ECOLOGICAL STATE OF LAKE DUROWSKIE

ALGAE ASSESSMENT

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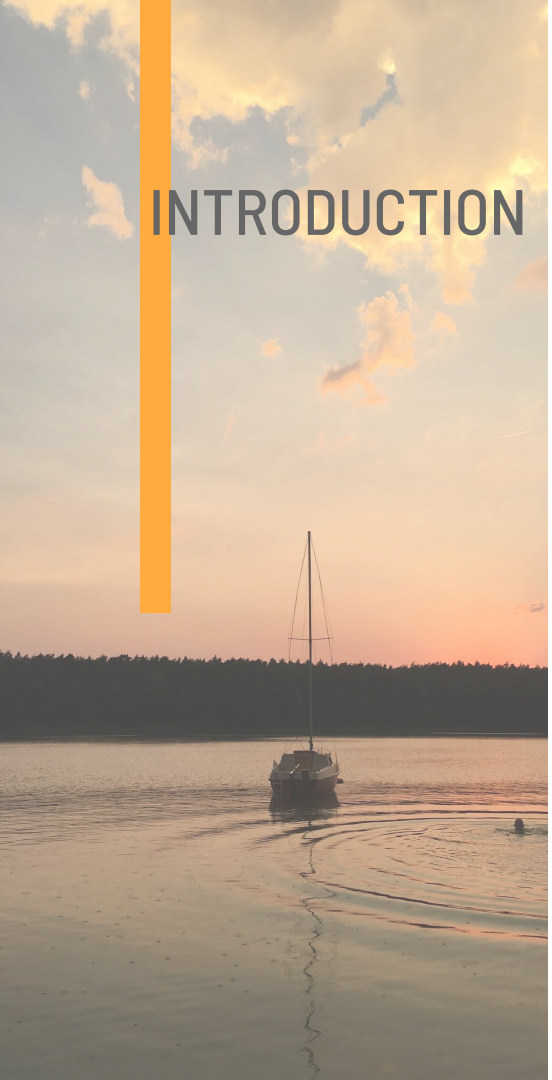


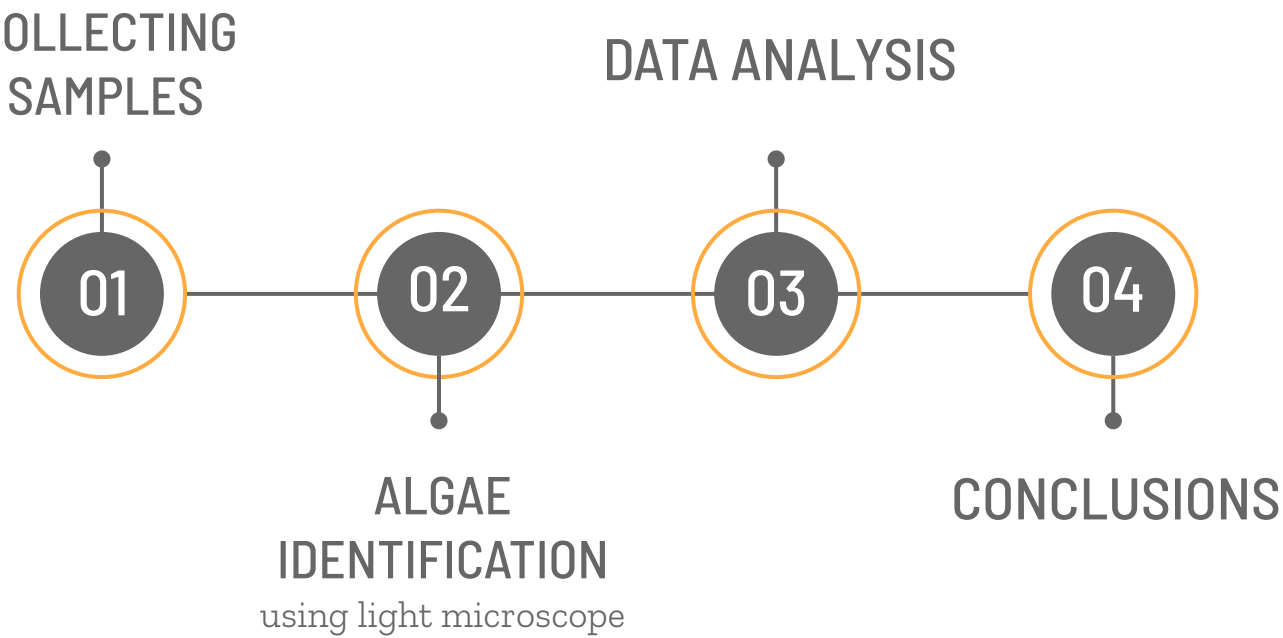
INTRODUCTION

Algae form the basis of the food web in freshwater ecosystems

They are the first organisms that react to changes in their ecosystem.

They are one of the quality elements required for the ecological status assessment of surface waters

METHODS


COLLECTING SAMPLES
01
ALGAE IDENTIFICATION
using light microscope
02
DATA ANALYSIS
03
CONCLUSIONS
04

