FRESHWATER FISHES RIVERS FULL OF LIFE

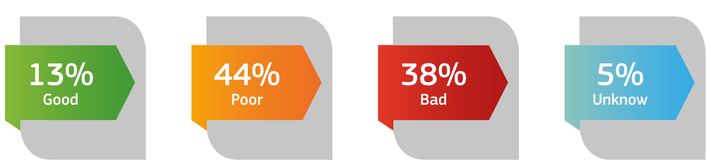
ADDRESSING THE PLIGHT OF FRESHWATER FISH IN EUROPEAN WATERS

LYNNE BARRATT[1], GUSTAVO BECERRA JURADO[2], MARIA-JOSE ARAMBURU[2].

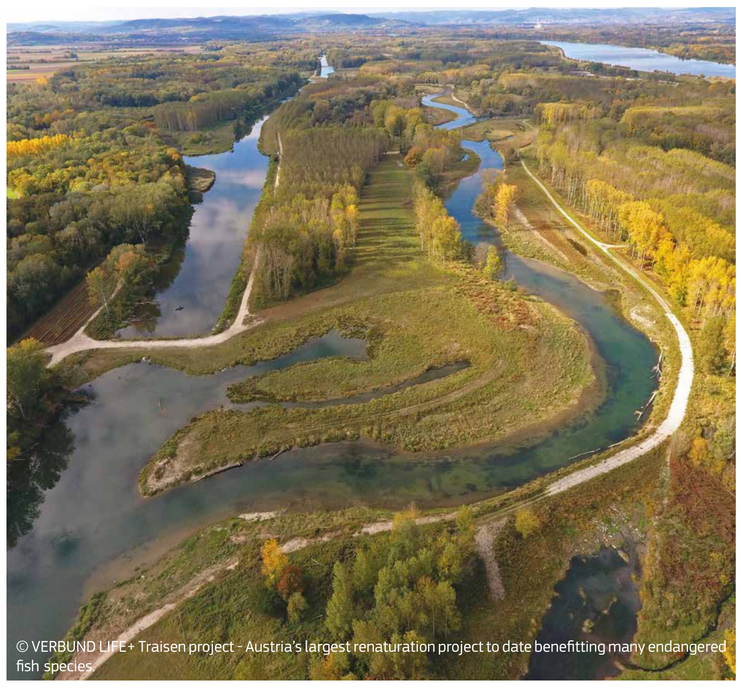
INTRODUCTION

The latest EU State of Nature report in 2020[1] indicates that only 13 % of European freshwater fish are currently in good conservation status and around 50 % have deteriorated since the last report in 2012. Equally concerning is the conclusion reached in the recently published report by the World Fish Migration Foundation[2] which concluded that populations of migratory river fish have plunged by a catastrophic 93 % in Europe since 1970.

CONSERVATION STATUS - EU State of Nature report 2020



Freshwater fish populations are threatened by pollution, over-abstraction of water, the introduction of alien species, overfishing, interruption of stream connectivity and alteration of in-stream habitats. Intensive agriculture and changes in forestry and agriculture practices, as well as climate change, also have a significant effect on water courses. Innovations targeting a wider range of threats and fish species could help to reverse some alarming declines. In fact. Modification of natural conditions is credited with 69 % of the reported pressures on fish populations. Several charismatic and flagship species such as the Atlantic salmon *(Salmo salar)* and Danube salmon *(Hucho hucho)* have benefitted through the LIFE programme.



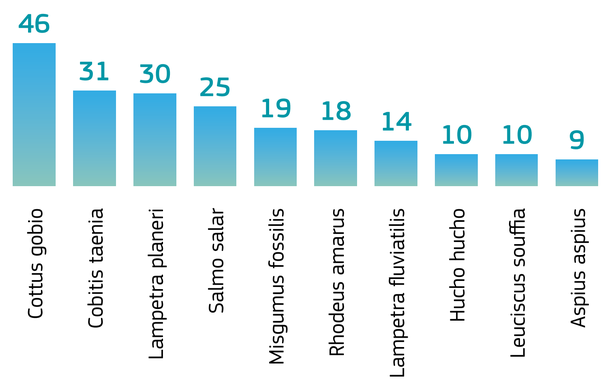
© VERBUND LIFE+ Traisen project - Austria's largest renaturation project to date benefitting many endangered fish species.

[1] State of Nature in the EU, Results from reporting under the nature directives 2013-2018, https://www.eea.europa.eu/publications/state-of-nature-in-the-eu-2020
[2] https://worldfishmigrationfoundation.com/resources/

LIFE programme and solutions

There are several direct links between the LIFE programme and maintenance or improvement of the conservation status of several freshwater fish species. Interestingly, most of these success stories have involved multiple projects within a country targeting the same species. Between 1992 and 2018, the LIFE programme has invested €150 million in fish protection and targeted 64 species of freshwater fish of the roughly 390 species in EU waters.

TOP TEN FISH SPECIES FEATURES IN LIFE PROJECTS



LIFE is not a research programme but uses the results of research to inform practitioners to improve concrete conservation actions and management decisions on the ground. LIFE projects mostly target freshwater fish through restoration or recreation of their habitats. Actions to restore rivers and recreate freshwater habitats have the indirect benefit of improving conditions threatened fish species. Since 1992, such actions include removal of barriers and dams, installation of fish passes, and re-meandering water courses that have been straightened for navigation and drainage to improve connectivity. In stream works using boulders, stones, gravels, and woody debris to improve hydromorphology and create spawning areas for a variety of fish species. However, in this congress we will focus on the three emerging issues featured in the LIFE symposia.

