

Food and Agriculture Organization of the United Nations



Human-Wildlife Conflict & Coexistence

HUMAN-WILDLIFE CONFLICT & COEXISTENCE / CASE STUDIES

INVESTIGATING THE POTENTIAL AND ECONOMIC FEASIBILITY FOR A COMPENSATION IN ADVANCE SCHEME

SPLASH / ANDREAS SCHA



INTRODUCTION

Upper Lusatia in Saxony is one of Germany's largest pond regions, consisting of around 1000 ponds. The building of fishponds and their use for fish farming has been a tradition in the region for over 800 years, providing an essential secondary habitat for several endangered species. One of these species is the European otter Lutra lutra, boasting a population of 400-500 individuals in the region, constituting one of the largest populations in central Europe in 2003. However, the presence of otters impacted the region's 150-180 fish farmers, particularly those operating small ponds. To mitigate negative interactions between otters and fish farmers, the state of Saxony introduced a type of damage compensation scheme in 1997 to reimburse farmers for their economic losses. In 2003, the Framework for Biodiversity Reconciliation Action Plans (FRAP) project (hereafter the "project") was initiated with the goal of creating a framework between the conservation of large vertebrates and the use of biological resources by humans. Coordinated by the Helmholtz Centre for Environmental Research in Germany, the project involved 13 partner organisations in nine European countries. The project used fisheries and fish eating vertebrates to illustrate successful approaches for conflict reconciliation. One of the examples used was that of otters in Saxony.







This case study will focus on one activity of the project's work, which investigated the possibility of providing compensation in advance to fish farmers, where payments are made based on estimated expected losses, rather than payments after the damage had occurred (ex-post compensation).

SETTING THE SCENE

Following historical declines of the otter population in Saxony at the end of the 19th century due to active persecution, there was a general change in the human perceptions of nature, in a broader sense, and otters in particular. In 1934, otter protection was established under German law, restricting fish farmers' ability to protect or defend their ponds. This resulted in the recovery of otter populations, but also had adverse negative impacts on fish farmers.

IN UPPER LUSATIA, FISH FARMERS MANAGED LARGE AREAS OF POND LANDSCAPES THAT **PRIMARILY CONTAINED CARP CYPRINUS CARPIO. THESE POND LANDSCAPES HAD BEEN PRESENT** FOR OVER 800 YEARS AND HAD BECOME **IMPORTANT FOR BIODIVERSITY AND NATURE CONSERVATION IN THE REGION.**



Fish losses caused by otters and other fish-eating vertebrates led to a loss of personal income and posed a threat to the livelihoods of local fish farmers. The Saxony government acknowledged the economic damage caused by the otters to the fish farmers. National sentiment had transitioned to supporting wildlife conservation but these negative impacts affected private fish farmers rather than the general public. Consequently efforts were made to provide support to the fish farmers. As a result, a compensation scheme for fish farmers was initiated in 1997 under a State of Saxony program for "case of hardship". To be eligible for compensation under the scheme, the total financial losses incurred had to exceed EUR 1 000 per year, but small-scale fish farmers often failed to meet this minimum requirement (see the Analysis section for how loss was assessed). Alongside damage compensation, fish farmers had the option to participate in voluntary agri-environmental schemes co-funded by the European Union. Incentives for extensive fish farming were paid to support ecologically beneficial enterprises and preserve the historical pond landscape. Voluntary contracts over five years were offered to fish farmers, providing financial incentives for implementing certain measures, such as extensive production without the need for additional feeding, or supporting wild fish stocks. Another measure in the voluntary contracts involved providing payments to fish farmers for extra fish stocking that created feeding habitats for endangered species. This measure, often implemented to support otter recovery, was informally referred to as the "otter bonus". Farmers also received support through an aquaculture programme that provided technical assistance, such as fencing and wires to protect fish stocks from predators.



PROCESS OF SETTING UP THE PROJECT

One of the project's activities involved taking a trans- and interdisciplinary approach to the research. A wide range of researchers from different disciplines, along with authorities at different levels and fish farmers, were involved in various aspects of the activity. For instance, ecologists studied the otters, which included searching for their presence in the Upper Lusatia region, by identifying their scats and gathering genetic data to distinguish individuals. Allowing for the production of population models. Legal professionals examined the legal regulations regarding otter conservation, conditions and frameworks that influenced the situation, with a particular focus on the use of lethal measures and compensation.

