

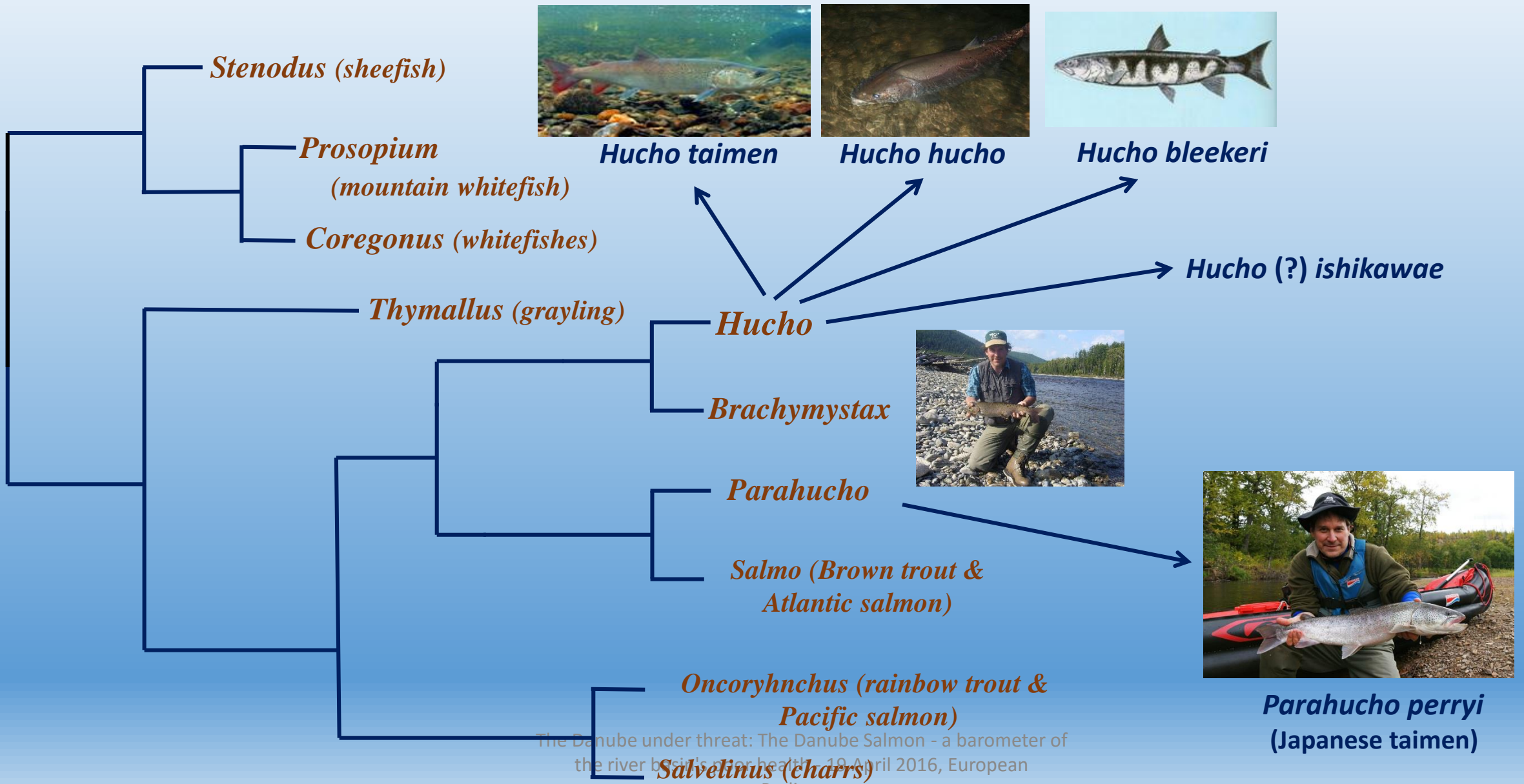
The Danube salmon: an overview of their biology, status and current threats, with emphasis on the Balkan region

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Phylogeny of Salmonid Fishes



The Danube under threat: The Danube Salmon - a barometer of the river basin's poor health, 19 April 2016, European Parliament

Sulec

The Danube Salmon – or Huchen (*Hucho hucho*)

Huchen - Donaulachs

Glowacica

Hlavatka, obechna, vaska, gadovica

Hucho, huhoszemling



Sarmon du Danube

Mladica, ljepolica

Lostrita, bala, puica, lostuca

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Huchen Distribution – historical and current

Huchen are a strictly freshwater salmonid, endemic to the Danube basin.

