



## The Sava River, Slovenia, Croatia, Bosnia-Herzegovina, Serbia

### Europe's prime source of natural flood prevention under pressure from dams and inland navigation

From its source in the Slovenian mountains to its mouth into the Danube in Belgrade, the Sava River represents one of Europe's ecologically and culturally most interesting lifelines. Along its total length of 944 km and total catchment area of 97,713 km<sup>2</sup>, the Sava River connects four countries and more than 8 million people who live in and from its catchment area. Large sections of the Sava River are still free flowing and extensive floodplains and alluvial forests have been preserved until the present day. The annual cycles of temporal flooding in winter and spring have shaped the face of this region and created rich cultural landscapes and strong traditions of the people living in harmony with their river.



Natural flood prevention: floodplains work like a sponge and reduce downstream floods. (Boris Krstinić/Lonjsko polje Nature Park Archive)



Alluvial forest along the Sava River. (Goran Šafarek)

The large natural floodplain areas in the middle section can store over 2 billion m<sup>3</sup> of water, saving lives and properties in downstream towns such as Sisak, Slavonski Brod or Belgrade. These floodplains provide probably the most exceptional natural flood prevention system in Europe.

The outstanding ecological value of the Sava River - its oxbows, meanders and floodplain forests - has already been acknowledged. Five areas totaling 74.888 ha have been designated as Ramsar sites: Lonjsko polje and Crna Mlaka (HR), Bardača (BA), as well as Obedska bara and Zasavica (SR). While most parts of the Sava River in Slovenia and Croatia have already been included in the EU Natura 2000 network, the river remains largely unprotected in Bosnia and Herzegovina and Serbia due to the lack of a coherent system of protected areas supported by national agencies.



## Biodiversity



Stork paradise in a traditional village along the Sava.  
(Martin Schneider-Jacoby)

A total of 49 highly important sites with respect to biodiversity were identified along the Sava, covering an area of 368,921.74 ha. However, there are huge scientific gaps regarding the ecological role and biodiversity of the Sava. On long stretches the river flows untamed and free and without any artificial limitations and thus provides typical riparian birds habitats, for instance for the Sand Martin (*Riparia riparia*) which breeds in steep walls, or the Common Tern (*Sterna hirundo*) nesting on gravel and sand islands.

However, there the floodplains play a key role in regards to the biological diversity of the region. Temporal flooding makes the Sava's floodplains a perfect feeding ground for several heron species or White storks (*Ciconia ciconia*) - which breed on nearly every roof in the riparian villages along the main river course. Rare European Spoonbills (*Platalea leucorodia*), which have been in dramatic decline in South Eastern Europe in recent years, still find feasible breeding grounds and good feeding conditions on the flooded pastures to raise their chicks. The area hosts the largest network of alluvial forests in the Danube basin, primarily composed of English oak (*Quercus robur*) and ash (*Fraxinus angustifolia*). These forests provide habitat to important European breeding populations of the Lesser-spotted Eagle (*Aquila pomarina*) and the White-tailed Eagles (*Haliaeetus albicilla*), as well as for a population of the rare and shy Black Storks (*Ciconia nigra*).



Eurasian Spoonbills nesting in one of the last active colonies in South Eastern Europe - the Sava River oxbow Kraje Diol in Lonjsko Polje Nature Park.  
(Nenad Setina)

## Social and cultural values



Posavina horses in their natural habitat,  
the pastures along the Sava.  
(Martin Schneider-Jacoby)

Over centuries, people have adapted to the flooding: the Sava's floodplains are characterized by rare livestock breeds, such as the Black Slavonian, the Krsko or the Turopolje pigs feeding in the floodplains and swamps along the river course. Even today, the traditional practice of breeding Posavina horses and cows in the open floodplain during most of the year is still in place. Old traditions and rituals are still being nurtured along the Sava and the villages along its course are characterized by typical wooden houses, with the ground-floors more or less unused to adapt to the natural pulse of the river. The Sava is the main symbol of regional identification for the people living along its banks. They have generated a rich variety of regional products, such as honey, cow cheese and regional pork products. Besides extensive agriculture, forestry is a main source of income and plays a key role in subsistence. Nature tourism has developed well in several locations along the river and might potentially turn into a main economic sector.



Typical and very rare domestic animal  
breed, the Turopolje pig, feeding on flood-  
plain pastures along the Sava.  
(Martin Schneider-Jacoby)



## The threats

The Sava River is under attack from two sides: the integrity of the upper and middle section is threatened by new hydro dam projects while the lower part is at risk of regulations due to plans for a navigational upgrade.