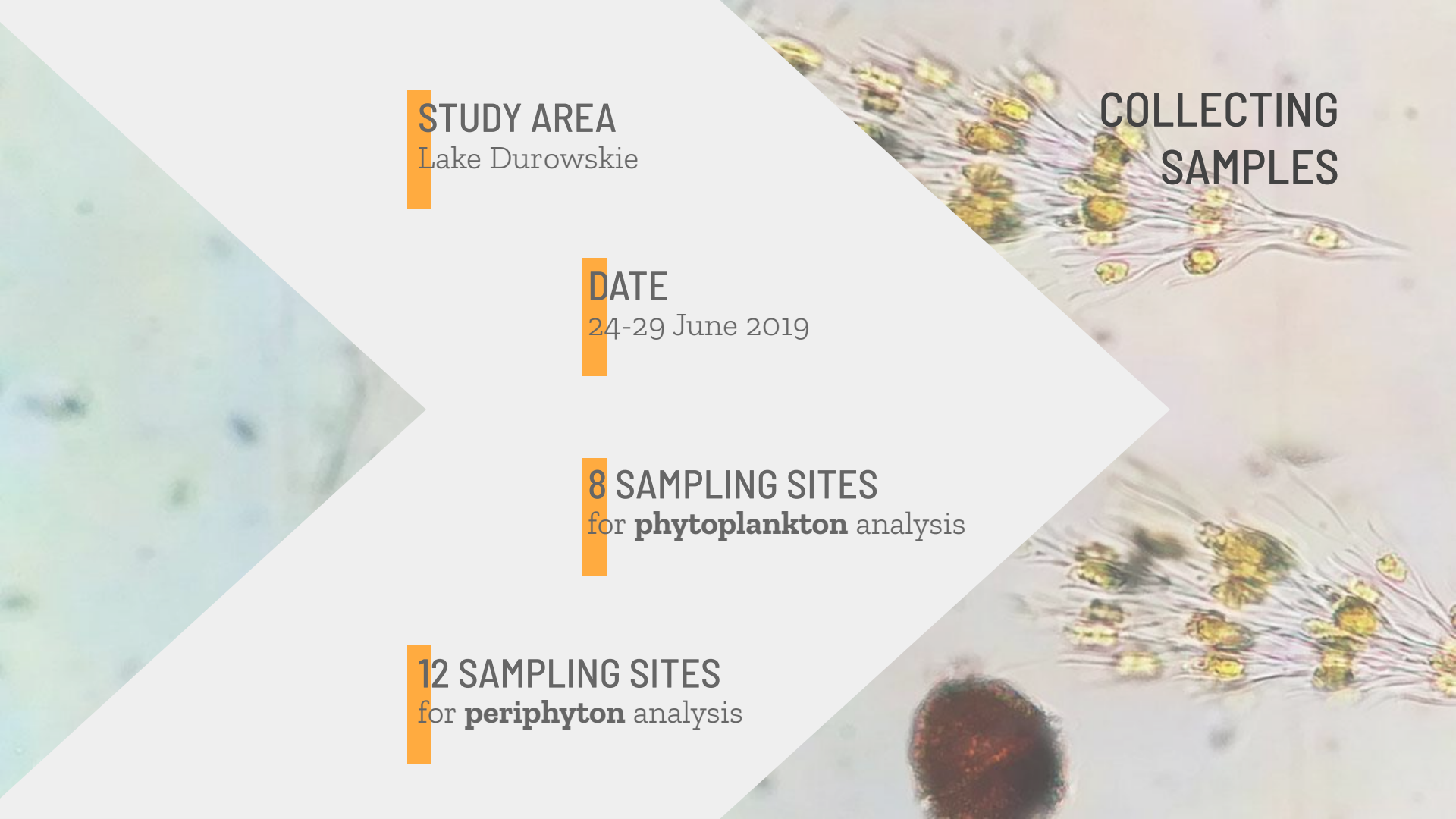
COLLECTING SAMPLES

STUDY AREA
Lake Durowskie

DATE
24-29 June 2019

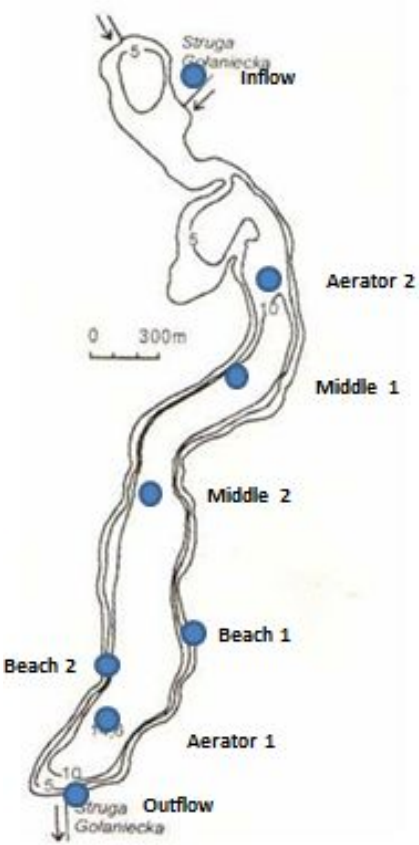
8 SAMPLING SITES
for **phytoplankton** analysis