There native range spans over 12 countries, including Germany, Austria, Slovakia, Poland, Czech Republic, Romania, Slovenia, Western Ukraine, Bosnia-Herzegovina, Montenegro, Croatia, and Serbia.

Of these, the Huchen was eliminated from its natural range in Poland in the 1950s, and most likely much earlier than that from the Czech Republic. Very limited occurrence is documented in Romania and the Ukraine (primarily in the Tisa system, a border river), as well as Germany and Austria where at least 90% of its natural distribution has been eliminated.

Thus the largest habitats supporting self-sustaining populations of Huchen are found in Slovakia (solid data lacking) and the Balkan countries of Bosnia-Herzegovina, Slovenia, Serbia, Croatia, and Montenegro.

The southernmost population is found in Lake Plava, Montenegro, at ca. 900 m above sea level. This unique „lake“ population, spawns in the uppermost Lim River, which forms the lake's outlet.

Huchen Biology

In contrast to Pacific salmon, Huchen are an iteroparous spawner – meaning they repeat attempts to spawn throughout their adult life.

The first reach sexual maturity at about 5-6 years of age, and around 60-70 cm total length.

They are found in a range of river sizes, with mean monthly summer temperatures normally ranging between 13 and 18 degrees Celsius.

They begin feeding on fish at a very early age, and are opportunistic taking in a large range in prey. They are a top predator of a river system, and thus serve as an excellent indicator of a functional ecosystem.

They can live to at least 20 years of age, and historically may have reached 60 kg, although nowadays specimens of over 30 kg are already very rare.

They can undergo migrations of more than 100 kilometers, but can also complete their life-cycle in relatively short reaches of a river system, if all the necessary conditions are available. Like most salmonids, they exhibit natal site fidelity, and thus look to return to the same site in which they were born.

Huchen Habitat

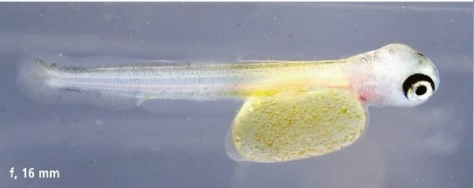
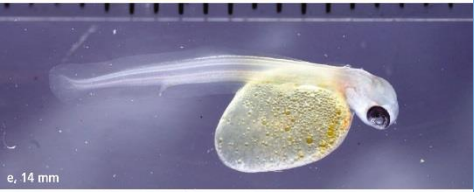
Like most salmonid fishes, Huchen require a variety of habitats to support changing needs during various stages of their life-cycle



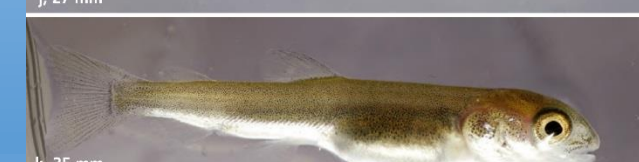
Clean gravel beds, with moderately fast flowing water



Interstitial, well-oxgenated gravel for larval development



Ample food of different sizes, and zero velocity zones for larval and juvenile fishes, with sufficient cover against predation

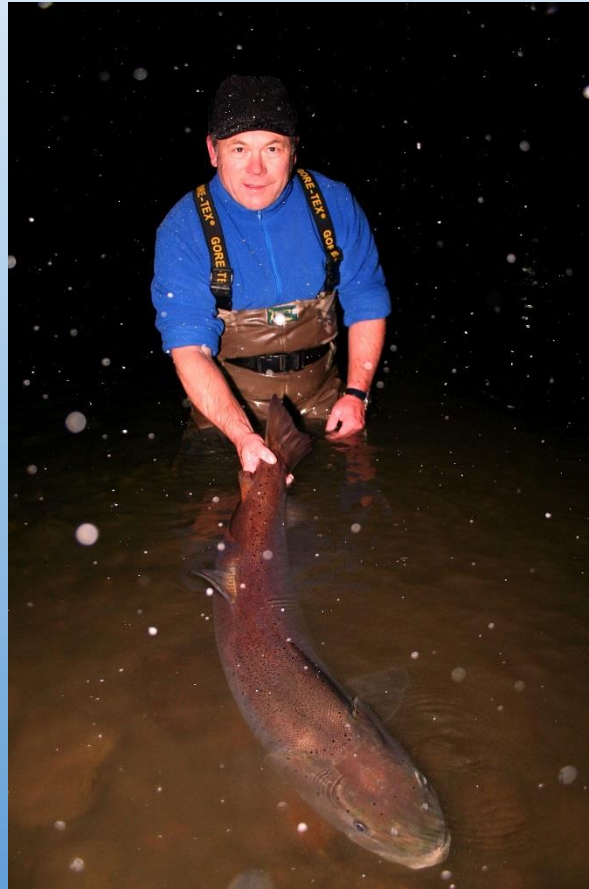


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Larger rivers, generally produce larger Huchen, and adults tend to prefer deep pools with low current velocity, where they rest for many days at a time, before occasionally moving into shallower water to feed.