## Hydropower

There are 29 existing hydropower dams in the upper part of the river basin. These dams cause significant downstream problems through disruption of sediment flow resulting in river bed incision as well as surface and groundwater level decrease. Due to the lack of sediment, the river bed has already eroded up to 6 m in Zagreb and drinking water supply for over one million residents is at stake.

Despite these facts, ten new hydropower dams are projected in the upper Sava section in Slovenia, further endangering already vanishing species such as the Danube Salmon (*Hucho hucho*). The Krka River, which constitutes the last remaining natural gravel supply for the Sava in Slovenia, is at risk of being completely cut off due to another two dams (Brežice and Mokrice), planned to be constructed in Slovenia downstream Krsko. According to a recently developed project named “Zagreb on Sava”, seven additional hydropower plants are to be built on the Sava between the Slovenian border and Sisak, as well as a 34 km long bypass canal to divert flood waters around the Croatian capital.

## Navigation

The lower section of the Sava River is threatened by unrealistic inland waterway development projects which involve broad regulations of the still natural flow of the river in this section. An upgrade of the Sava navigation from class III to IV between Sisak and Slavonski Brod (2.5 m navigation depth) and from class IV to V between Slavonski Brod and Belgrade (2.5 m to 2.8m depth) is projected even though the river is barely used for commercial shipping (annual capacity: 400,000 tones) and alternative transport via the new highway and the railroad is available.



Navigation plans: Planned upgrade of the Sava River.  
(Croatian Space Plan, 2013)





These navigation plans would lead to the complete deterioration of the Sava River: 106 new river training structures and 27 new embankments would have to be built in Croatia only, while 1.7 million m<sup>3</sup> of sediment would have to be excavated in order to fix and deepen the navigation corridor. These constructions would destroy the meandering processes; river and floodplains would be further disconnected and old oak wood forests and oxbows along with its rare species, such as the Spoonbill colony in Krapje Đol (HR), would be sacrificed. Economic needs and benefits, as well as environmental and other costs of such projects have never been properly assessed. Nevertheless, these navigation projects are fully endorsed by the International Sava River Basin Commission and relevant water management lobbies.

## Conclusions



Temporal flood in the Sava River's floodplain.  
(Martin Schneider-Jacoby)

- The unique flood protection system of the Sava River is threatened by dam and navigation projects.
- Significant river bed erosion is already threatening the livelihoods of millions of inhabitants.
- Further river degradation would increase the risk of floods in downstream communities, towns, and settlements.
- Exceptional biological and cultural values of the Sava region are the backbone of sustainable development in the region.



## We Demand

- No more hydro-power dams on the Sava River to be built, particularly in the lowland areas and NATURA 2000 sites.
- The government of Slovenia to assure the urgent implementation of measures to mitigate downstream impacts of existing reservoirs, particularly concerning the sediment deficit and consequent river bed incision.
- No upgrading of the existing navigation class - adapting the vessel to the river, rather than the other way around.
- The EU not to finance projects that clearly violate respective EU directives.
- The importance of the Sava River for navigation to be re-assessed by an independent expert group (including NGOs) and alternative transport systems such as railways, pipelines and roads to be taken into account. A sound cost/benefit analysis to identify the environmentally and economically best solution for the transport of goods along the Sava corridor.
- A large river restoration programme for the entire still free-flowing main river section from Slovenia (Krsko) to Serbia (Belgrade) to be developed and implemented.

## Save the Blue Heart of Europe Campaign

The rivers on the Balkan Peninsula are among the best preserved in all of Europe. More than 60 % of all rivers in the region are in good or very good hydromorphological condition. Additionally, these rivers are major biodiversity hotspots. 69 fish species are endemic and more than 50 % of all European freshwater-mollusc species live on the Balkans.

However, this “Blue Heart of Europe” is threatened by hydropower development: more than 570 new dams (> 1 MW) are projected from Slovenia to Albania.

Therefore, the international NGOs Riverwatch and EuroNatur have launched the campaign “Save the Blue Heart of Europe” in cooperation with several national partner organizations, aiming to protect the most valuable rivers and river stretches in South Eastern Europe from destruction through uncontrolled hydropower development.

### More information:

[www.balkanrivers.net](http://www.balkanrivers.net)  
[www.riverwatch.eu/balkan-rivers](http://www.riverwatch.eu/balkan-rivers)  
[www.euronatur.org/Blaues-Herz-Europas](http://www.euronatur.org/Blaues-Herz-Europas)  
[http://ppnea.org/albanian\\_rivers.html](http://ppnea.org/albanian_rivers.html)

### Contact:

[info@balkanrivers.net](mailto:info@balkanrivers.net)