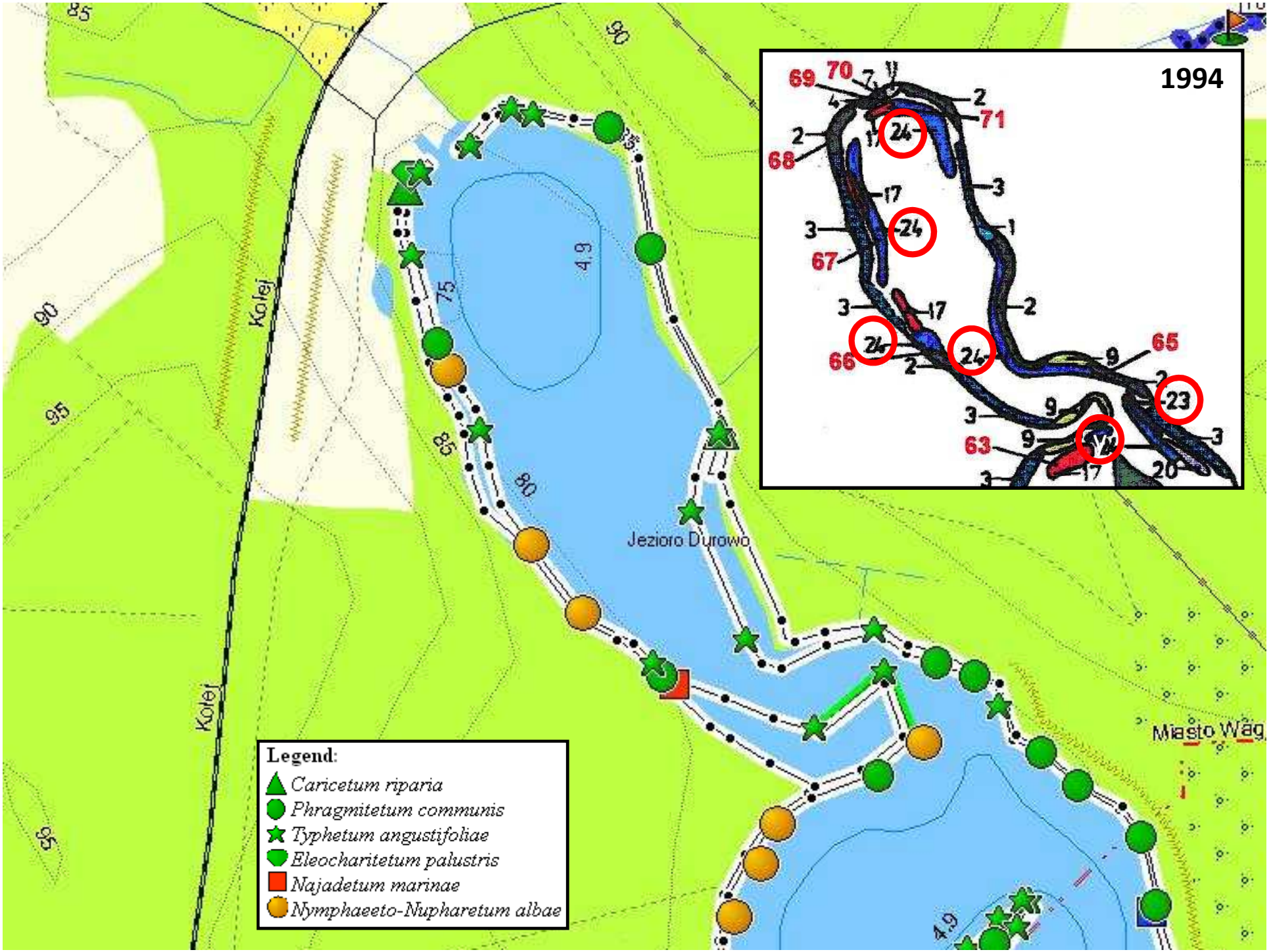


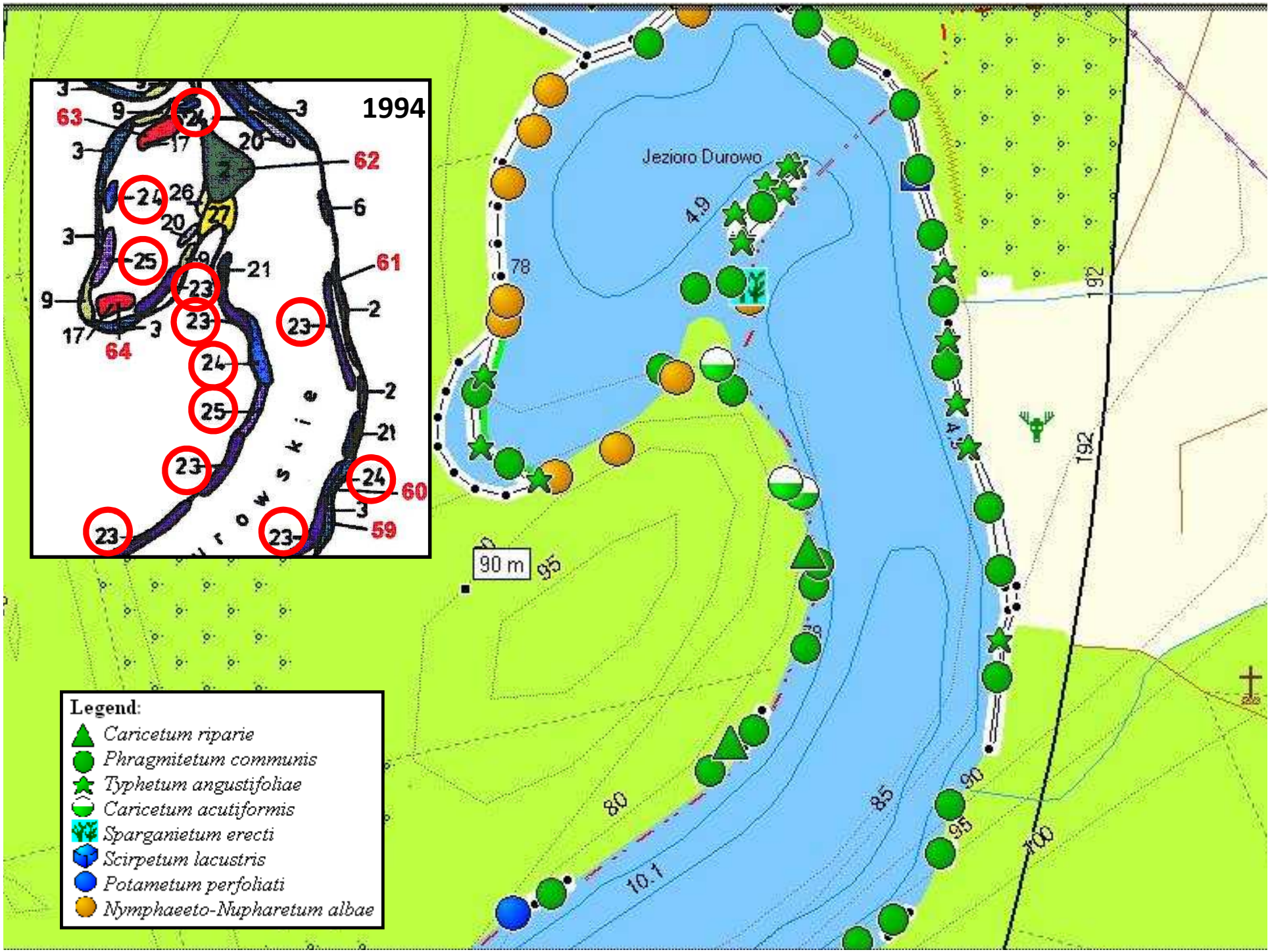


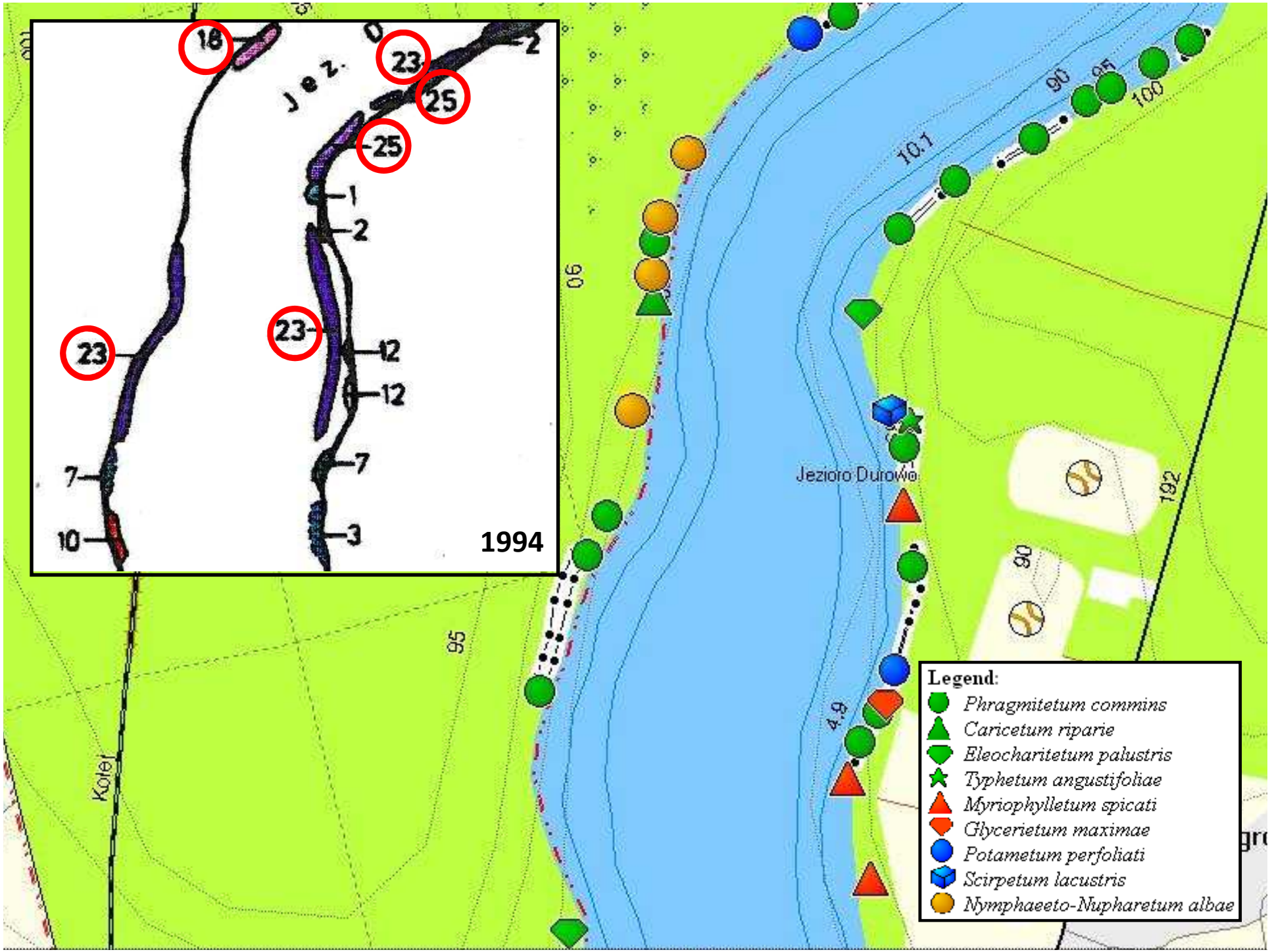
Further plant species associations