Fly-caught Huchen on the upper Mur River, Austria



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Mounted 30+ kg Huchen, Plav Lake, Montenegro

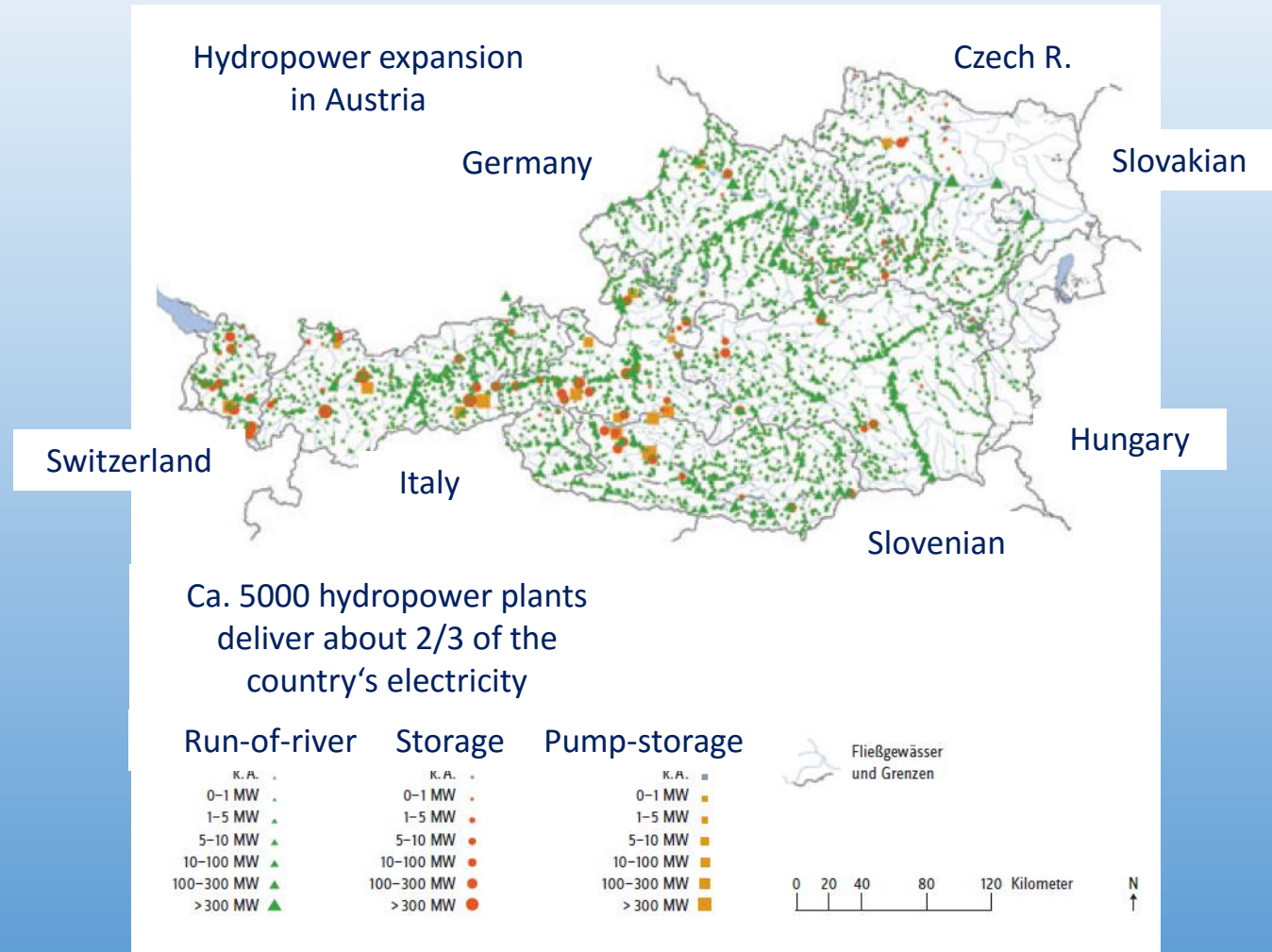


Huchen from the inner city of Graz on the Mur

Austrian distribution of Huchen

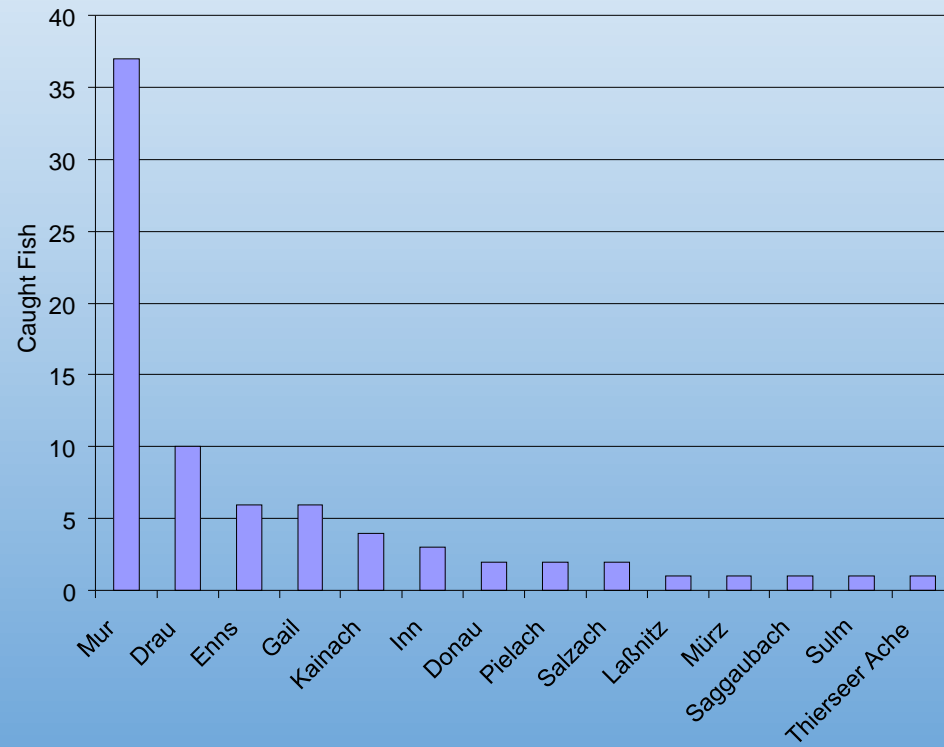


Austria – a hydropower landscape



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The Mur River in Austria contributed almost 50% of all Huchen collections, within the EU-sanctioned monitoring program.



77 Huchen caught across 518 monitoring stations (occurrence in 25 sites)

48% in the Mur River

The Mur already has 32 run-of-the-river power plants

But two more have been approved, and others are in planning

In other words, despite more than 90% loss of habitat, and the fact that the Mur remains the last, best place for Huchen in the country, more power plants in Huchen habitat are being built.



Study Series within the Campaign:

The Huchen *Hucho hucho* in the Balkan region

Distribution and future impacts by hydropower development



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for



Huchen in the Balkans

The largest stretches of Huchen habitat left in their range are found in the Balkans. At the country level, the highest number of km is found in Bosnia-Herzegovina, followed by Slovenia, Serbia, Montenegro and Croatia (counting border rivers twice).

Here is a link to the entire study:

http://balkanrivers.net/sites/default/files/Huchen_Study_2015.pdf

The accompanying webpage of the NGO river watch (riverwatch.eu) also provides interactive maps, information and additional reports on hydropower expansion including financing.

