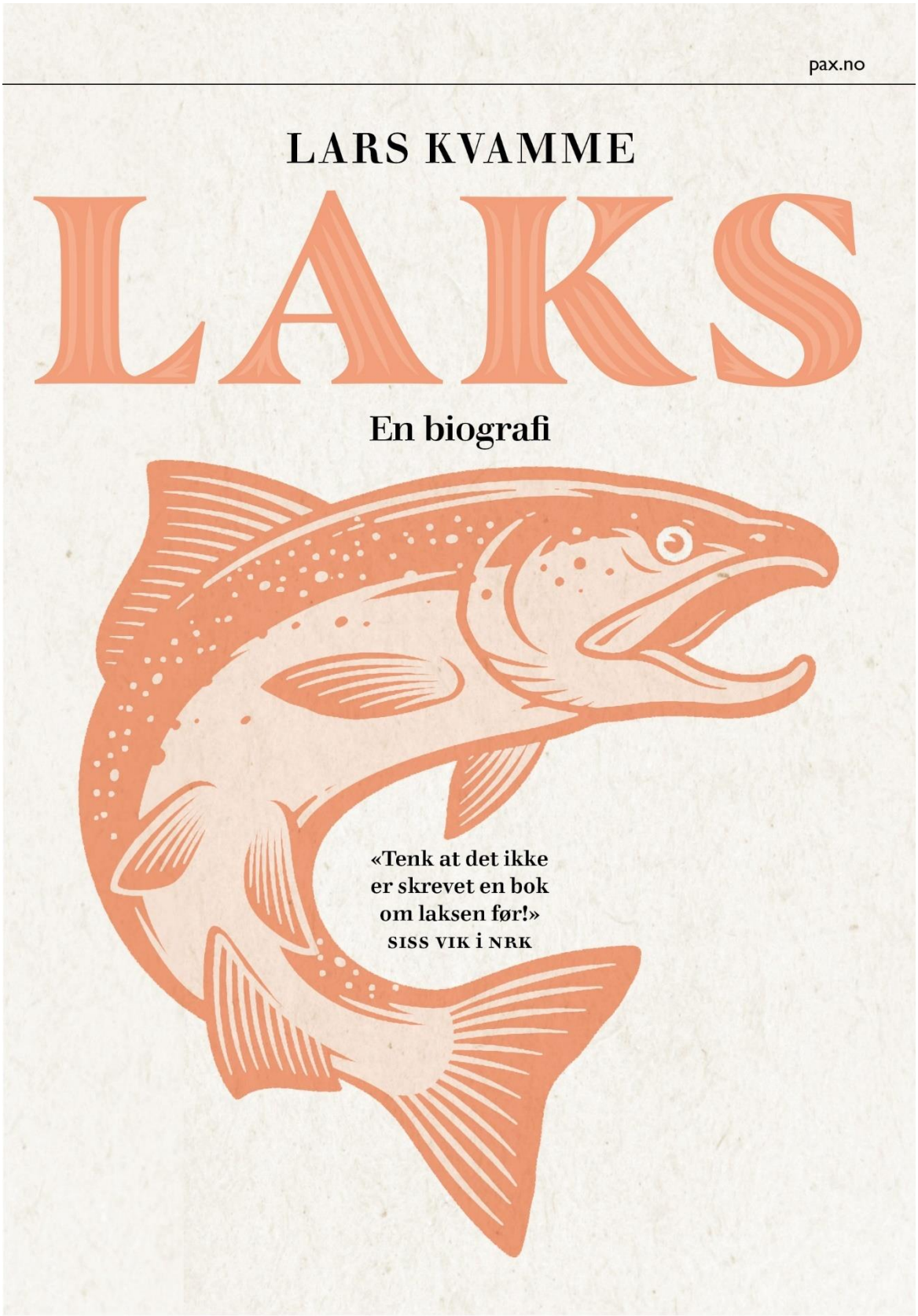
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LAKS
En biografi
«Tenk at det ikke er skrevet en bok om laksen før!»
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Salmon – A Biography

