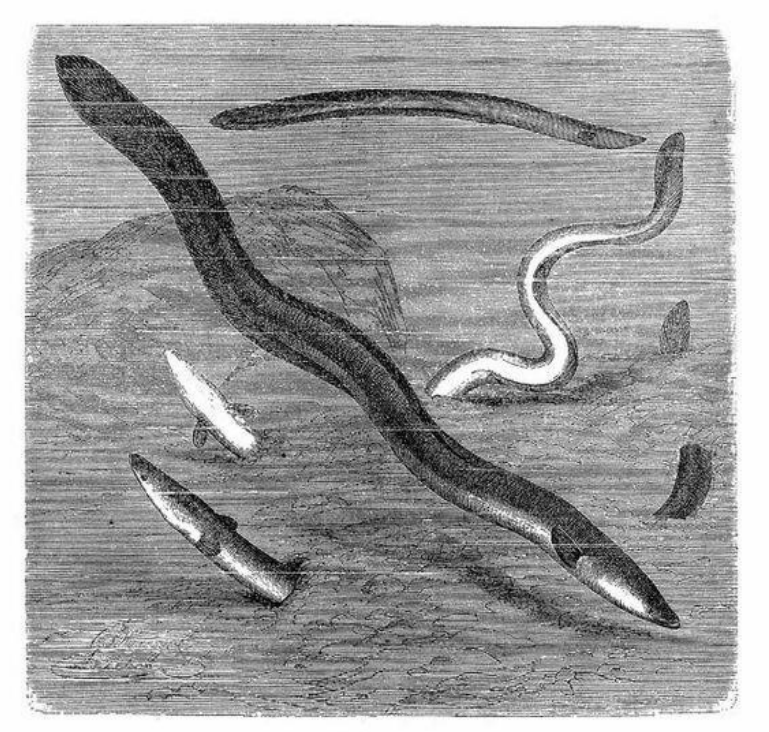
EEL RANGER PROGRAMME



Investigate a future where fishermen become Eel Rangers

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1. Executive Summary

The migratory European eel (*Anguilla anguilla*) is currently listed as critically endangered on the IUCN Red List. The eel stock is declining, including across the Netherlands. This is due to many threats, such as barriers, low water quality, habitat loss, global warming and over-exploitation, all of which act synergistically. There are efforts in place by the national government to tackle some of these issues, though many of these solutions will take quite some time (i.e., adjusting dykes and dams). For this project, the focus is placed on the threat of eel fishing, particularly legal small-scale fishing.

While large scale eel 'farming' is practiced in the Netherlands, the focus lies on traditional eel fishing (also known as 'wild eel fishing'). This is a practice that has taken place in Dutch waters since feudal times and it is also paired with a strong culture of eating smoked eel. Increased regulations and total bans in some European nations put this traditional way of fishing at risk of disappearing. The Netherlands currently has a three-month ban in place, but until now there are no signs the stock is recovering. These effects will not be seen for another generation as the life cycle of eels are long and they can only reproduce once. This makes eel conservation efforts particularly challenging.

Good Fish is dedicated to saving the eel whilst also trying to avoid a complete ban on wild eel fishing and therefore have commissioned this research. The aim of this project is to make an economic plan, describing alternatives for eel fishers in their transition as "eel rangers" in the Netherlands. The reasoning behind this effort is to find ways that fishers can use their traditional knowledge of eels and waterways in order to help the conservation of eels whilst maintaining their livelihood. This research was carried out by completing a literature study as well as 13 interviews from four different groups of stakeholders: academics, NGOs, fishermen and waterboards. These interviews were all coded using inductive and deductive coding on Atlas.ti software. Data was also collected on the financial responsibilities of the different ranger jobs and possible costs were described.

Five possible ranger opportunities were found through the data analysis: assisting in research, moving the eel over barriers, fishing for alternative species instead of eel, anti-poaching efforts and finally, an array of non-fishing job alternatives. Each of these alternatives is discussed using the primary data as well as published literature, including fish management case studies from different countries. Assisting in research was the most mentioned option, in part due to the fact some fishers are already involved in research for consultancies, NGOs, waterboards and academics. This option seems the most likely to take place as the critical state of the eel requires frequent monitoring. Fishers are also already involved in moving eels over barriers such as in DUPAN (Duurzame Palingsector Nederland) "Eels over the Dykes" project, but this could be an effort that is expanded with more fishers. There is, however, a significant debate surrounding the efficiency of this technique in helping the eel population recover, reflected in both the literature and the interview responses. Fishing for alternative species, particularly invasive species, is also examined. Some species are already fished on, making this easier to expand and therefore a strong possibility. However, their markets should be comparable in extent to that of the eel, for this shift to be possible. These requirements are harder to meet, especially in the shortterm. Anti-poaching is an option with mixed impressions across interviewees, this option makes sense as fishers are already on the waters and can use their knowledge to note illegal fishing. However, the social implications of having anti-poaching rangers are often very complex. Finally, the non-fishing job alternatives derived largely from a water board which already employs an 'ex-eel fisher' to do them, instead of fishing. These activities include monitoring water quality or weeding habitats and were already part of the regular tasks of the waterboard.

For each of these possible ranger jobs, participants had different ideas of who was responsible for funding the salaries and extra costs these activities require for fishers to do them. The four main groups

that were identified were academia (specifically universities), the Dutch government (this includes the Ministry of Agriculture, Nature and Food quality (LNV) and regional waterboards), NGOs (such as WWF but also the National Postcode Lottery) and the European Union. Largely, the responsibility of funding was placed on the Dutch government, both the LNV and waterboards. In order to better understand what this funding might look like, estimates of the gross salary of fishers were made based on secondary data. First, the number of eel fishers in the country was estimated at 80 fishers, based on our interview data. The salary of a single fisher will depend on multiple factors, the amount of eel they catch per year, the quality of eel they catch (yellow or silver) the price of the eel that year (including fluctuations throughout the year) and the operational costs they have. The range of gross salary found was between €39,325 and €66,550, depending on eel prices and assuming the total catch of wild eels is evenly divided between the 80 fishers. Finding the precise salary of fishers is only possible by discussing this with the individual fishers as they will all fish different quantities depending on their boat size and frequency of fishing. The salary for these alternative jobs ought to at least match the salary that fishers are currently paid when they participate in research with RAVON, which is €50 per hour. Though further research is needed concerning the costs and salaries for these jobs.

Some other key findings in this research were reoccurring topics that suggested a transition to eel rangers would have more challenges than just the funding. The major challenge that was found was the apparent lack of trust between the different stakeholders. This lack of trust between fishers and the government as well as science in general, presents a large challenge. Eel fishers are unlikely to switch away from eel fishing if they do not believe eel populations are decreasing. The tradition and culture surrounding eel fishing is also a significant finding as it may present a significant barrier to overcome when discussing reducing eel fishing, as some people may interpret efforts to reduce eel fishing as an attack on Dutch culture.

In conclusion, this report suggests different jobs of what an eel ranger programme might look like in order to sustain the livelihood of fishers whilst also involving them in eel conservation efforts. Certain jobs are more likely to be well-accepted by fishers as some are already practiced, whilst others may require more new changes (anti-poaching). The most significant conclusion is that fishers are a very heterogenous group and the willingness to be involved in a programme such as this will be dependent on each individual. The same can be said of their eel fishing-based salaries, which would have to be met by these alternative jobs.