

KICK-OFF MEETING, 22.5.2025.

# Exposure, biological effects and fate of microplastics in aquatic organisms under different anthropogenic impacts

PlastOrgAnoTox

Field work – Water sampling and analysis

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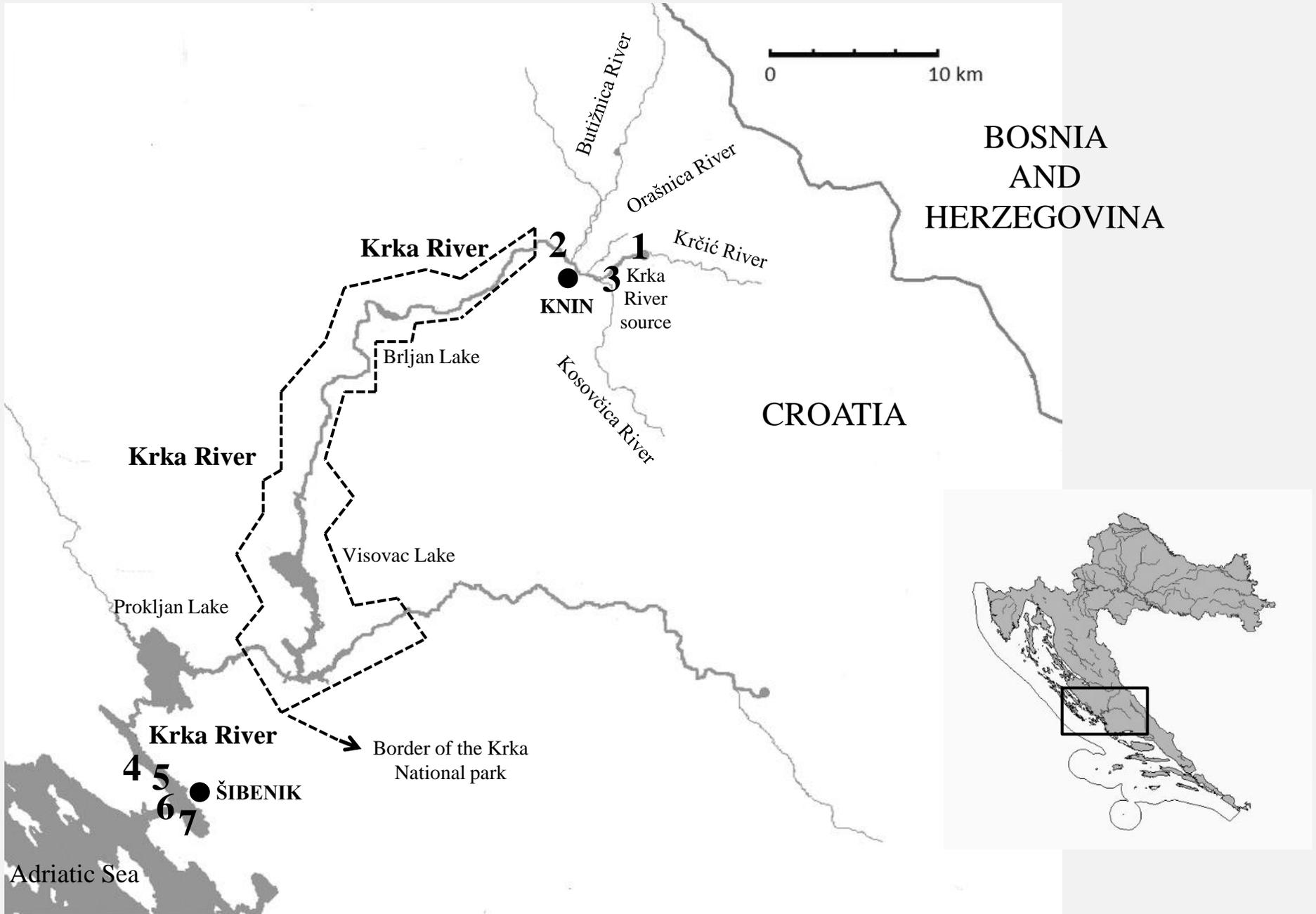
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# SAMPLIN LOCATIONS

- **1 reference location**  
- Krka River source
- **2 anthropologically impacted location near the town of Knin** – (wastewater from the municipal runoff and maybe water and sediment from from the pools nearby screw factory)
- **3 fish farm** – Krka River source
- **4 fish farm** - Krka River mouth
- **5 bivalve farm** - Krka River mouth
- **6 location near Šibenik**
- **7 location near Šibenik** – (near shore and off shore)



# SYSTEM SETUP AND OPERATION



- Set up the water pumping system ensuring the intake valve is **open** and the **discharge valve is closed**.



- Connect **pump** with the **battery**



- Only open the **discharge valve** if **water starts leaking** excessively from the sieves

Operate the pump for **1 hour and 30 minutes**.

# SIEVE DISASSEMBLY IN LABORATORY



Open the sieve from the **top side**:

- Unscrew the butterfly screws.
- Lift the two black weights.
- Remove the red sealing strap.
- Remove the top cover

# LABORATORY PREPARATION AND SAMPLE COLLECTION

- Preparing a workstation with the following items:
  - A **bucket** for collecting water during sieve rinsing.
  - **Bottles** for storing water samples.
  - A **tweezer** for picking out visible microplastic particles.
  - **Lighting** to enhance visibility during inspection.