12 SAMPLING SITES
for **periphyton** analysis

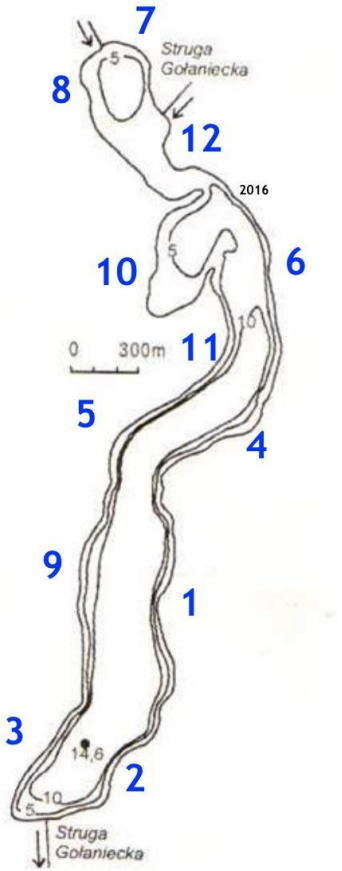


SAMPLING POINTS

Phytoplankton sampling sites



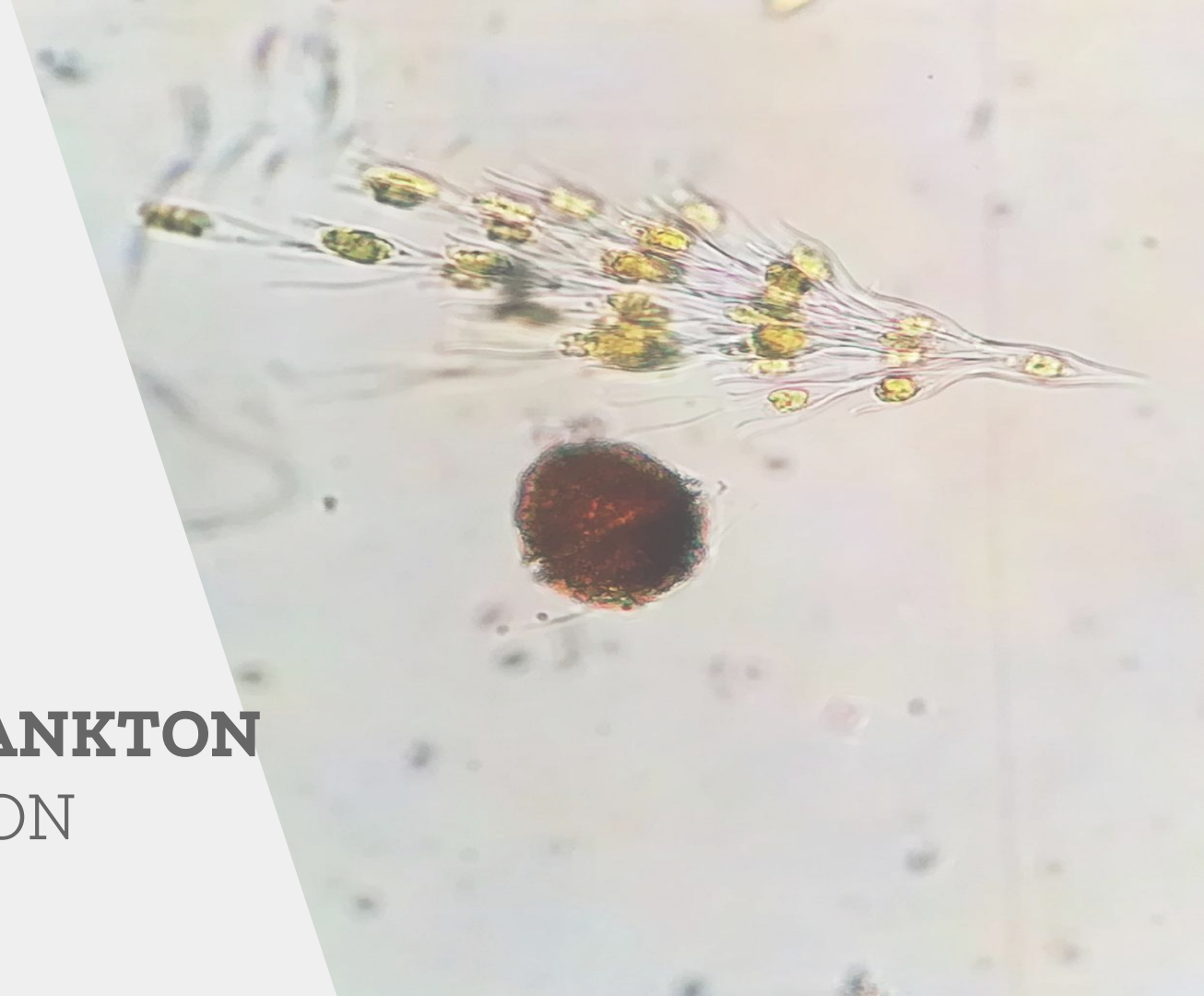
Periphyton sampling sites



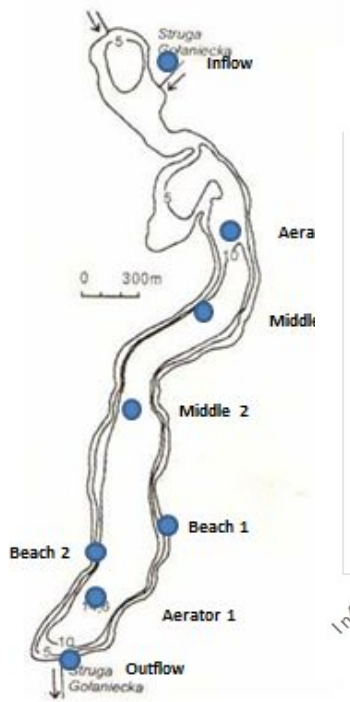
RESULTS

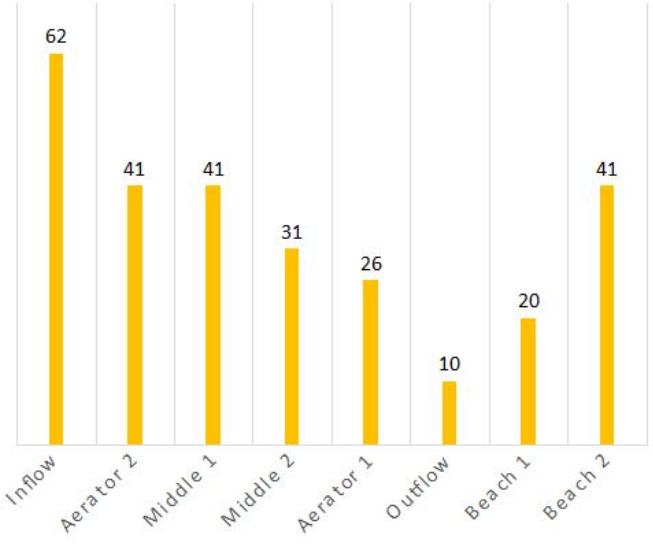
PHYTOPLANKTON

PERIPHYTON

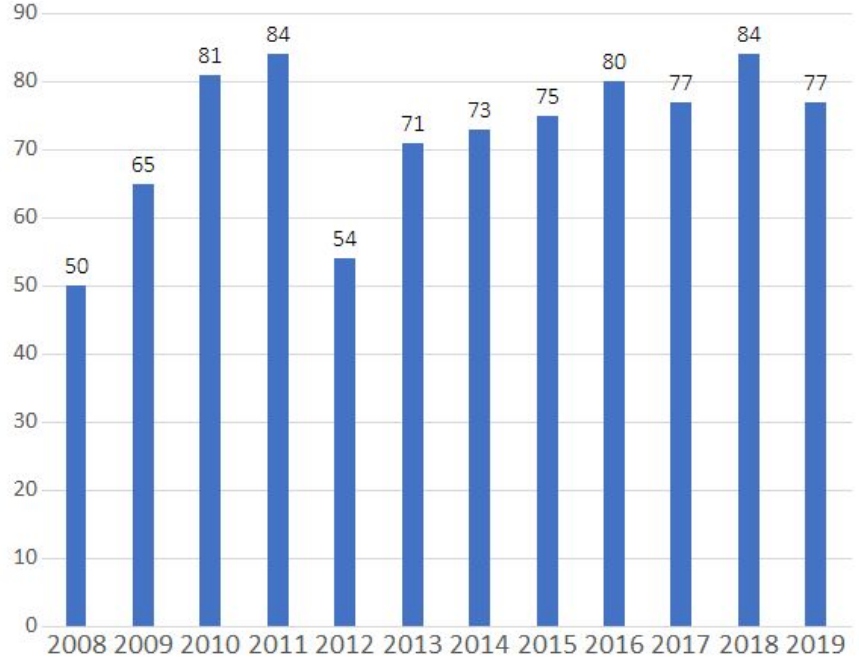


PHYTOPLANKTON NUMBER OF SPECIES





Species abundance by site (2019)