by Lars Kvamme

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THE SALMON IN THE CAVE

At around the same moment in history when the Atlantic salmon acquired the form it has today, approximately two million years ago, the evolution of another species also began to approach its current form: the predecessors of what would become *Homo sapiens*, the human being. The oldest remains of Homo sapiens are found on the African continent, a substantial distance south of the salmon's natural habitats. With time, humans began migrating north and into Europe. The oldest remains of our European forefathers and mothers are from around 40,000 years ago. This was during the last Ice Age, so these first primitive Europeans inhabited central and southern areas of the continent, in the same region as the salmon.

This large, nutritious fish swam up the rivers close to the habitat of the primitive human beings, and it wasn't long before they discovered the salmon. It is of course difficult to establish the kind of relation they formed with the fish. They must have initially viewed it first and foremost as food. But there is cause to believe that the so-called *Homo sapiens sapiens*, which is the name of these early Europeans, held the Atlantic salmon in high esteem.

One of the first things I discovered when I started reading the history of the Atlantic salmon was a photograph of a salmon image that had been carved into the ceiling of a cave in Southwest France, L'Abri du Poisson. The cave is located by the Vézère River in Dordogne. The picture shows the outline of a huge fish that scientists hold to be a salmon. It is more than one meter long, so this is an image of a fish that has been carved in lifelike proportions. The date of the carving is not certain, but it is estimated that the artwork was created 25,000 years ago.

The regions along the Vézère River are known for a number of archaeological finds, and many of the oldest remains of the first Europeans were found in exactly this region and in northern Spain. The cave where the first evidence of European human life was found, L'Abri du Crô-Magnon, is located just a stone's throw away from the cave with the salmon engraving. The cave salmon is profoundly fascinating. It is one of the oldest examples of a connection between the salmon and human beings. Our shared cultural history begins here.

The first thing that struck me was that human beings at this time must have been obliged to set some pretty rigorous priorities for how they spent their time. The fact that they went to the trouble of carving the outline of a fish on the ceiling of a cave must therefore have had significance. If we fast forward to all those who spend both time and money every year on holidays dedicated to wading in salmon rivers around the North Atlantic Ocean, this means that there is an unbroken line spanning at least 25,000 years, from the cave artists up to the salmon fishermen of today. These are people whom the salmon has affected in different ways.

The second thing that struck me when I looked at the map was that this was a part of Europe where salmon were living while the last glacial period still lay like a cold blanket over all of northern Europe. The last Ice Age reached its maximum expansion around 20,000 years ago. Because of the ice, salmon were obliged to live in different ice-free regions, including the southern part of the European continent. When the ice receded, the salmon began migrating north.

The salmon did not swim directly from the South of France all the way to Norway, but they must have started somewhere or other. The southernmost regions where the existence of the Atlantic salmon has been recorded in our time are in northern Portugal, at approximately 41 degrees latitude. But a period of higher temperatures about 100,000 years ago may have made the rivers furthest south too warm for the salmon at that time. It is therefore not improbable that the salmon that started migrating north were born in or at least inhabited rivers in central and southern parts of France. It is possible that the salmon strains found in central rivers of France are therefore the oldest strains of the *Salmo salar* still alive today.

When the Romans conquered what came to be called Gaul, Pliny the Elder called the Atlantic salmon “Salmo” for the first time. Pliny was a Roman author and natural scientist who lived in the first century AD. In his best-known work *Naturalis Historia*, he writes that the Gauls of Aquitania, the Roman province that is today Southwest France, loved this fish above all other fish. This must mean that there were still a considerable number of salmon in the rivers in the South of France at this time.

In 1758 the species was formally given the Latin name *Salmo salar* by the Swede Carl Linneus. The most well-known explanation for the origin of the genus name, Salmo, is that it comes from the Latin word to leap, or *salire*. Others claim that the Gallic name of the fish was Salmo even before the arrival of the Romans. Another theory is that the name comes from the River Salm in Germany, a left-bank tributary of the River Moselle, which empties into the Rhine.

