

ACTION NAME	D3 Evolution of the river habitats in the restored stretches
SCZ in which the action is undertaken	Leitzaran river
LINK WITH NATURA 2000	This follow up action is necessary to: <ul style="list-style-type: none"> - Determine the effectiveness of the envisaged preservation measures. - Assess the need to modify the execution of pending actions or to adopt corrective measures due to their possible negative effect on habitats and species, or to strengthen scope, intensity, and positive impacts. - Establish the spatial (stretch affected) and temporal scope (point of balance or slowing of changes) of the mentioned actions, as well as their repercussion on the availability of suitable conditions for habitats and species in the SCZ, in coordination with other follow-up actions.
Key Elements of the promoted SCZ	These effects and processes relate: <ul style="list-style-type: none"> - Directly to the key elements “Alder and poplar trees COD EU 91E0*”, Ecological River Corridor "<i>Parachondrostoma miegii</i> and the Fish Community in general” of the SCZ Management Plan. - Potential benefit to the species of community interest Atlantic salmon (<i>Salmo salar</i>), whose movements from the Cantabrian sea up to the convergence of the Leitzaran with the Oria have been documented (radio-monitoring in 2008), with an already implemented reintroduction plan.
PLACE OF ACTION AND MUNICIPALS:	SCZ Leitzaran river
Date	2016 - 2020
Budget	€60,000
Related project actions (follow-up)	This follow-up action focuses on preservation actions on the Leitzaran, which are expected to increase the change capacity of the river eco-systems, considering its size and the characteristics of the receiving medium: "C1 Ubaran", "C2 Truchas Erreka", "C3 Inturia", "C4 Oioki" and "C5 Restoration of the channel (wooden structures)".
Description of the action - OBJECTIVES	The aim of this follow-up action is to assess the evolution of river habitats along the stretches foreseen to be affected by the project actions.
Description of the action - BACKGROUND	Some of the proposed preservation actions seek to restore the natural processes of the river, which is why it is hoped that relevant changes will take place in the formation of the channel (succession and relative abundance of rapids, pools, tables, etc.), availability of habitats, their structure and state of preservation. Partners have recent experience in the Leitzaran and in other fields, both in carrying out actions that lead to these changes (partial demolition of the Inturia dam and other smaller obstacles), as well as in the follow-up of these changes. <p>In previous experiences the evolution of the river habitats has been documented. Furthermore conclusions have been drawn regarding the scope and speed of change, which have been extremely useful when designing other restoration interventions such as the foreseen actions. The results of these follow-up actions are particularly useful in determining the effects of the measures on the scope of the action and its benefits on habitats and river habitats.</p>

Description of the action - ENVISAGED ACTIONS/DESCRIPTION OF FOLLOW UP

Follow-up of the river habitats will be performed using characterisation **techniques**, typically used in river ecology, based on setting sampling stations available that monitor the spatial distribution of the conservation actions, in which data is taken from the different indicators using direct measurements, macro-invertebrate sample, electric fishing, etc.

The indicators to be used are divided into four characterisation sections:

- Characterisation of the **river meso-habitat**. It is performed using a linear transect along the river channel, distinguishing the different zones or typology depending on their use by fish species in the different life-cycle phases.
- **Biological quality** (benthic macro-invertebrates). This is performed based on the methodology used in the Basque Country Autonomous Community Ecological State of Rivers Network (Gartzia de Bikuña et al. 2008), which is based on the guidelines enforced by the AQEM methodology proposed (AQEM Consortium, 2002) and which develops an integral ecological quality assessment system of European streams and rivers using benthic macro-invertebrates.

It will proceed to stratified and semi-quantitative multi-habitat samples, proportional to the representative nature of each habitat. Diverse indexes will be created, used widely for the diversity of the benthic community.

- **Fish species** (inventory). This characterisation is performed based on the methodology used in the Study of Fish Species in Gipuzkoan Rivers, carried out annually by the DFG with the aim of implementing uninterrupted follow-up of the state of fish species in the rivers of Gipuzkoa. Once the sample has been performed using electric fishing and capture of the fish, which are kept alive in vivariums in the river with water circulation, a small field-work laboratory will be assembled, in which biometric data will be taken and the species identified.
- **River and riparian habitats**. The habitats are identified and bordered off during the fieldworks, along stretches identified as immediately affected (due to their proximity to the action zones), to the scale of 1:2,500, which will enable the precise localisation and quantification of the characteristics and distribution of these habitats before demolition, as well as observing its evolution over time.

With regards to the **seasonal distribution** of the follow-up, the plan is based on a comparative scheme between the initial state, or that prior to interventions, and the final state, or after each one of them or after their phases.

JUSTIFICATION What are the desired results? - ENVISAGED RESULTS

- Discover the effect of the actions on the river habitats in the SCZ Leitzaran river.
- Obtain reports about the initial and final condition (project deliverables).