Hucho populations and hydropower planning in Western Balkan Euronatur RiverWatch

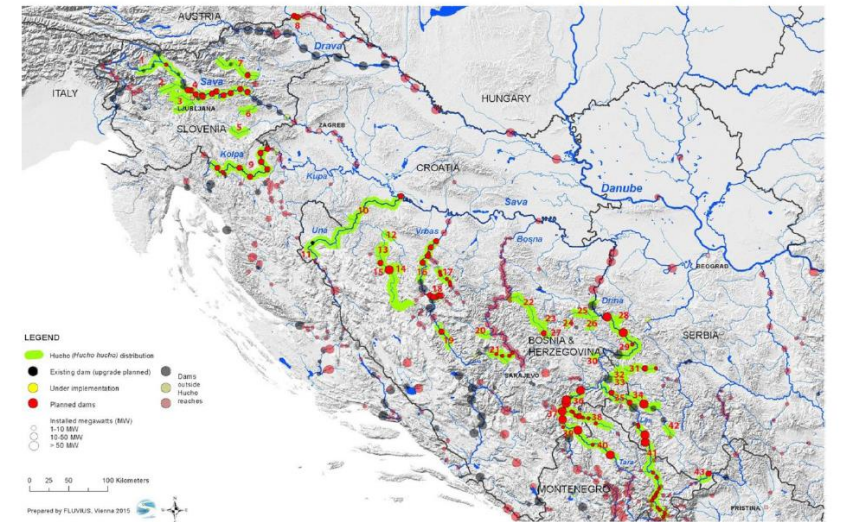


Figure 2. Distribution of self-sustaining Huchen populations and existing as well as potential future hydropower plants in the Balkan region. Numbers correspond to Table 1.

The largest and most important Huchen rivers for the Balkan region, for each country, are the **Sava** for Slovenia, the **Kolpa / Kupa** (Slovenia/Croatia), the **Una** (Croatia/Bosnia-Herzegovina), the **Sana** (Bosnia-Herzegovina), the **Drina River** (Bosnia-Herzegovina & Serbia), and the **Lim River** in Montenegro and Serbia. Additional rivers of significant size or presumed quality include the **Čehotina** in Montenegro and Bosnia-Herzegovina, the **Vrbas, Krivaja and Fojnica** in Bosnia-Herzegovina, and the **Savinja** in Slovenia. Additional tributaries of these rivers often harbor smaller populations or act as spawning grounds for populations in the main rivers.



Una River, Croatia/Bosnia-Herzegovina

Huchen are not overly sensitive to human influence. They are not the „canary in the coal mine“.

They tolerate moderate levels of water pollution – they are flexible in their diet – and although their stocks are reduced through river regulation – they are not eliminated.



Tara River Canyon, Montenegro

Certain types of hydropower development, such as the storage dam depicted here, completely eliminate riverine habitat above the dam, and dramatically degrade habitat below the dam, due to hydropeaking (fluctuating releases). They also provide no possibility for migration.



Piva River Canyon, Montenegro

Smaller facilities, or run-of-the-river schemes are generally less damaging, but when constructed at a sufficient density (see Austria), in key areas, or without sufficient passage facilities, can also contribute to loss of huchen habitat and the general degradation of riverine ecology.

Huchen and the Future

Huchen serve as both an indicator and symbol for intact river systems – self-sustaining populations are found in some of our most productive, diverse and beautiful rivers left on the continent.

Experience shows that large or dense hydropower development is incompatible with the conservation of huchen.

Hydropeaking is perhaps the most extensive (in area) and difficult to mitigate impact of storage or pump-storage hydropower schemes.

The combined effects of hydropeaking and reservoir flushing can also lead to the promotion of river bed colmation, which chokes out invertebrate life and eliminates spawning grounds.

Dams further create sediment deficits, resulting in river bed erosion (sinking of the river bed), loss of gravel bars and sand banks, and a reduction or change in the overall morphological dynamics of the system.

Flushing often results in acute or even catastrophic kills of aquatic life below the dam, often for many kilometers depending on the size of the flushing event.

There are numerous other issues associated with hydropower expansion that impact riverine ecology, and the potential to conserve huchen populations.

Huchen and the Future

- 1) Appendix III of the **Bern Convention** lists the species as in need of protection in 1979.
- 2) Since 1992 the Huchen is on Annex II and V of the **EU Natura Habitats Directive** and Flora and Fauna guidelines as a species of public interest, for which countries are required to designate protected areas (Natura 2000 sites) and set actions for its maintenance and rehabilitation.
- 3) Since 2000, the **EU Water Framework Directive** (EU-WFD), barring exemptions for previously heavily modified water bodies, calls member states to maintain or improve all water bodies in a good ecological condition. Additionally, member states are forbidden (barring exemptions under article 4.7 of the EU-WFD), from carrying out projects that degrade the good ecological status of water bodies.
- 4) Conservation activities for Huchen help countries fulfil 14 of the 20 **CBD Aichi Biodiversity** (see Appendix 3 for details) **Targets**, as well as associated targets now integrated into the European Biodiversity Strategy 2020.

Huchen and the Future

We have sufficient legislation to protect Huchen, but we need political will and proper dissemination of information.



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