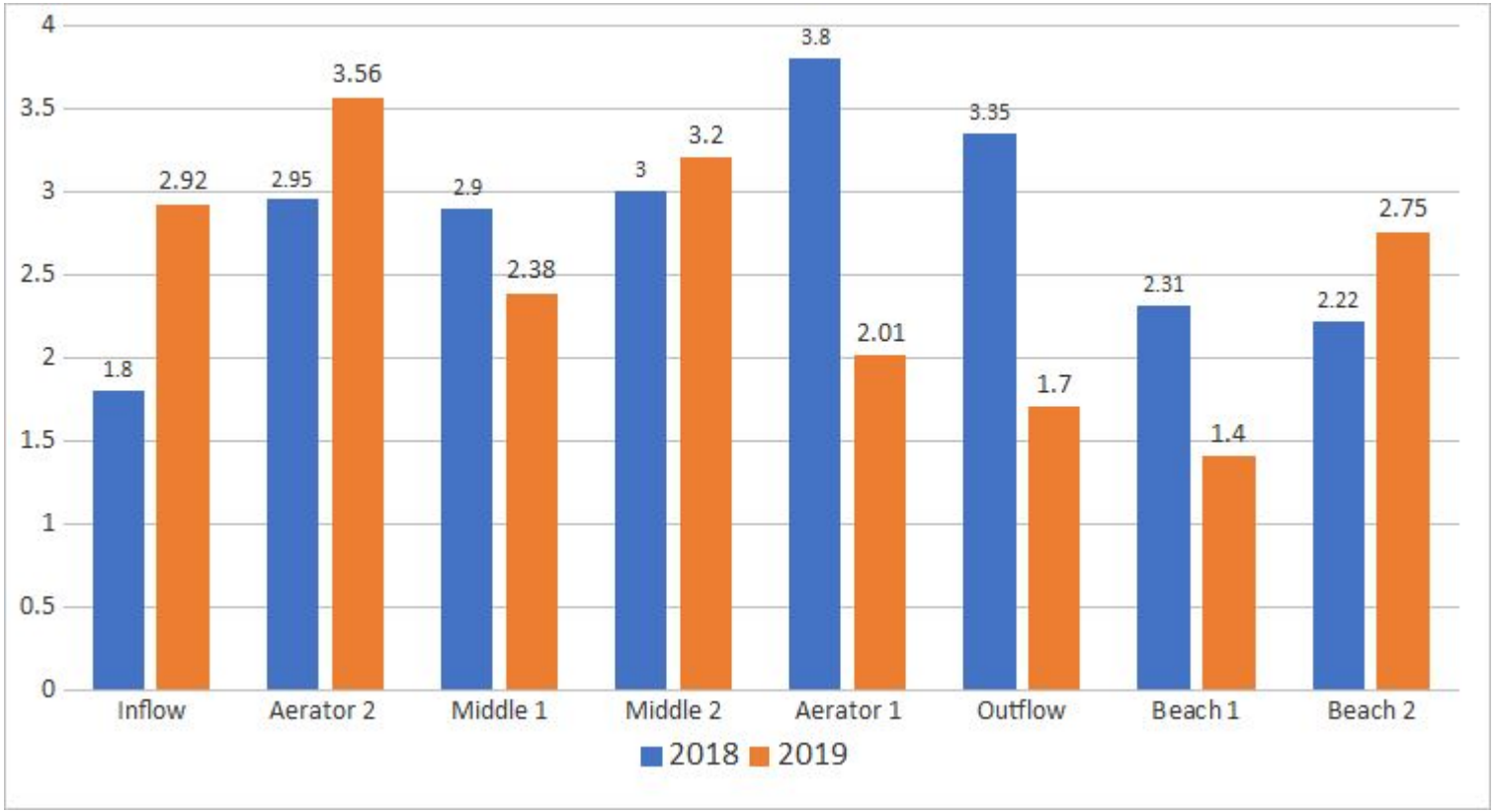


Number of species in Lake Durowskie (2008-2019)

JACCARD INDEX

YEAR	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2008	84	51	43	33	40	52	82	35	40	36	46
2009	-	48	28	20	29	35	39	13	34	31	29
2010	-	-	42	42	62	47	37	35	38	41	46
2011	-	-	-	34	58	47	50	40	38	48	42
2012	-	-	-	-	77	49	59	47	38	39	42
2013	-	-	-	-	-	52	78	45	46	45	51
2014	-	-	-	-	-	-	57	40	48	48	58
2015	-	-	-	-	-	-	-	43	47	50	57
2016	-	-	-	-	-	-	-	-	42	52	44
2017	-	-	-	-	-	-	-	-	-	52	54
2018	-	-	-	-	-	-	-	-	-	-	48

