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**Autor:** Herzog, Stéphane  
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# The Reuss Delta, where nature and the economy exist in harmony

The Reuss Delta, south of Lake Lucerne, used to be dying. It has now been given a new lease of life using rubble from the Gotthard Base Tunnel. This pioneering project has enabled the creation of islands and shallows conducive to animal and plant life.

STÉPHANE HERZOG

There is a small island a stone's throw from the shores of Lake Uri, the southernmost part of Lake Lucerne. On this gorgeous autumn day, we swim across to the little cluster of islands known as Lorelei. When we reach land, our feet touch a layer of moss of almost fluorescent green. The ground on which we are walking is actually a landfill site! The islets in question are man-made from by-products from the excavation of the Gotthard Base Tunnel. Between 2001 and 2008, 27 million tonnes of granite, gneiss and limestone were dug out, one-tenth of which was used in the lake.

The original plan was for all of it to end up in the lake, according to engineer Giovanni De Cesare, a hydrology specialist at the Swiss Federal Institute of Technology Lausanne (EPFL). This solution – prohibited since 2011 – was abandoned, as another serious problem was emerging: this “Swiss Camargue” was at risk of disappearing, as its soil was being eroded by the current and the waves, and gravel was being dredged from the lakebed. The canton of Uri then took the unprecedented step of passing a law to preserve the Reuss Delta. The first step in the revitalisation process was to use diggers to scoop out a broader angle for the delta. The rescue campaign was thanks to Martin Jaeggi, a pioneering engineer (now retired) specialising in transporting solids down rivers. It was his idea to revitalise the delta using backfill from the Gotthard.

## A park for both people and animals

Today, the location is a park where people and animals can roam and play. During the summer, thousands

of visitors flock to the delta to top up their tans on the little islands. “The park is not reserved for bears,” jokes De Cesare. Only one section of the site, including the Neptune archipelago (which comprises three other islands), is off-limits to the public. Elsewhere in the park, barbecue enthusiasts can grill their sausages. There are even logs available for the fire, stored in purpose-built cabins. People out for a Sunday stroll can be spotted along the paths running through this lush, almost tropical place. You can also discover the reserve by bicycle. Birdwatchers have several hides to choose from, including one overlooking the entire delta. On the left bank of the Reuss, visitors can enjoy the dish of the day at the Seerestaurant for only 21 Swiss francs, including salad and a drink. “This establishment was opened thanks to a legal exemption,” says Rico Vanoli, general secretary of the municipality of Flüelen, the town on the right bank of the lake.

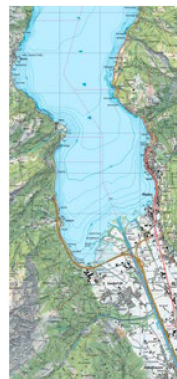
The challenge for the Reuss Delta is to attempt to reconcile economic, social and environmental objectives. “If there had been no reaturation, the local farmers would have lost land to erosion, which had already encroached over 100 metres inland,” explains De Cesare. The farmers themselves are actually involved in helping to maintain the reserve, as they let their Highland cattle graze on invasive species of plant. Then, there is industry. Since 1905, the Arnold quarry workers have been extracting the silt borne downstream by the Reuss. It now forms part of the project's economic cycle, Vanoli says, by paying a concession to the canton. Its remit is to create islands and shallows in the middle of the delta. This achieves two goals: it protects the delta against erosion and provides a

habitat for animals. Granted, the Arnold machines digging up the lakebed in the port town of Flüelen do make a bit of noise. In addition, the delta is accessible solely via the shores of the lake, as the company prevents anyone accessing the reserve directly. This is a pity, but the trade-off is that the firm employs 45 people, some of whom live in the town. “The company is appreciated and accepted here,” says the municipality's general secretary.

## New shallows for fish

This autumn, Seeschüttung, the organisation spearheading this operation on behalf of the canton of Uri, launched the latest phase of reaturation of the Reuss. This work, performed by barges operated by Arnold, is intended to create new shallows close to the banks of the lake. These seven-hectare shallows are being created using 4.9 million cubic metres of material taken from the new tunnel at the Gotthard and the work on the Axenstrasse road connecting Brunnen (Schwyz) to Flüelen (Uri). The project will cost 62 million francs and is being fully financed by the two materials suppliers, the Confederation and the cantons of Schwyz and Uri.

The shallows will be no more than ten metres deep, so as to allow light to reach the bottom. The end result will resemble how the site used to look prior to industrial gravel mining. Above all, this new sublacustrine land will protect the delta against erosion. On the other hand, there is a risk of it damaging the lakebed. “The operation may affect aquatic life, but the pros and cons of each procedure are weighed up against each other,” says De Cesare. The clean-up of the Reuss Delta is scheduled for completion by 2029. Observations are already show-



The Reuss flows into Lake Uri, as the southern finger of Lake Lucerne is called.

Map: Landestopo



ing that the project is bearing fruit. The Reuss has got its meanders back, and the return of nature has benefited both plant and animal life.

The delta boasts around 500 different species of plant. These include rare or protected species like marsh gentian, the subterranean clover and the Siberian iris. The wetlands are also home to reptiles. The marsh beds have been colonised by mussels and snails. Around 225 species of bird nest or stop over in this oasis. In the water itself, 30 species of fish have been identified, including river lampreys and lake trout, both highly endangered.

### Great diversity of wildlife

The wildlife in the delta is drawing in many nature-lovers, says Bruno Imhof, the former sacristan at Altdorf and a visitor to the delta for 25 years. He has spotted some extremely rare birds here. In May 2023, he tells us, he saw a cattle egret, a migratory wader from Africa listed as endangered.

In April of this year, he came across a damp, exhausted hoopoe on one of the islands of Lorelei. “It stayed on the island for three days to get its strength back,” says the Uri native, who is nonetheless concerned about the excessive numbers of visitors in summer. Renaturing has restored the delta to its historic role. As for the Reuss’s legendary floods, they will not destroy the delta, “since it will function as a submersible dam”, Giovanni De Cesare explains. A bit like the fable of the oak and the willow.



Excavated material has been used to restore the Reuss delta, creating new habitats for plants and wildlife – as well as recreational space for people. Barges are now offloading the same material to create new shallow-water zones that are of particular benefit to fish. Photos: Keystone, Stéphane Herzog, seeschuettung.ch

