Transcript

Degrees of freedom and gravel banks

Interview with the freshwater ecologist Günther Unfer

CG (Christina Gruber): Welcome to Fishy Podcasts!
In this episode, freshwater ecologist Günther Unfer tells us about the habitat of the Huchen (Danube salmon, *Hucho hucho*), the lost degrees of freedom of the Traisen and why taking action for the health of our waters can no longer wait.

Hello Günther, please introduce yourself briefly!

GU (Günther Unfer): My name is Günther Unfer. I'm a senior scientist at the University for Natural Resources and Life Sciences Vienna (BOKU). I've been at the Institute of Hydrobiology and Water Management since 1995. I come from Carinthia, grew up on the Drau and Möll rivers and have loved rivers and fish for as long as I can remember.

CG: Can you briefly explain where we are here?

GU: We are here on the Traisen at the lower end of the residual water stretch before the two mill streams (Mühlbäche) that are diverted far above St Pölten come back into the Traisen. This is the section between the diversion of the mill streams and the mouth into the Danube where the Traisen really only carries residual water on about 250 days a year, the discharge is less than 1m3 / s compared to the mean water of the Traisen that is significantly more with 10 m3/s. Only a fraction of the water remains in the Traisen, the rest is diverted via the mill streams.

CG: How long have you been involved with the Traisen?

GU: I have come across the Traisen several times in my professional career, having already carried out studies in the upper reaches of the Traisen in the early 2000s. I have mainly been involved with the river since the planning for the LIFE Traisen project, which has now been planned and implemented. It started around 2005 and I have intensively worked on Traisen in the last 5 - 10 years.

CG: Do you have a good overview of the Traisen?

GU: I have a relatively good overview of the lower course of the Traisen, as it has been redesigned. The point where we are standing right now is about 1 kilometer downstream from where the Traisen once flowed into the Danube. With the construction of the Altenwörth power plant, however, the mouth of the Traisen was relocated to the lower reaches of the power plant and the Traisen was channelized into the lower reaches of the power plant via a regulated straight channel. The LIFE project was only completed in recent years, in 2016, as part of which the lower reaches of the Traisen were completely redesigned and the Traisen estuary was moved even further downstream. In the course of this renaturalisation, the lowest 9 river kilometers have been completely redesigned. A new channel has

been dredged and equipped for a lowland river in the barbel region. New habitats for the typical Danube fish species have been created. The lower reaches of the Traisen have been significantly upgraded, and just a few hundred meters downstream from where we are now, the river will regain full flow, as the mill streams flow back into the river. This lower section has been completely redesigned as part of the LIFE Traisen project.

CG: What has to happen to the Traisen to become a Huchen river again and make it possible for Huchen to spawn in St. Pölten again?

GU: The Traisen needs a lot more water that the Huchen will be able to spawn in St. Pölten again. The residual water stretch has a discharge of under 1m3/s on most of the days throughout the year, way less than originally needed. The river is relatively wide and shallow. In reality there is too little water here for the Huchen to migrate upstream, there are also migration barriers, continuum interruptions, further upstream from Traismauer, which first have to be made passable. However, for the Huchen to return to St. Pölten, it would firstly require significantly more water and a continuous river flow, to guarantee the Huchen to migrate up to St. Pölten again.

CG: Is there a Huchen population in the Traisen and is it even possible to speak of a Huchen population?
GU: There are really only single Huchen in the Traisen, we caught a few huchen upstream of Lilienfeld many years ago, but really only a few. The Traisen certainly doesn't have a vital population at the moment. Young huchen from fish farms are stocked. However, farmed fish have difficulties establishing themselves in the water and have lower survival rates. Their ability to spawn naturally is probably limited, they show signs of domestication and have behavioral deficits. All in all, building up a population from the fish stocking is not incredibly promising. But again, if a popuation is really to establish itself, it simply needs more water, especially in this section of the diversion, where Sankt Pölten is located at.

CG: Is it possible for fish to migrate in the mill stream?

GU: No, the mill streams were originally created for mills and have now been created for small hydropower plants. From my personal point of view, it would be a good idea to abandon the use of small power plants in the Traisen, which generate little electricity. If the water is no longer discharged the water can remain in the Traisen. There would be a massive ecological benefit if these small power stations were abandoned. I know that the utilisation has grown historically and is seen as a cultural asset, but our waters need renaturation. The waters need to be improved and it would be very simple to significantly improve the Traisen if the water from the mill streams were returned.