The German rivers at that time were also known for an abundance of salmon. The species name *salar* has also been explained as deriving from the Latin word meaning to leap, while others maintain that it comes from the Latin word *salarius*, meaning “from salt”. Today not many salmon remain in European rivers. Since I was going to tell the history of the Atlantic salmon, I had to make an attempt to track down the salmon living in a special French river, a river that may be the home of the oldest still-living population of Atlantic salmon in the world today. But maybe not for much longer.

SEARCHING FOR THE PRIMORDIAL SALMON

It wasn't wholly evident that I'd chosen the right river. I'd had plenty of time to think about this while cold rain lashed against the windscreen of the rental car that I had picked up at the Lyon airport. Three hours of driving lay ahead of me, on roads curving through a landscape of ancient volcanoes, farms and villages. I caught glimpses along the way of old stone houses and churches between the rhythmic back and forth of the windscreen wipers.

My destination was Chanteuges, a village of some 400 inhabitants, located by the Allier River. This is one of the tributaries of the powerful Loire River that empties into the Bay of Biscay, by the port town of Nantes, 1000 kilometres further northwest in France. My goal was to find one of the oldest living salmon strains in the world, in a river that is perhaps one of the places out of which the ancestors of today's salmon swam, once upon a time. I was on the trail of a salmon that could link today's Norwegian wild salmon – and farmed salmon for that matter – to the European salmon of the past. The best way to achieve this was to come here. While I was driving, it occurred to me that leaving Norway to travel to a place that was closer to the Mediterranean than the Atlantic Ocean, in search of a salmon, was perhaps a bit far-fetched.

On top of everything, I had an extremely iffy appointment with a Frenchman who had only stipulated a time and place in an email sent many weeks before. Even in southern Europe darkness falls early in the day in mid-December and it was pitch dark when I finally drove into the little, apparently deserted, village. The rightness of my decision to come was not immediately apparent.

The Loire River is France's longest river. The Allier is a tributary of the Loire and it originates in the north in the Cévennes mountain range, about 110 kilometres from the French Riviera. It is more than 1000 kilometres from the source of the river to the Bay of Biscay where the Loire empties out. The river runs through large parts of France and for thousands of years was an important transport artery. Few other rivers can rival its standing as a salmon river. The Rhine is even longer, but the original salmon strain of this area is considered extinct. The Seine, which flows through Paris, was also known as a salmon river, but neither are there any remaining salmon to be found there. The Loire is therefore one of the world's longest salmon rivers with its original strain still intact. Nobody knows the peak number of salmon that have swum up the Loire and Allier, but in the late 19th century, the annual salmon harvest from the river was 40,000. It is not improbable that as many as 100,000 salmon returned to the river every single year.

Due to the length of the river, the salmon developed wholly unique characteristics. While in most rivers, salmon swim up the river in the spring and summer, spawn in the autumn, and

then attempt to return to the ocean, this is impossible for salmon who want to reach the spawning sites of the upper Allier. The long journey up the river, 1000 kilometres against the current, can take fourteen months. The journey often starts in October the year before the salmon will spawn, but the salmon are stopped approximately halfway by the low winter temperatures of the water. Late in the winter, sometime in March, the temperature begins to rise, and the salmon can commence the second part of its journey.

The next challenge is the summer temperature of the river, which can be too high for the salmon to continue and again it must take a break. Later in the autumn, when the water temperature drops again, the Allier salmon begins the final stretch of the journey, which takes it up to the source of the river more than 1000 meters above sea level, more than two years after it began. Only then can the spawning process begin. Given that the salmon does not eat after it has entered fresh water, it must have a wholly unique constitution to manage this arduous undertaking: the result is a fish that has developed characteristics over the course of thousands of years enabling it to survive such a journey.

Due to the long distances and the many man-made obstacles in the river, adult salmon from the Loire and Allier very seldom return to the ocean after they have spawned. But new life will eventually emerge from the gravel riverbed. And a few years later these fish will be ready to follow the current out into the ocean as smolts. The journey to the Bay of Biscay is much quicker as it moves with the current and often takes no more than a few months.

