

# *The Temo River of Bosa and the restoration of the ecosystem: an indissoluble bond*



*The Temo river flows through the picturesque town of Bosa*

We live in an era in which safeguarding the environment and achieving environmental sustainability inevitably imply the protection of local ecosystems. River ecosystems, in particular, play an important role in regulating the water cycle and mitigating the effects of climate change. Even the ecosystem of a small river contributes to global biodiversity. The Temo River, the only navigable river in Sardinia, is an example of this.

## *Historical and geographical notes*

The Temo river originates from Mount Calarighe, located in the territory of Villanova Monteleone, in the province of Sassari. In its initial stretch it is called Rio Làcanu and, after crossing a valley, it is blocked by the dam of Mount Airadu, where it takes the name of Temo. It flows into the Sea of Sardinia, near the city of Bosa, after a journey of about 55 km.

The Temo has always been a central element in the life of Bosa, influencing its economy, culture and urban development. Its importance is also demonstrated by the presence of numerous architectural and infrastructural works along its banks, such as the Roman bridge and the ancient tanneries, structures that supplied hides to a large part of the island, today examples of industrial archaeology. Around 1800 the river was polluted because flax was macerated there and water from the tanneries, oil mills, sewage and various household waste was poured into it.

The relationship between the river and the city has not always been easy. On several occasions, the Temo has been the cause of floods that have caused damage and inconvenience to the population. For this reason, over the years, various works have been carried out to contain and regulate the course of the river, such as the construction of dams and embankments.

Today the Temo, the only navigable river in Sardinia, continues to be a precious resource for Bosa, representing an important tourist attraction, thanks to the possibility of navigating it and admiring the beauty of the surrounding landscape.

## *Geological and geomorphological uniqueness: Temo river ecosystem.*

The climate along the river is typically mediterranean, with the following characteristics: hot and dry summers with temperatures that can exceed 30°C and with little rainfall; mild and humid winters with temperatures that rarely fall below zero, and rainfall is more frequent.

Spring and autumn are transitional seasons with pleasant temperatures and moderate rainfall. In particular, in the area of Bosa, where the river flows into the sea, the climate is influenced by the proximity of the sea, with sea breezes that mitigate summer temperatures.

The Temo valley, now a Special Area of Conservation (SAC), is characterised by the inland recessed valley of the Temo river and part of its tributaries, surrounded by gently sloping slopes and terraces of volcanic rock.

The river ecosystem is a dynamic and complex system, strongly interconnected with the territory. The variety of biotopes (River environments, temporary ponds, rocky environments, oak forests, Mediterranean scrub, riverine forests of willow and white poplar) present in a relatively small area, used extensively, significantly increases biodiversity, so much so as to make the area of great conservation interest.

The area is also of particular interest from the avifauna point of view, due to the presence of the rare griffon vulture, threatened with extinction, the goshawk, the sparrowhawk and of the peregrine falcon.

## *Direct observation and microbiological analysis*

Observing the watercourse and the condition of the banks, the presence of waste, such as plastic, glass and cans, is noted, especially in the most anthropized area. A group of students from the G.A. Pischedda Higher Education Institute, with the help of a teacher, proceeded with the microbiological analysis of a sample taken in the Ponte Vecchio area, the most urbanized area, in December 2024, a period of low rainfall. The presence of Coliform bacteria was detected in all three dilution levels, with a high concentration of the same in the body of water examined. It can therefore be deduced that there are sewage spills in the water.



A plastic waste found on the river bank



Sample left in oven for 24 hours at 42 degrees Celsius

## *Awareness, short food supply chain, sustainable garden*

The G.A. Pischedda Higher Education Institute has a location adjacent to the river where it houses the Hotel and Agricultural Institute with a plot of land used for agricultural exercises and an educational restaurant. The institute fully responds to the changing needs of society, in which the culture of environmental protection, enhancement of the territory and its conservation are establishing themselves by activating courses that, integrating the fundamental disciplines, deal with safety, the quality of food products and the enhancement of environmental resources. Its location, adjacent to the river, allows the creation of an educational garden to allow students to learn sustainable agriculture techniques, reducing the use of pesticides and chemical fertilizers, harmful to the river.

A short supply chain is being created between the educational garden and the educational restaurant of the institute to also promote the consumption of local and zero-mile products, reducing the environmental impact related to the transport and distribution of food. The preparation of meals in the educational restaurant with anti-waste recipes, and the reuse of food scraps allows the creation of a virtuous circular economy model.

The protection of the Temo river ecosystem also requires strong awareness of the population and tourists on the problem, with information material, events and initiatives for cleaning the river, communication through local media, social media and the municipality's website, creation of digital signage that can display different and always current messages based on the presence of people, or the time of year, the installation of bins and containers for separate waste collection along the banks of the river and in places of greatest affluence, increased controls and provision of fines for those who throw waste into the river.

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