# LABORATORY PREPARATION AND SAMPLE COLLECTION

- The sieves are stacked in descending order of mesh size:
  1.  $> 1 \text{ mm}$
  2.  $500 \mu\text{m} - 1 \text{ mm}$
  3.  $125 \mu\text{m} - 500 \mu\text{m}$
  4.  $63 \mu\text{m} - 125 \mu\text{m}$
- Removing and rinsing sieves carefully using a **water syringe** to dislodge particles
- Inspect under **the light** and **collect** the remaining particles



# LABORATORY PREPARATION AND SAMPLE COLLECTION

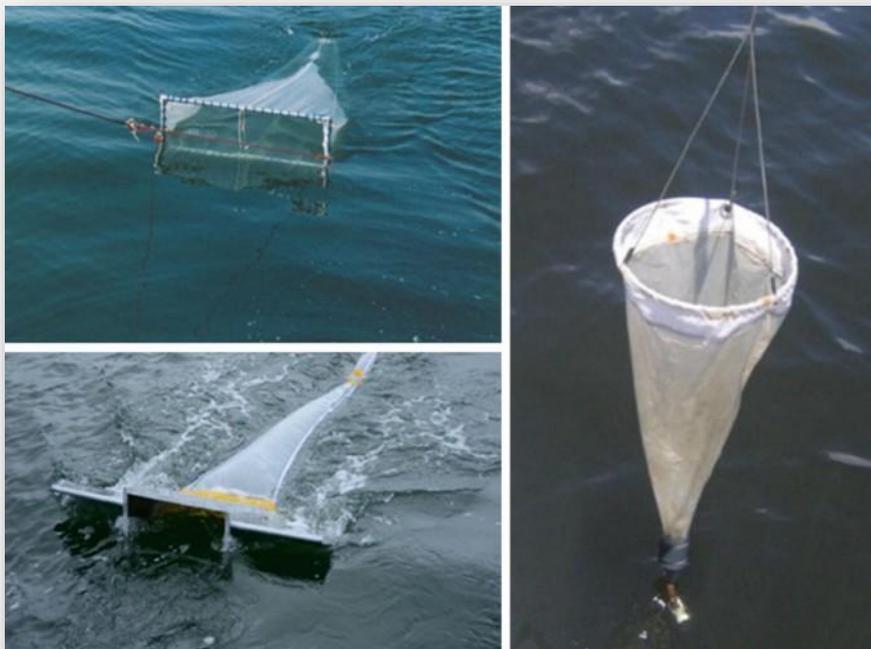


- In case of very small particles that are hard to collect – use filter paper



- In case of aquatic fauna - collect it separately for identification or further analysis

# PLANKTON NET



# PHYSICOCHEMICAL ANALYSIS OF KRKA RIVER, 2025

LOCALITY PARAMETER	Krka Fish farm	Krka Source	Krka Knin	IND DIV
Turbidity /FAU	1	12	9	38
Water temperature °C	10,3	10,8	9,9	*-
Salinity ‰	0,18	0,20	0,22	1,18
El. conductivity µScm-1	385,6	426,7	471,5	2330
TDS mg/L	192,8	213,4	235,8	1165
pH	7,86	7,38	7,81	7,50
ORP mV	-39	-12	-36	-19
Dissolved oxygen mg O <sub>2</sub> /L	10,58	10,12	10,09	7,72
Oxygen saturation O <sub>2</sub> %	99,7	93,6	91,9	*74,6
CO <sub>2</sub> mg/L	3,21	2,01	4,47	5,24
KPK/ Mn mg O <sub>2</sub> /L	1,72	3,48	5,11	21,3
Nitrites mg N/L	0,003	0,011	0,004	0,098
Nitrates mg N/L	0,01	0,10	0,12	1,19
Ammonium mg N/L	0,08	0,14	0,19	9,31
Total nitrogen mg N/L	0,09	1,17	2,23	11,7
Total phosphorus mg P/L	0,016	0,014	0,020	0,27
m- alkalinity KT°dH	3,58	3,21	3,18	0,23
UT°dH	10,02	8,98	8,90	0,64
	12,96	11,86	11,72	4,1

# PHYSICOCHEMICAL ANALYSIS OF ŠIBENIK RIVER AREA, 2025

LOCALITY	AM3	AM4	AM6	AM7
PARAMETER				
Turbidity /FAU	23	10	9	14
Water temperature °C	14,9	15,2	11,9	13,2
Salinity ‰	21,48	28,68	6,58	8,15
El. conductivity µScm-1	35120	28680	11200	14210
TDS mg/L	17560	22440	5600	7107
pH	8,16	8,18	8,18	8,17
ORP mV	-57	-58	-57	-57
Dissolved oxygen mg O <sub>2</sub> /L	10,50	9,99	10,73	10,64
Oxygen saturation O <sub>2</sub> %	102,9	9,28	98,2	100,4
CO <sub>2</sub> mg/L	9,28	8,96	1,34	1,19
KPK/ Mn mg O <sub>2</sub> /L	10,3	9,19	5,14	4,72
Nitrites mg N/L	<0,001	0,001	0,003	0,001
Nitrates mg N/L	<0,01	0,05	0,03	<0,01
Ammonium mg N/L	0,13	0,06	0,08	0,19
Total nitrogen mg N/L	1,6	0,1	1,4	2,2
Total phosphorus mg P/L	0,13	0,11	0,12	0,07

# METALS

- Measured metals for Krka and Šibenik locations:
  - Sc, Ge, Al, Li, Sr, Tb, In, Fe, Y, Mn, Na, Mg, Ca, Zn



# FUTURE ACTIVITIES

- Measuring microplastics particles in sampled water with Shimadzu FTIR



THANK YOU FOR YOUR ATTENTION