SOCIAL SCIENTISTS ENGAGED WITH THE **STAKEHOLDERS INVOLVED, INTERVIEWING FISH** FARMERS, LOCAL AUTHORITIES IN CHARGE OF OTTER MANAGEMENT, AND OTHER DECISION-MAKERS. THE **GOALS OF THIS LATTER ACTIVITY WERE TO DETERMINE THE STAKEHOLDERS' PERCEPTIONS OF** OTTERS, UNDERSTAND THE HISTORY OF THE **PROBLEM, IDENTIFY THE EXTENT OF DAMAGE OCCURRING, GAUGE HOW THE STAKEHOLDERS FELT ABOUT THE DAMAGE, AND ASCERTAIN WHAT THEY NEEDED TO EFFECTIVELY MANAGE THE SITUATION.**





ANALYSIS

Interviews and discussions with the fish farmers made it clear that it often took a long time for the compensation to reach the fish farmers after reporting the damage caused by otters. This was due to the fact that the damage could only be accurately assessed after the ponds had been drained, which generally happened only once a year. Fish farmers were required to submit a marginal return calculation (a detailed description of their expected production and loss) to the Fisheries Authority. Two expert opinions were used to determine the compensation amount. The marginal return calculation was derived from the fish production for the pond, the estimated loss of income due to otter presence and the expected natural fish mortality in the pond. The fish farmers also needed to prove the presence of otters in the pond by reporting otter tracks, and observations of fish remains. Therefore, it took a long time for the compensation to be paid out. This presented a significant problem because the fish farmers produced carp on a three-year cycle. If an otter were to enter a pond, the fish wouldn't be lost for one year, but three years' worth of work would be lost. Therefore, compensation payments were crucial for fish farmers to restart their production cycle.









Following the collection of ecological and economic data, an economic analysis was conducted. This analysis was based on such factors as the otter population in the region, the daily food requirements of otters and the proportion of that food expected to come from fish. This helped determine how much of fish production could potentially be lost to otters. It was estimated that the otter population (approximately 400 adult and 100 juvenile otters) could consume 85 tonnes of fish per year in the region. With an annual average production of 3 124 tonnes from the fish farms (based on annual production for the years 2000-2003), otter predation could account for 2.7 percent annual loss. This loss was valued at EUR 177 411 across Saxony.

THE COMBINED SUM OF THE "OTTER BONUS" AND **COMPENSATION PAYMENTS FOR THE SAME PERIOD** (2000-2003) FAR EXCEEDED THE ESTIMATED MAXIMUM DAMAGE THAT COULD BE CAUSED BY **OTTERS, SUGGESTING THAT COMPENSATION PAYMENTS WERE DISPROPORTIONATELY HIGH. NEVERTHELESS, ALL STAKEHOLDERS RECOGNISED** THAT THESE COMPENSATION PAYMENTS PLAYED A **CRUCIAL ROLE IN PREVENTING CONFLICTS.**

Given the biologists' findings, which indicated that otters were present throughout the landscape and their population was stable, the project considered it advantageous to provide the compensation in advance. This approach aimed to cover potential damage while also incentivizing fish farmers to maintain the habitat that otters depended upon.















ACTIVITIES

The project developed a conceptual framework by categorizing the different costs that could occur depending on whether implementing an ex-post compensation or compensation in advance scheme. It was calculated that the direct damage costs for both schemes would be the same. However, the analysis indicated that differences in costs were more likely to arise from i) transaction costs, including the costs for acquiring all the information to determine the damage cost, and ii) decision-making costs that stem from the occurrence of imperfect damage measurements and differing opinions regarding the amount of damage and the appropriate cost valuation of that damage.

The project calculated the hours of personal time required to manage all the applications for compensation and verify the damage. According to the managers responsible for damage verification, the average time required to verify an application was 2.5 hours on average. A significant portion of this time was devoted to discussing the different variables to estimate the extent of damage with the farmers. With 1000 ponds in the region, assuming each pond made one compensation claim a year (resulting in 2500 hours spent verifying claims), at a rate of EUR 30 per hour, the transaction costs could be EUR 75 000 per year or EUR 375 000 per year over five years.



For the compensation in advance scheme, it was estimated that it would take from 0.5 to 1 hour to draft a contract for a farmer. Therefore, for 1000 fishponds, it could take 500-1000 hours to draw up all the contracts. At the same hourly rate, the total transaction cost would be EUR 15 000-30 000. Since the agreement would span five years, these would be the only transaction costs. Nevertheless, accurate ecological data would be required to estimate the probable damage in advance. It was estimated that conducting the appropriate species monitoring, which would be performed every five years, would cost approximately EUR 200 000.