In the ocean, there's is still a great deal we don't know about the salmon from Allier and Loire, but the capture of individual tagged specimens has shown that the salmon live in both the Norwegian Sea by the Faroe Islands and the Labrador Sea west of Greenland. The salmon who migrate all the way to Greenland share food sources with salmon from North America. After several years at sea, the salmon returns to the river. Because of the long period of time it will now spend without food, the salmon is obliged to bulk up in advance to survive the trip. It is the fat reserves it has stored while in the ocean that will sustain it for the next year and a half, until it has finished reproducing.

Throughout history the salmon of Allier have encountered different challenges. After the Romans noticed the local population's appetite for the fish, they presumably lived well on the salmon in the rivers up to the time of the Middle Ages. However, under the reign of the French King Charles IV (1294–1328) an injunction was introduced against fishing for salmon during their spawning period. The nobility of the region had long had control over the best fishing sites, and for many years, commoners had no access to the fish in the river.

For the salmon population, this privatization of shared resources was auspicious. It ensured that salmon fishing was kept under control. All this changed after the French Revolution in 1789. During the period of the first French republic, all hunting and fishing privileges were abolished, and the salmon was declared *Res Nullius* – the property of no man and everyone therefore had fishing rights. At the same time, the French abolished the law protecting the salmon during its spawning period. For the salmon in France, the French revolution heralded the start of overfishing which gradually diminished the number of salmon in the rivers.

Throughout the course of the 20th century, the salmon from Allier and Loire met with new obstacles, in a literal sense. Dams and other types of barriers were constructed along the river. The river was also polluted by a growing and increasingly industrialized population. The most sensational of all is the fact that salmon even managed to survive in a river crossing almost all of France. The salmon must today pass a series of dams and other manmade hindrances – and no less than four nuclear power plants.

The Allier is today the only tributary of the Loire where salmon still return to spawn naturally, and the Loire the only one of the truly long rivers in Western Europe where there are still salmon strains that return at all. That was why the alarm was sounded in 1994, when no more than a hundred or so salmon returned to spawn. In practical terms, this unique strain of salmon was almost extinct. Something had to be done.

Driving through the Auvergne region, the site of the Allier River, is like driving through history. The region is best known for its beautiful natural landscape and good food. It is especially known for good cheese. Not even those who live here know that there are salmon here. They actually served salmon at the restaurant of the little family-run hotel in the village of Brioude where I stayed, but it was imported farmed salmon from Norway.

The name Auvergne comes from the Celtic tribe Averni, best known for its leader Vercingetorix's proud resistance against the Romans, a part of the history immortalized through the Asterix comics series. That was the closest I'd come to any advance knowledge about the region, before I discovered Allier and the tenacious, indomitable salmon here, which refuses to surrender, despite being under siege from all sides.

When I drove towards Chanteuges, I took the old road along the river. It curves gently through small villages that look as if they have been there since the dawn of time. Everything is made of brick and stone.

The colours of the buildings suit the winter. Beige, brown and grey and drawn Venetian blinds. The last of the brown leaves cling to the branches of the old oak trees along the road. In some

of the villages, old churches or monasteries loom on the hilltops. Many of the buildings are around 1000 years old and, except for the small villages, nothing much appears to have changed in all the years that have passed. Even the people who live here are old. This historical agricultural region is struggling due to depopulation, like many other rural districts in Europe.

A few kilometres before Chanteuges, I took a turn-off leading down to a camping site located all the way down by the riverbank. It was clear that it had been a while since the summer guests had departed. A volleyball net testified all the same to relatively recent activity here. But the river flowed energetically past, unaffected by the atmosphere of dormancy on land. A short distance away some farmers were burning refuse. The smoke prickled my nose in the chilly air as I walked over to the water's edge. I don't know exactly what I was expecting to find. Maybe I hoped to see a fish down there in the clear water of the river. I was still approximately 100 kilometres north of the mountains where the source of the Allier is located. In the upper stretches the river is full of rapids and narrow gorges. Where I was standing, it flows more sedately from village to village.