COMPARISON OF SHANNON-WEAVER INDEX IN 2018 AND 2019

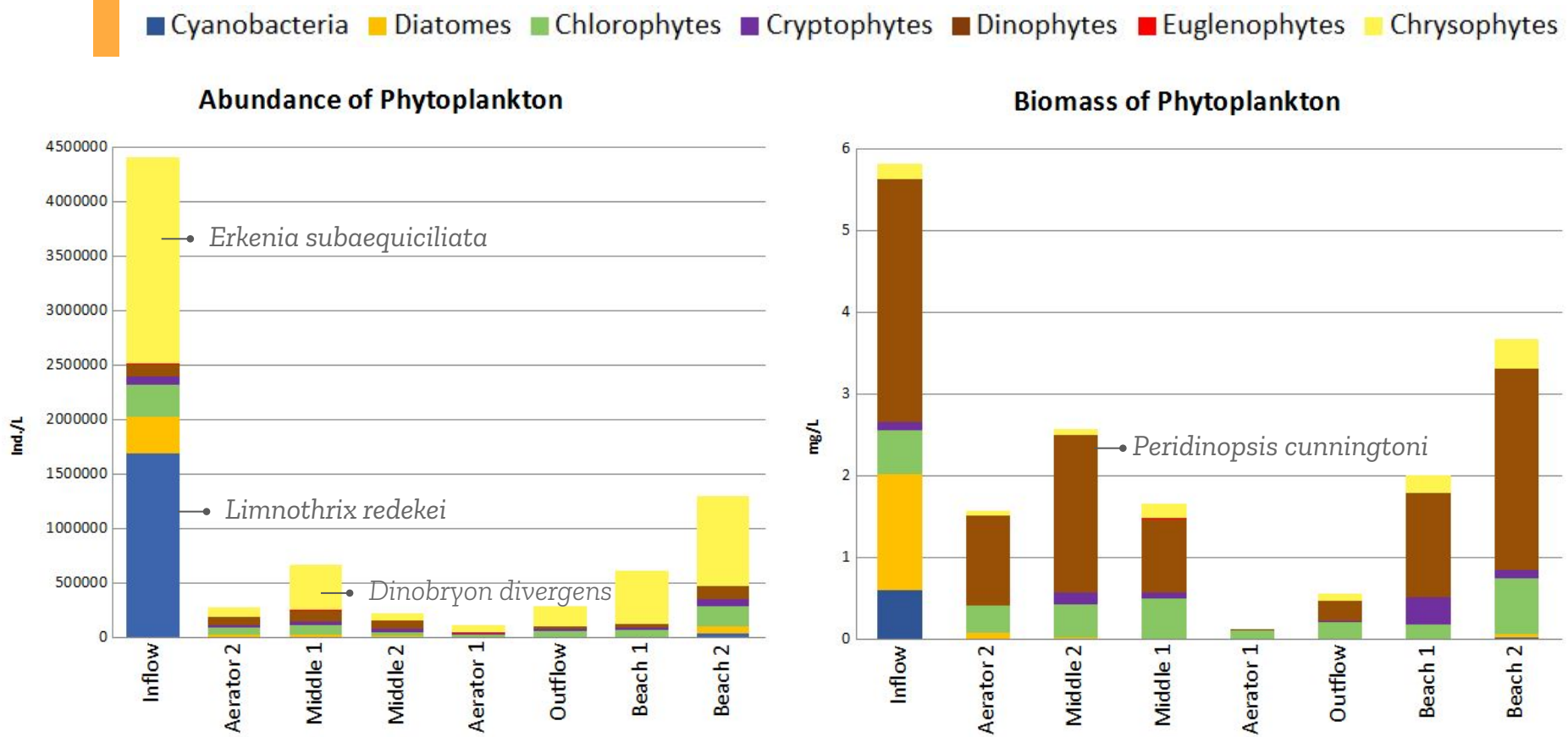


MIXED INDEX OF NYGAARD

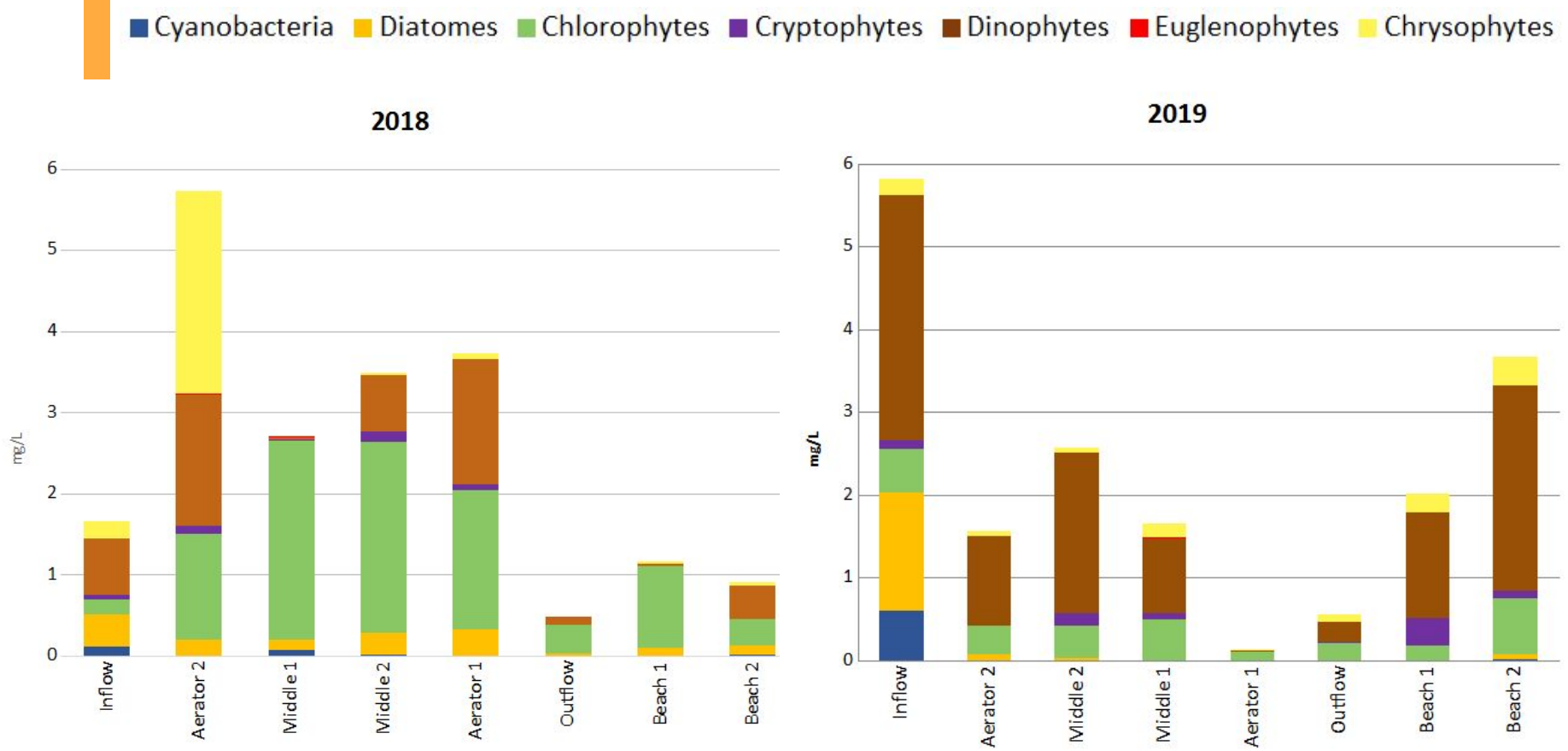
Dystrophy	0.0 – 0.2
Oligotrophy	0.2 – 1.0
Mesotrophy	1.0 – 3.0
Eutrophy	3.0 – 5.0
Hypertrophy	5.0 – 43.0

Station	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Inflow	-	1.8	17	9	19	3.8	17	7	9	7	8.7
Aerator 2	26	11.5	5	8	14	20	4.3	12	8	8	3.8
Middle 1	9	12.5	13	3	5.5	11	4.8	7.7	6	4.8	2.8
Middle 2	-	8.3	18	9	7.5	20	4	8.5	6	5	4
Beach 1	-	-	3	9	7	5	5.5	-	3	3	3
Beach 2	-	-	-	5	6	10	12	-	5	5	2.5
Areator 2	16	8.3	9	7	8	9	6.7	-	7	5	4
Outflow	-	6.5	5	-	12	8	8	14	5	4	4

PHYTOPLANKTON NUMBER OF SPECIES AND BIOMASS IN 2019



COMPARISON OF PHYTOPLANKTON BIOMASS 2018/2019

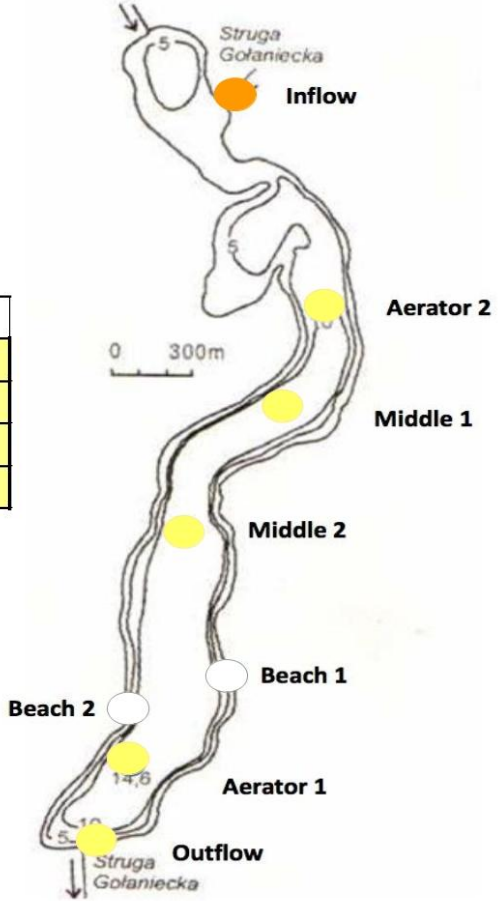


PMPL INDEX

Phytoplankton Methods for Polish Lakes

	Inflow	A2	M1	M2	A1	Outflow
2019	3.46	2.81	2.67	2.63	2.58	2.52
2018	3.32	2.8	2.79	2.78	2.61	2.63
2017	3.4	2.74	2.78	2.78	2.78	2.5
2016	3.7	2.78	2.76	2.76	2.67	2.53