- Introduction of invasive and alien species has become more pressing in recent years. LIFE projects are exploring innovative ways of removing these species for example through electrofishing and capture, transference to isolated fishing ponds, encouraging behavioural change to stop deliberate release of 'recreational' species.
- To combat the continued decline of endangered species, LIFE projects are developing innovative ways of boosting populations through rearing and releasing into the wild. Development of hatchery facilities and making rivers safe to release fish.
- Neglected and overlooked species in European waters with very limited ranges in the wild increasingly threatened by climate change. LIFE projects champion these lesser recognised species with concrete conservation actions targeted toward directly improving or protecting the habitat, reducing pollution or the impact of intensive agriculture or forestry, combatting invasive species and securing water resources.

LIFE & Invasive Species - *Case Study*

© Group of wels catfish TiberRiver Italy Mattia Nocciola

The wels catfish, *Siluran glanis*, is native to eastern Europe and western Asia but is now established in many countries outside its native range where it outcompetes native species. The Project includes 23 lakes in northern Italy, 25 reservoirs in Portugal and 2 in Czechia. The species is the largest freshwater fish species in Europe in the introduced range with adults at least twice as large as native predators, it is long lived, fast growing and adaptable.

The LIFE PREDATOR project will prevent, detect, and combat the spread of this species in south European lakes to protect biodiversity

- The project is developing a transnational strategy for managing this species by significantly reducing the biomass in each location.
- Developing, testing and applying early detection systems in lakes based on eDNA and citizen science approaches.
- Establishing effective and selective methods of capture to control catfish populations in lakes and reservoirs.
- Preventing the introduction and further spread of the catfish by tackling its main vector.
- Raising awareness in the public and other target groups about the impacts of invasive fish species through communication and outreach campaigns is a key feature of the project.
- Increase the use of catfish as a food, reducing discards of unexploited catfish and promoting its use.

More information can be found at the project website: https://lifepredator.eu/

LIFE & Endangered Species - *Case Study*

© Marble Trout *(Salmo marmoratus)* Bruno Boz

LIFE GRAYMARBLE deals with the conservation and management of marble trout *(Salmo marmoratus)* and Adriatic grayling *(Thymallus thymallus)* in the Dora Baltea catchment which represents the north-western limit of the marble trout's range and it is classified as critically endangered in Italy and endangered in Europe. The main threats are lack of connectivity, hybridisation, and introgression. There are issues also associated with changes in the hydrological regimes due to water abstractions and insufficient viable flows which will be further affected by climate change. There is a lack of suitable hatcheries and there are no guidelines or specific regulations on the management of either species.

This project aims to improve the conservation status of the marble trout and the grayling from unfavourable to favourable in the project area. Main results of the project will be:

- Improving hatchery facilities for the two target species.
- Development of pure bred stocks to reinforce the natural populations.
- Removal of 17 barriers to fish movement reconnecting 20 km stretch of river.
- Immediate stop to inter-fertile trans-Alpine trout and grayling releases in the species range
- Complete eradication in 11 nursery areas
- Achievement of favourable conservation status for both species in 21 stretches of river and reinforcement of residual wild populations
- Creation of at least 2 new populations of Adriatic grayling (200 % increase) and 7 new populations of marble trout (450 % increase)
- Achievement of Good Ecological Status (GES) under the WFD for at least 7 water bodies.

More information can be found at the project website: https://www.lifegraymarble.eu/

LIFE & Neglected Species

© Mediterranean trout from Acquasanta creek (Sibillini Mountains National Park)

The Italian populations of Mediterranean trout *(Salmo cettii)* are mostly fragmented and isolated in small mountain streams, so that only a few thousand individuals are likely to be left. In most of the Italian range, it is considered extinct and has been replaced by non-native species. LIFE STREAMS is a programme of recovery actions for *Salmo cettii* in Mediterranean streams. The main threats to the Mediterranean trout in Italy are the lack of a strategy to limit introgression with the Atlantic species. The modification of habitat due to decreasing water resources, increase in pollutants, the presence of physical barriers, water extraction and illegal stocking of non-native trout.

The main objective of LIFE STREAMS is the recovery and conservation of the Mediterranean trout, based on a previous LIFE project. The project will:

- Identification of at least 11 pure wild populations and creation of a further 11 pure wild populations.
- Eradication of at least 11 alien populations.
- Production of at least 66,000 native fry.
- Translocation of at least 3,600 wild native trout.
- Increase in autochthonus genotypes by 5 %.
- Decrease in alien genotypes by 5 %.
- Minimal vital flows guaranteed in 51 sites.

More information can be found at the project website: https://www.lifestreams.eu

CINEA
European Climate, Infrastructure and Environment Executive Agency
Chaussée de Wavre 910 - B-1040 Brussels, Belgium - Tel: +32 (0)2 299 5252

1 - Elmen-EEIG - External Monitoring Consultant for the LIFE programme, 2 - CINEA - European Climate, Infrastructure and Environment Executive Agency