On one bank the river has eroded away at volcanic stone and black mountains ascend like pointy towers. The river winds through the countryside and is a popular destination for paddlers in the summer. The mountains and the forest regions are popular walking sites. There were no paddlers on the river at this time. No fish either, as far as I could tell. I therefore got back into the car and drove the final stretch to Chanteuges. Some of the villages I passed along the way are constructed on the very bank of the river, with walls descending down into the water, while others are built against the steep rock faces surrounding the riverbed. In several locations, small bridges just wide enough for passage of a single car cross the river.

When you reach Chanteuges, an old Benedictine monastery can be seen towering above cobblestone paved hills surrounded by brick houses. The Allier winds gently past in the base of the valley below. The village is located around 500 meters above sea level and is one of several popular travel destinations in the area for tourists in the summer season. Now it seemed to move at a sluggish pace.

However, as it turned out I wasn't going to visit the village. On a piece of land on the outskirts of Chanteuges an enormous wooden building appeared that did not resemble any of the other buildings I had seen in the village or otherwise in the valley. The building is clad with untreated wood and one of the rooftops is covered with solar cell panels. Occupying the enormous halls inside the building is Europe's largest hatchery for wild salmon, Conservatoire National du Saumon Sauvage, the centre established for the purpose of saving the Allier salmon from extinction.

Patrick Martin is not a large man, but he is extremely enthusiastic. He meets me with a firm handshake and an alert gaze behind round eye-glasses. Patrick was born and raised by the river in Chanteuges and was originally a university-trained agronomist. For more than half a year I'd tried to make contact with the man who could give me the key to understanding the Allier salmon. And now, here I was.

The initial plans for a hatchery in Allier emerged as far back as in the 1920s, when the building of dams intensified and became a threat to the salmon. But it wasn't until the salmon almost disappeared in the early 1990s that the plans were implemented. Ever since the first plans were discussed in the 1920s, a number of attempts were made to stock the Allier with fertilized salmon roe and fry from other rivers. These attempts were never successful. It turned out that no other salmon had the unique characteristics the Allier salmon had developed over the course of tens of thousands of years. The salmon originating in other, shorter rivers never made it all the way to the spawning areas.

In the mid-1990s when Patrick was working in Belgium, he was asked by the local authorities if he would lead a project to build a hatchery in Chanteuges. For him it was an opportunity to return home to his roots, so he said yes. "The problem was that there were many people who wanted to save the salmon, but few who were willing to pay for it," he told me. Patrick was therefore obliged to seek out funding. From the time he started the project in 1995, six years went by before he could open the doors. He received half the funding from the EU, the rest from local power and water companies, and some from the national fisherman's organization. He also installed solar cells in the roof – and today the centre is energy self-sufficient and also sells power to the local grid.

Although salmon sport fishing has a shorter history here than in many other places, a tradition was nonetheless established. It all started one day in April in 1909 when a French officer was trout fishing in the vicinity of the tiny town of Brioude, a half-hour's drive north of Chanteuges. Instead of trout, he caught a huge fish that he only managed to land after a two-hour struggle by enlisting the help of a passerby. When a rumour began circulating about the almost ten-kilo salmon he'd managed to hook, it wasn't long before Brioude became a salmon fishing destination for sport fishermen from all over Europe.

Fishermen who wanted to combine the good life in Southern France with big salmon fishing poured in. The sport fishermen this far up the river were nonetheless not the main threat to the salmon; it was the professional fishermen further down the Loire River and all the dams that were eventually constructed in the river. But the fishermen in Allier often caught the first

salmon to arrive every year, and because of this the salmon that came to spawn began arriving later and later. This would prove to have fateful consequences.