THE COMPENSATION IN ADVANCE SCHEME **WOULD ELIMINATE THE NEED FOR DAMAGE VERIFICATION, RESULTING IN THE** TOTAL COST OF EUR 230 000. THIS WAS **SIGNIFICANTLY CHEAPER THAN THE EX-POST COMPENSATION SCHEME DUE TO** THE HIGH TRANSACTION COSTS **ASSOCIATED WITH THE LATTER.**









OUTCOMES

In response to concerns from fish pond farmers about the challenges with the current scheme, the project provided evidence for policy-makers and wildlife managers on the most economically suitable compensation scheme for the Upper Lusatia region. A compensation in advance scheme for otter damage was ultimately not implemented.

CONVINCING THE AUTHORITIES TO COMPENSATE FISH FARMERS BEFORE THE DAMAGE HAPPENED PROVED CHALLENGING **BECAUSE THEY WERE WORRIED ABOUT** POTENTIAL WASTAGE OF FUNDS IF DAMAGE **DID NOT ACTUALLY OCCUR, AS THE PROPOSED SCHEME WOULD HAVE ALREADY DISBURSED PAYMENTS TO THE FARMERS.**

Fish farmers appreciated the idea of receiving compensation in advance, as it would have provided them with the security they needed to maintain the fish pond habitats, without bearing the full costs associated with otter presence. Unfortunately, the scheme never came into effect.







KEY INSIGHTS & LESSONS LEARNT

NO UNIVERSAL SINGLE TRUTH

Understanding and respecting the diverse perspectives of all stakeholders was crucial because it was impossible to establish a single shared reality.

LISTENING TO FISH FARMERS 02

By engaging the fish farmers on the management approaches and schemes being implemented, the fish farmers could provide input on what would and wouldn't work for them, highlighting important issues with plans that would have made them unsuccessful if implemented.

CONSERVATIONISTS AS STAKEHOLDERS

The fish farmers were actively engaged in conservation efforts. Their maintenance of fishponds for optimal carp production resulted in biodiversity benefits. The fishponds represented some of the few water bodies in the state. Therefore, if abandoned and no longer maintained, it would significantly impact wildlife that depended on such water bodies for their habitat.

CONVINCING DECISION MAKERS

The project faced difficulties convincing the authorities to offer compensation in advance as there were concerns that compensation might be disbursed for damage that might never occur. Incentivizing the need to be proactive rather than reactive was challenging. Nonetheless, it was clear that providing compensation in advance would result in reduced transaction costs, as it negated the need for assessments. Consequently, the overall scheme would be more cost-effective, irrespective of whether damage costs were potentially inflated.

CHARISMATIC SPECIES 03

The otter is a charismatic species garnering support from the general public and fish farmers. The fish farmers were happy to coexist with the otters as long as measures were taken to mitigate impacts caused by them. The occurrences of overkill by otters were also rare, making them more tolerable species to coexist with compared to other species.

PREDICTABLE DAMAGE 04

The presence and damage caused by otters were predictable across the pond landscape in Saxony over a year, allowing for accurate estimation of economic impacts on fish farmers. In contrast, for species like cormorants from the *Phalacrocoracidae* family, whose presence across a landscape is not predictable due to migration, compensation in advance may not be appropriate, as damage could vary spatially and temporally.

07 FLEXIBILITY IS A CRUCIAL CONSIDERATION

Currently, many compensation schemes are structured around five-year cycles, with predefined rules established at the outset across the Saxony state. This lack of adaptability can pose challenges when trying to align with on-the-ground realities. A rule that suits one area might prove restrictive for farmers elsewhere, potentially impeding specific livelihoods.

INCLUSION FROM THE OFFSET

During the project, all stakeholders were involved in the research component to understand the situation. However, the impacted fish farmers were not involved in identifying solutions. In a follow-up project, a more inclusive approach was adopted, involving all stakeholders from the beginning to the project's conclusion, helping to significantly improve engagement.









FURTHER INFORMATION

- Otters in Saxony: a story of successful conflict resolution
- A conceptual framework for damage compensation schemes. Biological Conservation. 2007

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ABOUT THE CASE STUDIES

The Food and Agriculture Organisation of the United Nations (FAO) and the IUCN SSC Human-Wildlife Conflict & Coexistence Specialist Group (HWCCSG) have jointly developed a set of case studies with the aim of covering the process projects have taken to manage various aspects of a human-wildlife conflict & coexistence situation. This case study is one of many that will be used to illustrate key components of the IUCN SSC Guidelines on Human-Wildlife Conflict & Coexistence. The published case studies can be found in the Human-Wildlife Conflict & Coexistence Library.

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Contact: Forestry Division – Willdife and Protected Areas Management http://www.fao.org/forestry/wildlife Food and Agriculture Organization of the United Nations Rome, Italy



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