LIFE Streams: transfer in a Spanish Special Area of Conservation (N2000)

Proposers: Forestas

Forestas crew working on the LIFE Stream project (Paolo Casula, Francesco Curreli)

Contact: Generalitat de Catalunya

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Objective:

The experience gained during the LIFE Streams project, described in the Mediterranean brown trout (*Salmo cetti*) National Guidelines, will be transferred for the management of Spanish brown trout (*Salmo trutta*) populations of conservation concern in the Natura 2000 network, with focus on non-invasive methods for population and habitat monitoring.

Duration: 4 days of field activity (+ 2 days travel)

Period: July 2025 (stream surveys with low flow regimes).

Equipment: Very light. Transportable by flight.

Why focus on monitoring?

During the LIFE Streams project Forestas focused on the application of extensive and non-invasive methods for the assessment of local distribution and population size of trout populations. Sardinian trout populations are indeed highly fragmented and of little size, due to stream heterogeneity and reduced water flows. In such situations it is important to assess in which stream stretches trout are present, in which numbers, and how population size is related to habitat features. At the same time, when working with populations of little size and of conservation concern, disturbance must be reduced to a minimum. Standard monitoring methods such as electrofishing should be avoided as much as possible and non-invasive visual monitoring methods evaluated (Palmas et al. 2023; Casula et al. 2024). Other Mediterranean heterogeneous trout populations may benefit from the application of such approaches and the transfer action appears thus useful for the management of native brown trout populations of the European Natura 2000 network.

Program:

1) **Site selection**. Before field work, up to 3 streams with native brown trout population of conservation concern will be identified within the Natura 2000 network. The 3 sites should have shallow (most pools within 0-1.5 meters depth) and transparent waters that can be surveyed by walking on stream sides. Streams stretches selected for monitoring could be long up to 1 km, with a starting point that can be reached with up to 1 hour walking. Site selection will be performed by the management body of the involved Special Area of Conservation (SAC within the N2000 network), in remote cooperation with the LIFE Streams crew.
2) **Sampling permission**. If needed, permission for fishing will be requested by the management body of the involved SAC.
3) **Field work**. Field sampling will be carried out for 4 consecutive days by the LIFE Stream Forestas in cooperation with Spanish park technicians, which will provide logistic support for

reaching sites and cooperation for field work. Each stream stretch will be surveyed at least twice, so that detection probability and population size can be estimated.

4) **Field methods**. Streamside visual survey and visual surveys with angling, as described by Casula et al 2024 will be performed. Habitat (pool) features and environmental conditions thought to affect detectability and abundance will be measured. Up to 20 trout individuals captured with catch and release angling will be fin sampled for genetic analysis.
5) **Data analysis**. Back home, the LIFE Streams crew (P. Casula) will analyze gathered population and habitat data to assess performance of the applied methods in the specific context. A scientific report will be developed in cooperation with the park technicians involved in the activity. Genetic analysis of fin samples will be performed by the LIFE Stream crew (ISPRA), if requested by the involved management body. Alternatively, fin samples can be provided to the SAC management body if genetic analysis is preferred to be performed by other institutions already involved in genetic monitoring of Spanish brown trout populations.

Schedule

Beginning of 2025: in cooperation with park technicians, site selection, description and survey design. Fishing or other needed permissions will be requested by park technicians.

July 7th – 11th: field sampling

Day 1: arrival of LIFE Streams crew and reaching working base. Presentation to park technicians of the LIFE Streams project and objectives the transfer action.

Day 2: sampling site 1 and 2

Day 3: sampling site 3.

Day 4: sampling site 1 and 2

Day 5: sampling site 3. Social dinner.

Day 6: briefing about what was learned and discussion about monitoring methods and their application for monitoring SACs trout populations. Leaving working base.

July 2025 and post LIFE Streams. Data analysis and sharing for co-reporting action results.

References

Casula P, Palmas F, Curreli F, Sabatini A. 2024. Selecting Monitoring Methods for Endangered Trout Populations. Diversity **16**:442. Multidisciplinary Digital Publishing Institute.

Palmas F, Casula P, Curreli F, Podda C, Cabiddu S, Sabatini A. 2023. Exploring Less Invasive Visual Surveys to Assess the Spatial Distribution of Endangered Mediterranean Trout Population in a Small Intermittent Stream. Biology **12**:1000. Multidisciplinary Digital Publishing Institute.