With time, the salmon population was diminished, and the number of visitors declined. All the same, for the local population salmon fishing remained important for a long time. In many of the old stone houses old-fashioned fishing gear can be found in the cellars and cupboards, stemming from the time before fishing was done with a rod. Many of the fishing implements resemble pitchforks. These are tools which few people even know how to use any longer. In 1994 the authorities prohibited all salmon fishing in the Loire and Allier.

“The biggest mistake we made was to prohibit sport fishing,” Patrick told me when we sat down to talk. Or, to be clear, I didn’t say very much, because Patrick talks a mile a minute. Since the 1990s he has been fighting a battle to save the salmon in Allier. He has a burning passion for this work, while the awareness in the population of the actual existence of salmon in the river has by and large disappeared.

His opinion is that although the sport fishermen took fish from the river every year, the fishing was an important means of preserving people’s relationship to the Allier salmon. “When people here in the region think about salmon now, they envision an orange fillet at the fresh food counter for nine Euros a kilo.” On all the bridges crossing the Allier in the different villages, he’s convinced the local authorities to put up another sign beneath the signs bearing the name of the river. On the second sign the words *Rivière à Saumons* can be read: Salmon River.

“It took me ten years to get them to go along with putting up the signs,” he said in despair. He hopes to help people remember that they live by a salmon river and to instil a sense of pride about this. The salmon has acquired a bad reputation in the French public opinion, he explained. Traditionally salmon was eaten a few times a year in France, often for Easter. Here in the region there was always local salmon available. The farmed salmon imported from Norway or Scotland is not rated as highly, and on a regular basis the French media has released critical reports about the negative aspects of the fish farming industry. “That is what people here associate with salmon now.”

Patrick has introduced a number of activities to raise awareness about the Allier salmon. To enhance the visibility of the salmon’s long journey from the source of the Allier to the Atlantic coast, for many years he organized *Le Marathon du Saumon*. The salmon marathon was in reality not a marathon at all. For fourteen days, Patrick guided paddlers on day trips on the river. It was possible to go along for the entire or parts of the trip which followed the salmon’s route from the upper Allier to the Bay of Biscay.

He is not passionate about the salmon for sentimental reasons only. The 7800 square meter centre he runs in Chanteuges has thirty-two tanks for brood stock that both come from the river and are farmed at the centre. In all they can produce more than two million roe, 600,000 fry, and 250,000 smolts annually. Patrick has understood that if he is going to succeed in keeping the centre open, the operations of the hatchery must have ties to the local population.

“With money we can continue to produce salmon, but creating local interest and involvement is more difficult. If the people who live along the river aren’t proud of our salmon, it won’t help to keep producing it.” Patrick has understood that if keeping the salmon alive is solely of interest for scientists and individual enthusiasts, it’s too late. To keep the salmon river alive, he must also preserve the life of the salmon culture.

It was a powerful sight that met my eyes when we went to see the fish. My worries about whether coming here was the right thing to do vanished when the doors to the hall containing the huge tanks opened. Finally, I was here, at the heart of the activity keeping the world’s perhaps oldest salmon strain alive. The huge brood stock salmon didn’t resemble the farmed salmon I’d seen in captivity previously. The skin of these fish was brownish-beige, and they were slender and long. As in many other places, the salmon in Allier have been called the king of the river. Although it’s a paradox that the king is swimming around in captivity, there was undeniably something more elegant and French about the way these fish moved.

Patrick has around a dozen local staff who take care of daily operations. He thinks it’s important that they come from the valley to demonstrate that the centre makes a local contribution. They are also proficient and stable. It is not easy for young people to stay in Chanteuges today. A job with Patrick can be a solution. At the same time, the centre also inspires interest and involvement on the part of the rest of the population. When you see Patrick Martin explaining with animated enthusiasm how important this is, it’s easy to imagine that he’s not just important for the salmon here but also for the village’s human population.

In the tank, other salmon of different sizes were swimming beside the largest of the brood stock. Patrick and the others at the centre learned early on that in order to achieve the greatest possible success with the hatchery it is important to intervene as little as possible with regard to manipulating the salmon’s natural way of life. That’s why they have brood stock of all sizes. “This is very different from commercial fish farming. In the salmon’s natural habitat, we don’t know if it is best to be large and robust or small and quick. If you’re going to sell to consumers, you’re only interested in producing large fish.”