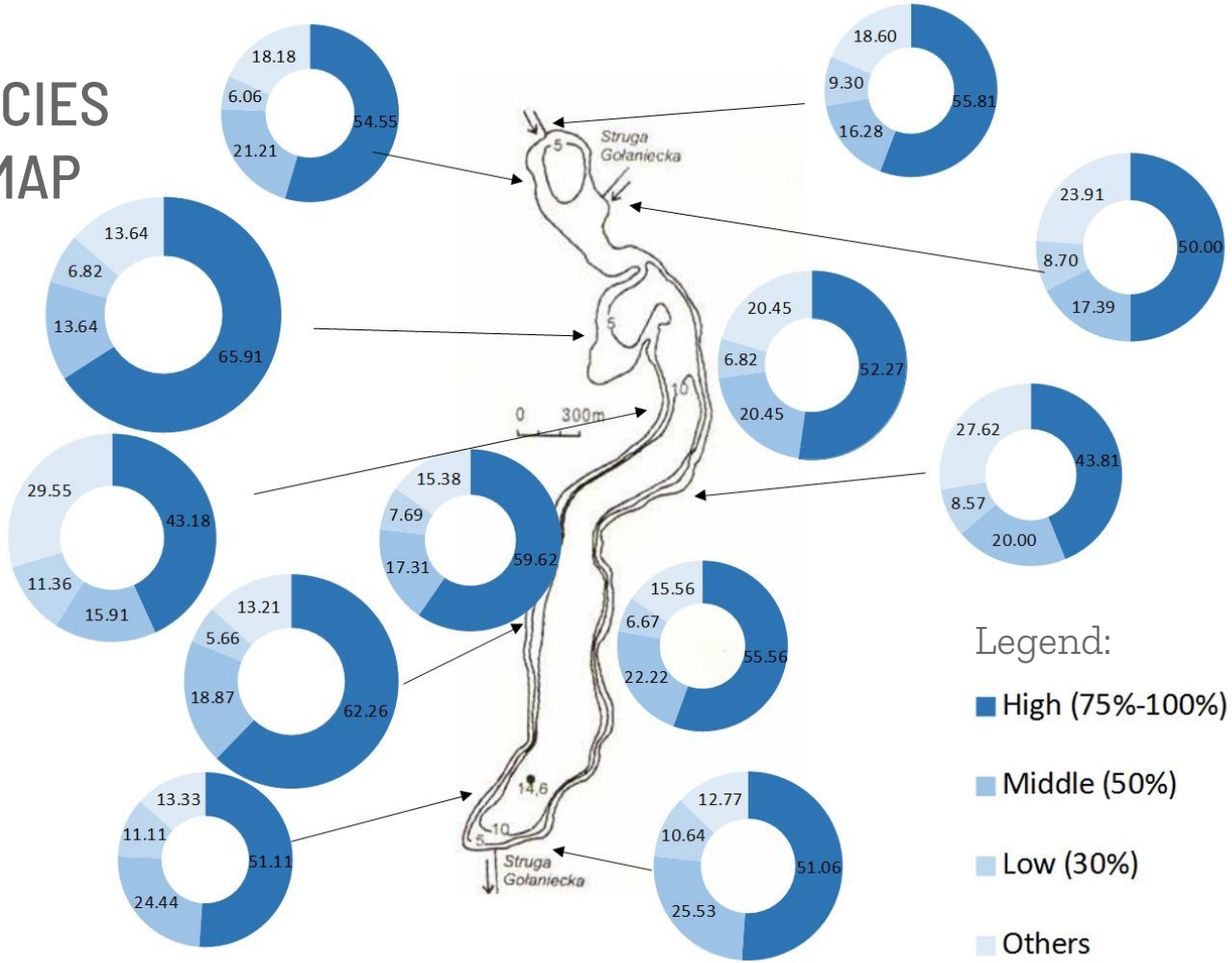
Ecological status	PMPL
Very good	0.0 – 1.0
Good	1.01 – 2.0
Moderate	2.01 – 3.0
Poor	3.01 – 4.0
Bad	4.01 – 5.0



