



Interreg
Slovakia-Austria
European Regional Development Fund



PlasticFree
Danube



EUROPEAN UNION

PlasticFreeDanube

SAMPLING PROTOCOL

For the assessment of plastic pollution along rivers

How the plastic waste collection succeeds...

- The present protocol helps us to determine where plastic waste related to rivers is mainly transported and where a particularly large number of plastics accumulates.
- Please **read this protocol at the beginning**. Some points can be filled in immediately, other questions can only be answered at the end of the collection.
- If you are collecting with a group and you split up, please use a **separate protocol for each subgroup**.
- If you are moving along a river with rapidly changing bank structures within short distances, it is easier to fill in an additional **protocol for each section**.
- In some cases (e.g. large rivers with wide river banks), it is advisable to divide the collection area in sub areas and agree which subgroup will “clean” which terrain strip in advance (e.g. one group will march along the gravel bank near the water, another group within the overgrown zone).
- Finally, it is important to **assign your collected bags to the respective group and cleaned section by labelling or clearly marking** them accordingly.

1. General Information

1.1. Information about collection

Name of river/creek, you collect:

Name of the "cleaned" area:

Date (d/m/y): Time: start: end: duration:

Nearest town / city

Choose one of the following three options to indicate the start and end of the collection area:

1) GPS-coordinates: start end

Further information about GPS recording (coordinate system, projection, device, etc.):

2) River kilometer: start end

3) Other recording:

Sampled width of the area (e.g. 10m to water; 20m wide strip in alluvial forest / wetland):

Collection point/area is located orographically (in flow direction): left right

Date of the last cleaning / collection activity: (d/m/y)

Name of organisation / association that collects:

Number of persons of your (sub)group:

How many garbage bags* were filled with plastic waste in your (sub)group?

Number	Volume of bags in litre	Filling level in percent (e.g. half full)

***IMPORTANT for more than one group: try to make your garbage bags assignable to your collection protocol, e.g. by labelling, colour marking, etc.**

Which plastic wastes were mainly (number of pieces) collected (e.g. *beverage bottles, food packaging, films, bags, wet wipes, cotton swabs, cigarettes, etc.*)?

What other waste did you find (e.g. *metal cans, glass bottles etc.*)?

How was the weather during the collection?

fair weather rain snow wind fog

1.2. Sampling area

Where did you mainly collect? Choose one of the three following options:

<p>(1) <input type="checkbox"/> riverbank*</p> <p>For collection on the riverbank, please answer points 2.1 to 2.6 below. *to the water</p>	<p>(2) <input type="checkbox"/> hinterland</p> <p>vegetation at the place of collection in the surrounding hinterland (tick):</p> <p><input type="radio"/> grassland, pasture <input type="radio"/> bush <input type="radio"/> (alluvial)forest <input type="radio"/> agricultural land <input type="radio"/> other: _____</p> <p>If known, continue with point 2, otherwise point 3</p>	<p>(3) <input type="checkbox"/> riverbank and hinterland</p> <p>For collection on riverbank and hinterland, please answer all the following points</p>
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<p>Does the vegetation impede the collection? <input type="checkbox"/> no <input type="checkbox"/> yes If yes, how far?</p>	<p><i>For instance: due high vegetation (densely overgrown area, high grass) plastic waste is hardly visible; inaccessible places, because under water; etc.</i></p>
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2. Characterisation of river morphology & surrounding area

2.1. River width

- trickle, rivulet, brook (width 1-3 m)
- creek (width 3-10 m)
- river (width >10 m, flows into stream)
- stream (width >10 m, flows into sea)

2.2. Flow velocity

Estimation of the flow velocity by

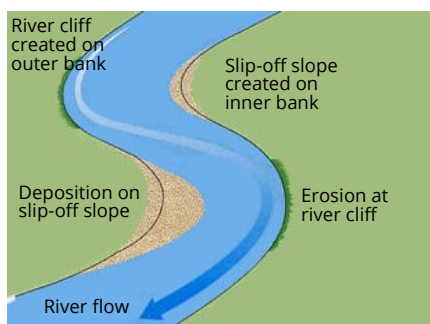
- (1) walking a distance of 10m along the shore and marking start (S) and end (E),
- (2) a stick (or similar floating natural material) is thrown into the river at (S)
- (3) the time from start to end point is recorded,
- (4) the procedure is repeated three times and
- (5) is then inserted into the following formula to calculate the average flow velocity:

$$\text{Average Time} = \frac{\text{measure 1: [sec]} + \text{measure 2: [sec]} + \text{measure 3: [sec]}}{3} = \text{sec}$$

$$\text{Flow velocity} = \frac{10 \text{ m}}{\text{sec}} = \boxed{} \text{ m/s}$$

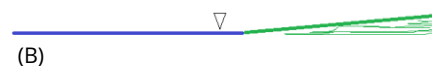
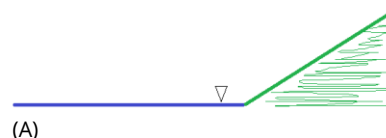
- Flow velocity could not be determined because:

2.3. Description of collection area at the river



- Location:
- straight river section
 - outer bank /cut bank
 - inner bank / slip off slope

- Type of shore:
- rather steep bank (A)
 - rather shallow bank (B)

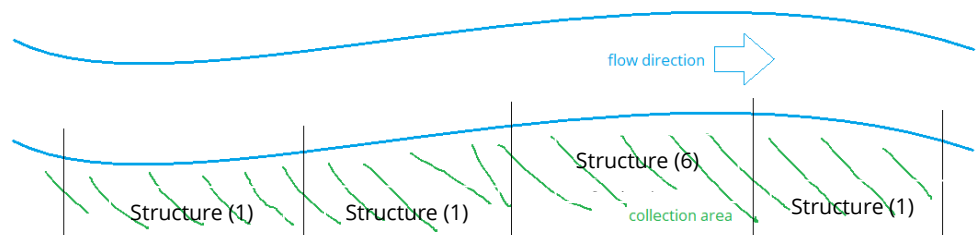


2.4. Bank structure und protection

Please tick the main structure (natural or obstructed) along the collection route. If the structure changes, you can also select several shapes and enter them graphically below (*see example*).

Description	Picture	Description	Picture
(1) <input type="checkbox"/> natural bank (e.g. gravel and sandbank)		(2) <input type="checkbox"/> natural rock, "no bank protection"	
(3) <input type="checkbox"/> Concrete dams, sheet piling, etc. (smooth bank reinforcement)		(4) <input type="checkbox"/> rip-rap revetment (rather smooth)	
(5) <input type="checkbox"/> ecological bank protection (e.g. using wooden stakes)		(6) <input type="checkbox"/> rough array of stones (larger blocks)	








Example:



Sketch

2.5. Description of riparian vegetation





Please tick the mainly occurring riparian vegetation along the collected route. In case of changing vegetation, choose several and enter them graphically below (*see example above*).

Vegetation	Picture	Vegetation	Picture
(1) <input type="checkbox"/> "green" slope, embankment		(2) <input type="checkbox"/> perennials, bushes, herb corridor, grassy / weedy vegetation	
(3) <input type="checkbox"/> reed bank		(4) <input type="checkbox"/> (alluvial) forest (also with undergrowth)	
(5) <input type="checkbox"/> gallery forest		(6) <input type="checkbox"/> none (due to erosion)	
(7) <input type="checkbox"/> none (due to bank protection)		(8) <input type="checkbox"/> other	

Sketch

2.6. Other structures

Which of the following hydraulic engineering structures did you notice along the collection route?
You can then record these elements graphically.

Description	Existing?	Picture
transverse structures like groynes or flow-directing longitudinal structure like guiding wall; other flow-affecting structures?	<input type="checkbox"/> yes <input type="checkbox"/> no	
damming transverse structures like weirs, ramps etc.	<input type="checkbox"/> yes <input type="checkbox"/> no	
hydraulic channel narrowing	<input type="checkbox"/> yes <input type="checkbox"/> no	
woody debris	<input type="checkbox"/> yes <input type="checkbox"/> no	
diversion (e.g. hydro power plant) /tributary	<input type="checkbox"/> yes <input type="checkbox"/> no	Which one?

Sketch

3. Characterisation of the surrounding area

3.1. Description of land use

What is the predominant type of land use in the immediate surroundings of the collection area? Describe only the cleaned bank side and indicate how the areas of use listed below are proportionally present (e.g. 30% roads, 70% farmland = 100% → please note that the sum is 100%).

<input type="checkbox"/>	natural landscape or nature reserve		___%
<input type="checkbox"/>	agricultural land	<input type="radio"/> farm-, cropland <input type="radio"/> grassland, pastures, meadow <input type="radio"/> (alluvial) forest, flood plain <input type="radio"/> vineyards	___% ___% ___% ___%
<input type="checkbox"/>	settlement area	<input type="radio"/> urban settlement area <input type="radio"/> rural settlement area <input type="radio"/> Industrial area (description if known): _____ _____ <input type="radio"/> Municipal facilities <i>o waste collection center, recycling yard</i> <i>o sewage treatment plant</i> <i>o landfill</i> <i>o other:</i> <input type="radio"/> sport-, leisure and recreation area (e.g. bathing area, picnic, dog area, playgrounds; description if known): _____ _____	___% ___% ___% ___% ___% ___% ___%
<input type="checkbox"/>	traffic area	<input type="radio"/> roads <input type="radio"/> rails <input type="radio"/> cycle paths <input type="radio"/> hiking trails <input type="radio"/> parking lots	___% ___% ___% ___% ___%
<input type="checkbox"/>	other	<input type="radio"/> Flood protection (dam) <input type="radio"/> Flooding area	___% ___%

3.2. Other characteristics

Did you find any accumulation points (increased quantities of plastic waste at specific points) along your collection route? yes no

If yes, how many have you seen?

4. Comments

If you noticed any noteworthy circumstances, you can note it here:

5. Graphic description

You can also draw the observed noteworthy circumstances (like pollution hotspots) along your collection route instead.

Sketch

