



Special areas of conservation with lime tufa springs



# Tuff-LIFE

A habitat of water and lime

## IN THE MIDST OF OUR FORESTS: MOSS-COVERED SPRINGS, RUSHING BROOKS



### PAN-EUROPEAN NATURAL HERITAGE

The EU LIFE nature conservation project „Tuff-LIFE“ focuses on a very special type of spring: the calcareous tuff springs. Due to their rarity and unique species composition, they belong to the pan-European Natura 2000 network of natural heritages. The distribution focus of the legally protected springs in the federal state of NRW is in the forested areas of the districts Höxter and Paderborn, where calcareous parent rock material dominates. Calcareous tufa springs arise, where water enriched with lime gushes from the earth's surface and the lime precipitates. Typical spring mosses support the development process and characteristic calcareous tufa and sinter terraces are formed.

In addition to the water focus, the project also takes the alluvial forests as well as the canyon and slope mixed forests as protected biotope types into account, which often accompany the streams and are characterized by ashes and alder stands. For some years now, these forests have been severely affected by ash shoot death, a disease of the character tree species – common ash.



### RENATURATION AS A LONG-TERM CONSERVATION STRATEGY

#### Threats

People have always used spring areas and forests in many different ways. As sensitive habitats, however, springs react quickly to external, anthropogenic influences. Today, many springs are severely affected and altered by old spring borders, narrow pathways or spruce reforestation causing acidification. This can lead to ecological communities typical for these springs can no longer settle and spread in their natural environment, accompanying and typical tufa development is suffering from this as well.

#### Measures

Between 2018 and 2023, by targeted measures, the springs and subsequent upper reaches of brooks and streams will be optimized and renaturalized. These measures include:

- Removal of obstructions
- Creation of fords, replacement of too small culverts by adequate crossing structures
- Forest conversion to habitat-typical trees and shrubs
- Adaptation of ash-shaped forests
- Change of light regime (sunshine/shading) by removal of non-native tree stands and planting of site-typical species accompanying the spring locations
- Creation of scarce habitats such as forest ponds, scours and small water bodies for target species and related species and speciations

The measures not only ensure the long-term protection of these protected and special habitats, but also have a positive effect on accompanying species typical of the biotope type, such as curled hook-moss (*Palustriella commutata*) and the keystone species of the project, the fire salamander (*Salamandra salamandra*).



### FIRE SALAMANDER IN DANGER

Globalization is currently not only affecting native forest tree stand, such as common ash, but is also presenting new dangers to animal species such as the fire salamander. The introduced skin fungus „Bsal“, which is deadly for salamanders and newts, has become in the last several years a serious threat to populations in Western Europe. After finds and increasing spread in the west of NRW, investigations will show whether the fungus is also already occurring in the districts of Höxter and Paderborn. In a separate monitoring also density and abundance of the fire salamander larvae in springs and streams will be investigated more closely.

### TRANSNATIONAL NATURE CONSERVATION: „NATURA 2000“ UND „LIFE“

- The project areas belong to the European natural heritage
- The term „Natura 2000“ refers to a coherent network of protected areas within Europe
- „Natura 2000“ stands for a common nature and species protection program constructed in accordance with the Flora-Fauna-Habitat Directive, it includes also areas designated under the Birds Directive
- The goal is the transnational protection of endangered native wild plant and animal species and their respective habitats
- The „LIFE“ funding program supports pan-European projects in the fields of climate, nature and environment protection

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