What is important for me to tell you is that we are standing here in the gravel distribution area, at the lower end of the residual water section, where the gravel is transported by the Traisen, especially in the event of flooding. The distribution of gravel works via the main channel; during flooding, gravel is eroded in the upper reaches and is transported further. Gravel transport is an essential

characteristic of a watercourse. Here you can see great gravel fractions of different sizes, fantastic spawning habitat is created by the river depositing the gravel here. The fresh gravel is the main prerequisite for providing spawning grounds for the Huchen and many white fish such as the nase and barbel. They need a loose, gravel substrate to create spawning nests. The fresh gravel is the key to creating favourable spawning conditions for the fish. This is the situation here, as the gravel remains here after the flood waters recede, this is due to the residual water. Further upstream, where the Traisen is regulated and channelised, the gravel is transported through these areas. There would also be opportunities from Traismauer to St. Pölten, if enough water remains in the river. Therefore, the river needs to be widened and given the opportunity to deposit gravel again. This would lead to a structurally upgrade of the lower river stretch. The river would have to be freed from its strict corset, and could create the structures by itself. You don't actually have to do much. You have to give the river back its degrees of freedom, allow it the width of the channel and allow the water to flow away!

CG: It's high time to do that!

GU: Of course, it's not just high time to do this on the Traisen, there are plenty of examples throughout Austria and Lower Austria of rivers that are over-utilised for power generation and are heavily regulated. We have over-exploited the benefits for society in terms of electricity production and flood protection of watercourses and at the same time neglected the fact that rivers must fulfil their natural functions. Rivers have two important functions: to transport water and bed load. These functions are no longer permitted in many watercourses in Lower Austria and Austria because these ecosystems have been massively altered.

CG: River alterations always affect us indirectly as well. There are effects on the groundwater, which becomes our drinking water, on which we depend. It is far too rarely discussed what effects the suppression of natural processes on rivers has on our ecosystems.

GU: Yes, I also think that this knowledge of how important watercourses are, where natural processes can still take place. This awareness needs to be brought much more into the centre of society. People need to realize that rivers are not just motorways, but habitats for fantastic biodiversity. Freshwater biodiversity is under massive threat and we must ensure that we leave a reasonably healthy world to future generations. We must do our best to restore the rivers and stop exploiting them. At some point, we have to stop exploiting them. We need to reflect and give the rivers space and the opportunity to develop themselves, otherwise we will fail as a society.

CG: Why is it important that species do not become extinct and that the Huchen remains alive in the Danube region and the Traisen?

GU: Huchen symbolise the state of the water in general. They are at the top of the food chain, as a predator, and indicate how the food web below is doing. Huchen act as indicator species, if there is a healthy Huchen population, also enough other fish species that act

as food source are present. They are the largest salmonid fish in the world and therefore a flagship species. It would be an absolute disgrace if we were to let the most impressive fish in our waters die out. And it symbolizes our careless approach to nature and biodiversity. The Huchen is a figurehead of our society, if we manage to improve its situation and save it from extinction, we will also see that the other inhabitants of our waters are doing better.

CG: This means also us, as we are residents of the river too!

GU: Of course, it's also about human well-being. It is a sign of a society's maturity when it is able to protect its habitat and reactivate it. It can be seen as a sign of prosperity that we no longer need to destroy everything and are in the favored position to ensure that our nature is being restored. We will also need it! Climate change affects us all and the more resilient a natural environment is, the better it is buffered against extreme events. In the context of climate change, nature conservation and habitat protection are a very important aspect. At the moment species protection is being played off against climate protection at the expense of nature conservation. The generation of sustainable electricity from hydropower as a method for climate action harms species protection by destroying the continuum of rivers. This has to change we have to think species and climate protection collectively to succeed on the long run.

CG: Thank you Günther, I think this is a very fitting conclusion to our interview and a reminder that the survival of the Huchen is closely linked to our own wellbeing and that of the water bodies around us.

This was the first edition of Fishy Podcasts for the project “Huchenhochzeit - The Danube Salmon's Wedding”.