The lighting above the tank adheres to the rhythm of daylight outside. In the winter the days are short and in the summer the light is stronger and the days longer. Another challenge they

ran into arose when the time came to start feeding the salmon after they had spawned. The most common type of feed available is designed for commercial farming, where the objective is in simple terms to get the salmon to grow as big as possible in the shortest possible amount of time. This feed therefore contains more fat than the food salmon normally find out in the wilds. According to Patrick the pellets fed to farmed fish often contain more than 40 percent oil. He would prefer no more than 12 percent oil in the feed for the Allier salmon. That is closer to what the salmon finds in nature.

Every year since the opening in 2001 the hatchery has put thousands of roes, fry, and smolts into the river. And the number of salmon returning to the river has gone up. Around the year 2000, some 1200 individual salmon returned. Subsequently, the number went down again and in 2018, 380 salmon returned to Allier. 60 to 80 percent of these started their lives in Patrick's centre.

The hatchery is no longer just important for the Allier salmon. The lessons learned in Allier are implemented elsewhere. For example, a project has been launched to bring the salmon back to the Rhine – using Allier salmon from Patrick's hatchery, among others. The unique salmon strain from this region may prove to be one of the last to have adapted to such long rivers. Should it disappear altogether, the opportunity to bring the salmon back to other long rivers in Europe will perhaps also be lost. Local adaptations from tens of thousands of years will be squandered.

Patrick is working intensively to save the salmon here, but at the same time when I met him, I felt that he was disillusioned. Decades of struggles to save both the fish and the culture surrounding it can take its toll on even the most resolute. He took out his mobile phone and showed me a video of a fisherman who has hooked a gigantic catfish – a freshwater fish that can grow to weights of several hundred kilos. "They've released these into the Loire as recreation for fishermen. They argue that it's a more popular fish, and that more people can then take part in this type of fishing than is the case for salmon fishing."

The video features a fisherman struggling to land a huge fish. "Large salmon didn't used to have enemies in the river. But now they have to contend with this as well." However, it's not the catfish that is Patrick's greatest concern. "The problem in a huge system like the Loire is that it's not just one factor that constitutes the threat. We have pollution, agriculture, dams, poaching, overfishing, and climate change. We can do a good job at the hatchery and still not succeed. The most important thing is to do something about the conditions in the river. If we can't fix that, the work we do here will not help."

"Do you think you'll succeed? Will you manage to save the Allier salmon?" I asked him at the end of the day. "I don't really want to say this," he started, and then continued anyway. "The length of the Loire River and our location so far south in Europe means that the salmon has in practical terms a pretty brief window of opportunity to return to the river if it is going to make it all the way to the spawning sites. Right now, that window is shrinking, and the return of the salmon is later every year. If this development continues, the Allier salmon will disappear." The window Patrick is talking about is a consequence of the rising water temperature of the river due to an increasingly warmer climate. At the same time, scientists have seen that the salmon return to the river on average at least one day later every year. He thinks this is because the salmon must travel further away to find food. If this trend continues, Patrick believes it could all be over in fifty years.

"It's not a crisis for the Atlantic salmon as a species; it will find new rivers further north. Perhaps the climate changes will cause the ice to melt in parts of Greenland and the salmon will migrate there, the way it migrated to Norway after the last Ice Age? But for the unique strain we have here in the river, it's more complicated." Unfortunately, Patrick's predictions sound credible. But as he said, there are limits to how far north the salmon can migrate to find food, so perhaps the number of returning salmon will stabilize. And soon another dam is going to be torn down in the spawning areas furthest upriver.

Maybe this, along with other initiatives to improve the quality of the river, will help make it possible for this primordial salmon to survive for many years to come. I wanted at least to believe this when I left Patrick and Chanteuges. After all, this is a salmon strain that has managed to adapt to different changes in climate and the environment for many thousands of years. It can do so again.