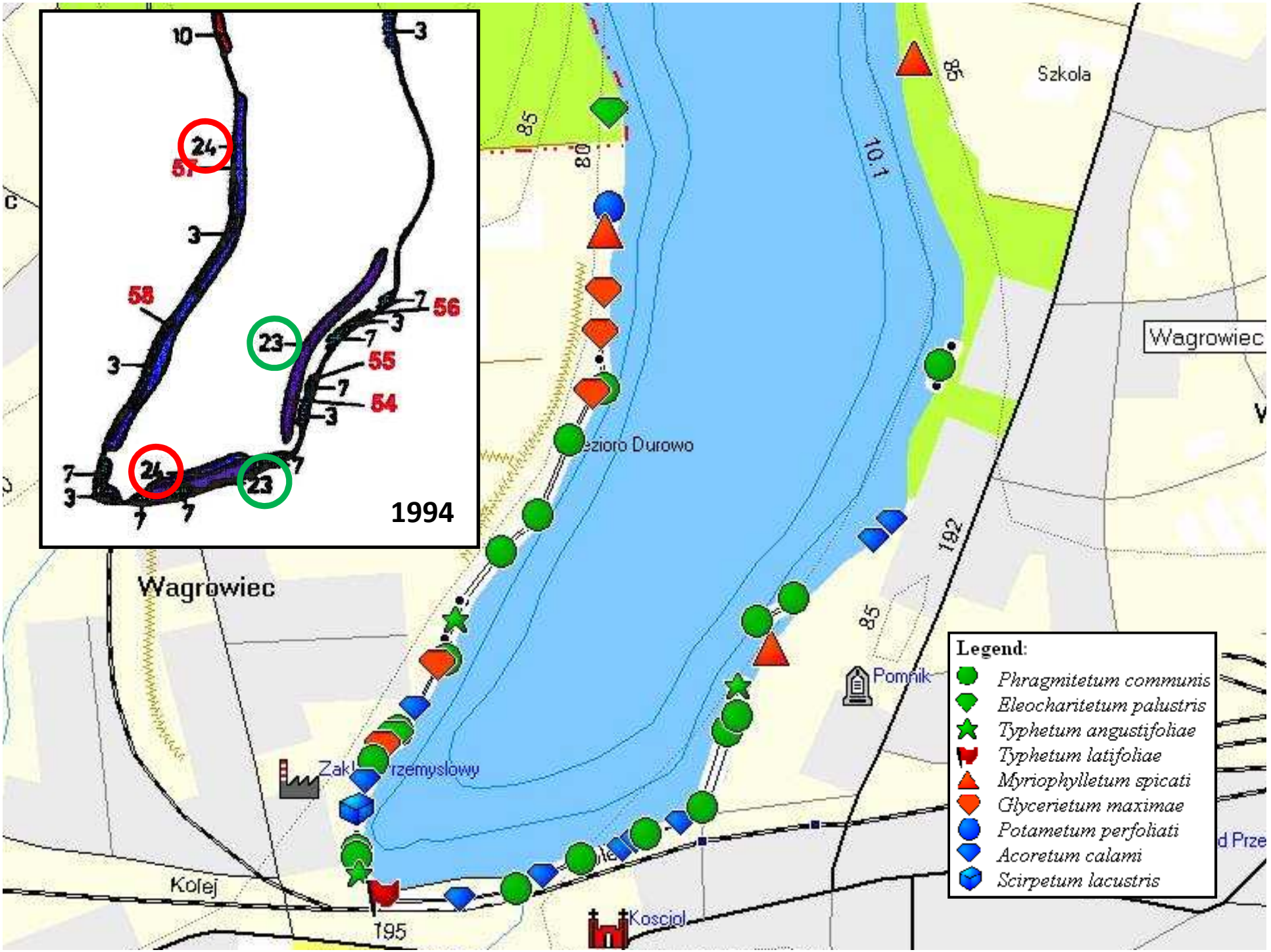


Jezioro Kobyleckie
Bartodzieje
Kolej
Miasto Wągrowiec
192
Kaliska
241
Jezioro Durowo
Kolej
Szkoła
Bobrowniki
Wagrowiec
Rgielsko
Boczniica
Wagrowiec
Kolej
195
196
Wełna
Legend
Inflow / dopływ
Outflow / odpływ


1994
Jezioro Durowo
Kolej
Kolej
Miasto Wąg
Legend:
Caricetum riparia
Phragmitetum communis
Typhetum angustifoliae
Eleocharitetum palustris
Najadetum marinae
Nymphaeeto-Nupharetum albae