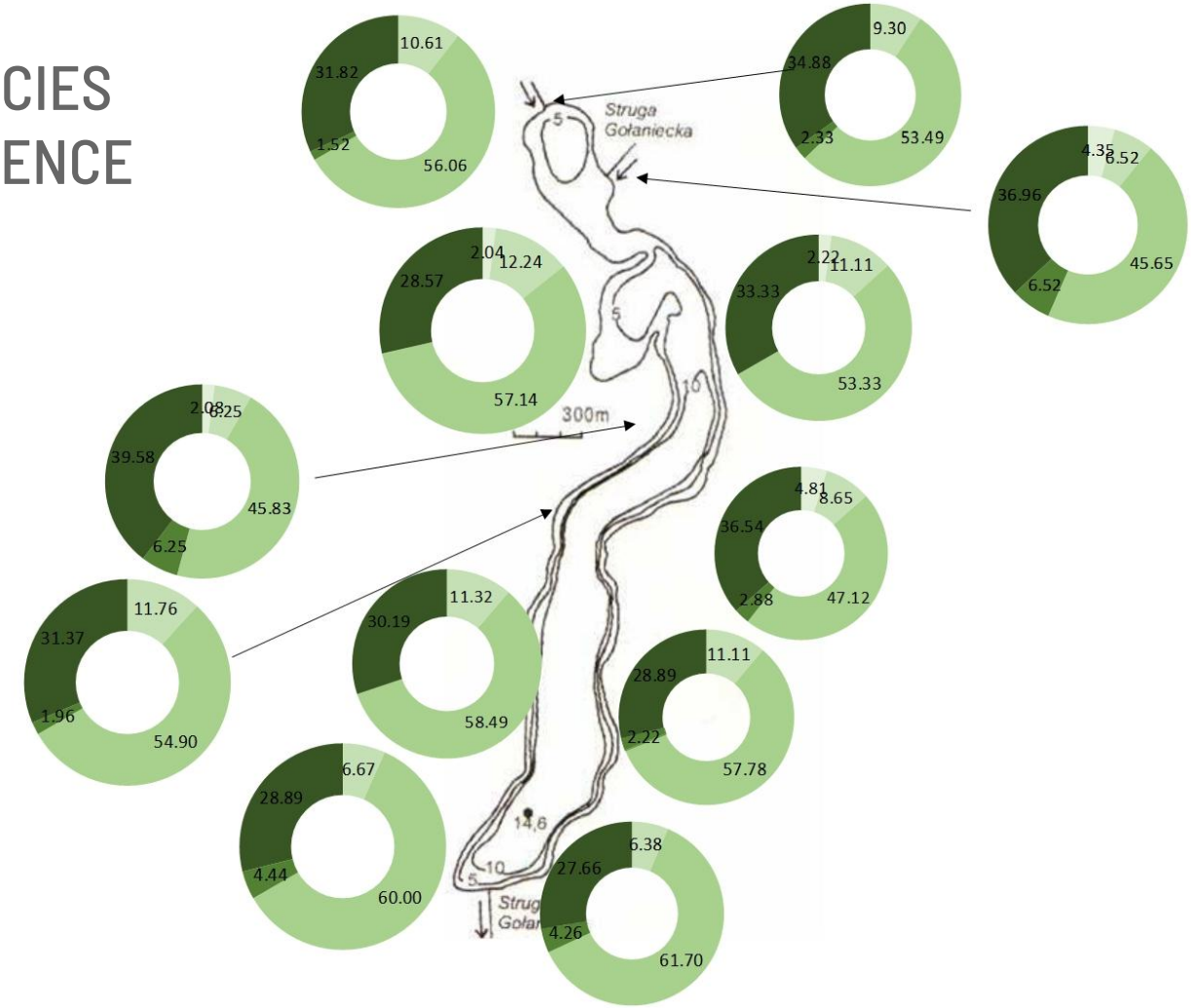
RESULTS

PHYTOPLANKTON
PERIPHYTON

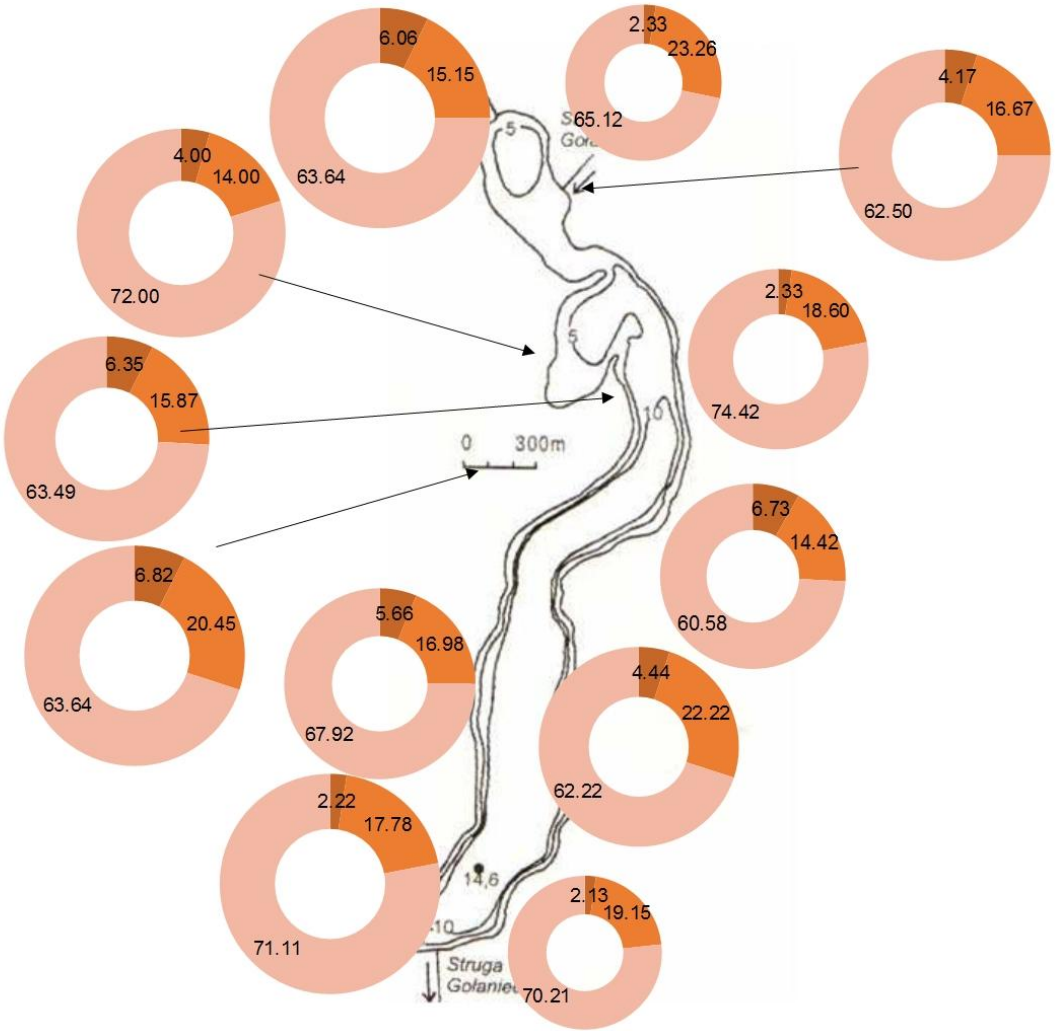
PERIPHYTON SPECIES O_2 PREFERENCE MAP



PERIPHYTON SPECIES TROPHIC PREFERENCE MAP



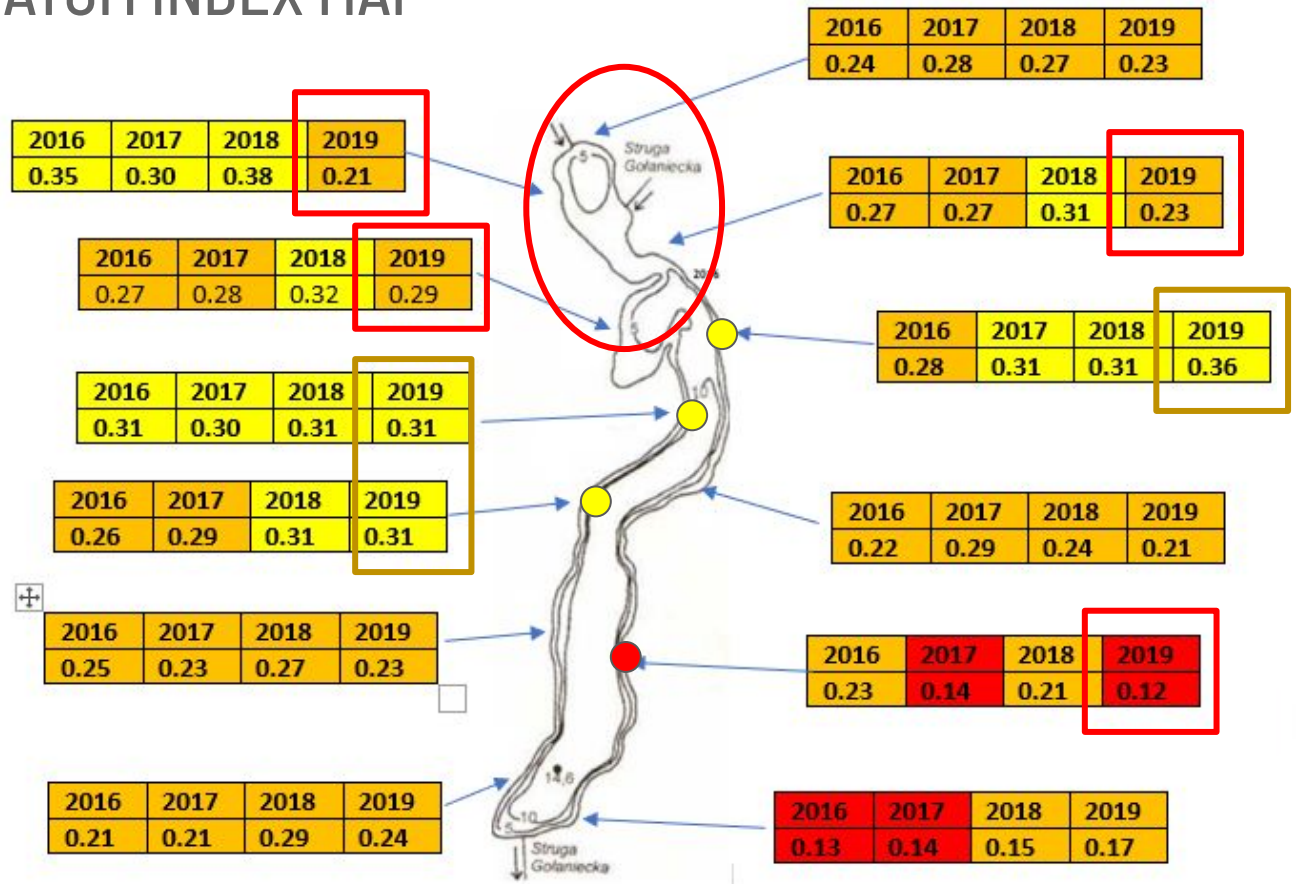
PERIPHYTON SPECIES pH PREFERENCE MAP



Legend:

- Acidophilous
- Circumneutral
- Alkaliphilous

DIATOM INDEX MAP



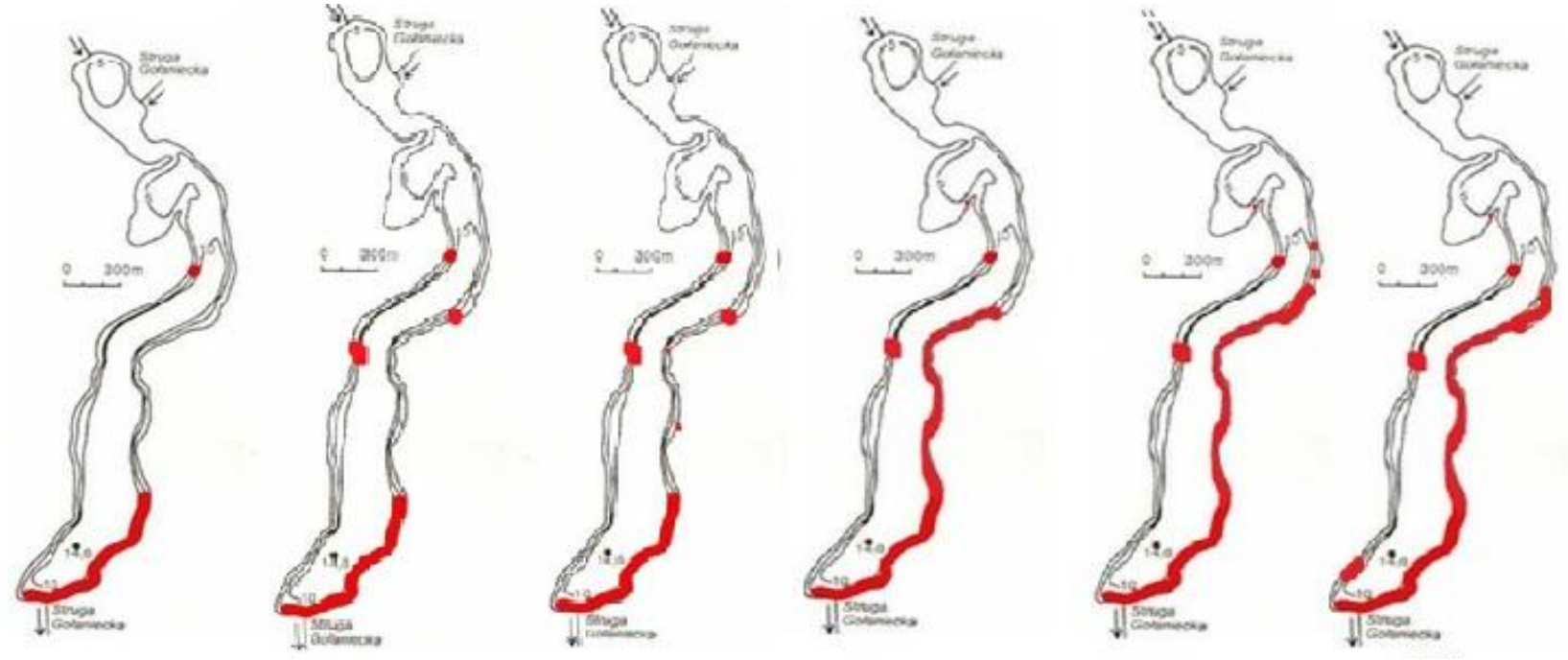
Legend:

>0,83	Very good
0,55	Good
0,30	Moderate
0,15	Poor
<0,15	Bad

RED ALGAE

Hildenbrandia rivularis
as an indicator of good
oxygenated water

MAP OF RED ALGAE DISTRIBUTION IN 2010-2019



Year: 2010 2011/12 2013-2015 2016 2017 2018/**2019**

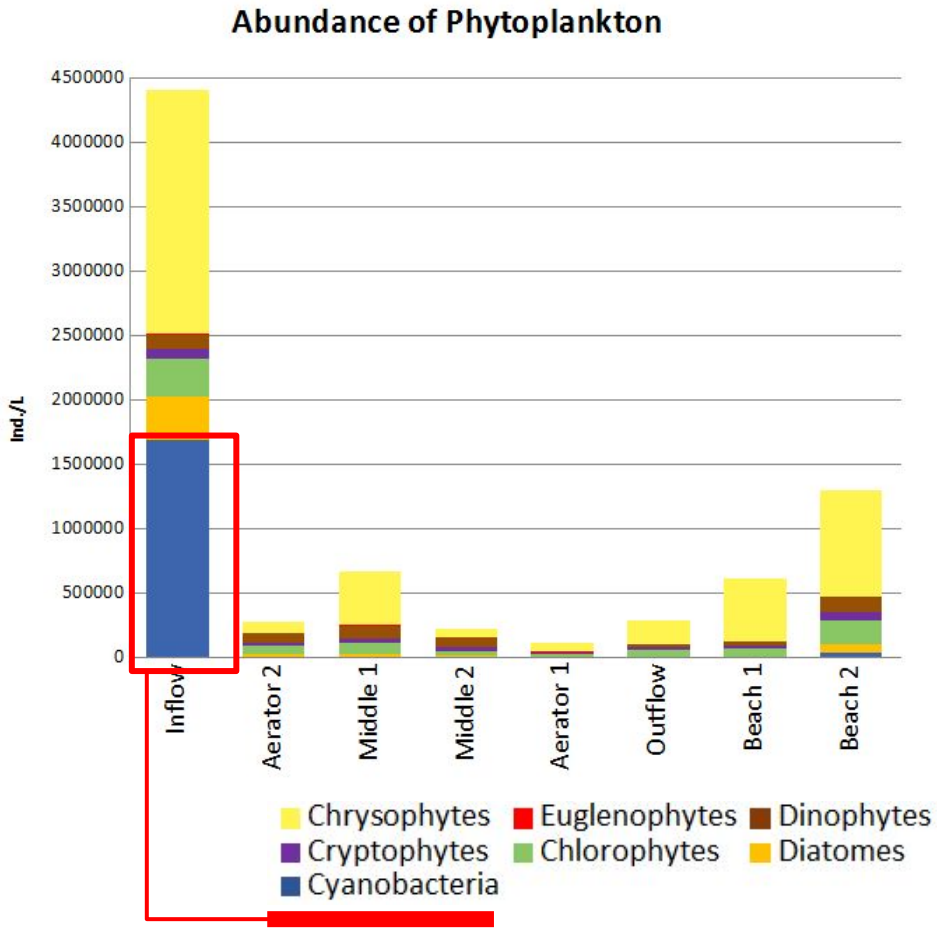
CONCLUSIONS:

- Stocking of predatory fishes in 2019 caused the dominance of large forms of phytoplankton: colonies and thick cell walls (they are not grazed by the zooplankton)
- The change in the species structure of phytoplankton is reflected in the improvement of the water trophy index (Nygaard composite factor).
- Despite unfavorable weather conditions, **there are no cyanobacteria** in the lake's waters, which indicates the effectiveness of restoration
- This year internal loading is clearly visible
- The middle part of the lake has a moderate water level. The northern part is in a worse condition, it is connected with the influence of the Gołaniecka Stream and anthropopressure associated with buildings

RECOMMENDATIONS:

- Beginning of the restoration of Lake Kobyleckie

- Otherwise, Struga Gołaniecka will constantly supply the Lake Durowskie with cyanobacteria



Thank you for your attention!

Dziękujemy za uwagę!

Дякуємо за увагу!

Grazie per l'attenzione!