1994
Jezioro Durowo
90 m
Legend:
Caricetum riparie
Phragmitetum communis
Typhetum angustifoliae
Caricetum acutiformis
Sparganietum erecti
Scirpetum lacustris
Potametum perfoliati
Nymphaeeto-Nupharetum albae


18
23
25
25
1
2
23
12
12
23
7
7
10
3
1994
Jezioro Durowo
Kolej
Legend:
Phragmitetum commins
Caricetum riparie
Eleocharitetum palustris
Typhetum angustifoliae
Myriophylletum spicati
Glycerietum maximae
Potametum perfoliati
Scirpetum lacustris
Nymphaeeto-Nupharetum albae


1994
Wagrowiec
Szkola
Wagrowiec
Jezioro Durowo
Pomnik
Kosciol
Kolej
Legend:
Phragmitetum communis
Eleocharitetum palustris
Typhetum angustifoliae
Typhetum latifoliae
Myriophylletum spicati
Glycerietum maximae
Potametum perfoliati
Acoretum calami
Scirpetum lacustris

ESMI INDEX

ESMI is an index for macrophytes that has been developed in Poland to estimate the ecological status of lakes to comply with the European Water Framework Directive

ESMI jest indeksem opracowanym w Polsce dla określenia stanu ekologicznego jezior, zgodnie z wymaganiami Ramowej Dyrektywy Wodnej

Jeziora ramienicowe glebokie/ Deep stratified lakes

Stan ekologiczy	Ecological Status	ESMI Index
Bardzo dobry	Very Good	0,680-1,000
Dobry	Good	0,340-0,679
Uniarkowany	Moderate	0,170-0,339
Slaby	Poor	0,090-0,169
Zly	Bad	<0,090

ESMI INDEX Durowskie Lake:

0,109

Poor

Differences within the lake

In the northern part of the lake:

- More submerged macrophytes
- Indicator species of good water quality: *Chara fragilis*, *Najas marina* and *Potamogeton lucens*
- Associations less fragmented and more extended (forming a belt)

MIR INDEX

MIR is an index for macrophytes that has been developed in UK and implemented in Poland to estimate the ecological status of rivers to comply with the European Water Framework Directive

MIR jest indeksem makrofitowym opracowanym w Wielkiej Brytanii i zaadoptowanym do warunków polskich
Zgodnie z wymaganiami Ramowej Dyrektywy Wodnej

Klasa stanu ekologicznego	Ecological status	Piaszczyste i organiczne
Bardzo dobry	Very good	≥ 44,5
Dobry	Good	(44,5-35,0>
Umiarkowany	Moderate	(35,0-25,4>
Słaby	Poor	(25,4-15,8>
Zły	Bad	<15,8

MIR INDEX Durowskie Lake:

Inflow/dopływ	Outflow/ odpływ
37,78	30,64
↓	↓
Good	Moderate

What does this mean?

- The water is better at the inflow of the lake than at the outflow
- The lake is negatively influenced by recreational activities in its surroundings and by nutrients that are released from the sediment
- Better regulation necessary

Vision for the future:

- Macrophytes could spread to deeper lake areas (up to 2,5 m depth or even more)
- The diversity of submerged macrophytes could increase again
- Seeds of some species are still present in the sediment (seedbank)

Importance of submerged macrophytes

- Competition with algal blooms
- Storage of nutrients
- Refuge for zooplankton (predator of phytoplankton)
- Limits resuspension of organic sediments
- Release of compounds that inhibit phytoplankton growth
- Spawning and breeding space for fish (e. g. pike)

Conclusions

- **Water quality in the lake is influenced by activities in Wagrowiec and release of nutrients from the sediment**
- **Better water quality will help to increase macrophyte cover (submerged macrophytes)**
- **Better status of submerged macrophytes will increase water quality further (positive feedback)**
- **Macrophytes respond with a time lag to changes in water quality → effects of restoration measures were not yet visible**
- **Future monitoring will show changes**

THANK YOU

FOR YOUR ATTENTION