

Sparling

A SMALL FISH
IN BIG TROUBLE



*The predicament of an
extraordinary fish*





Going with the flow

European smelt, *Osmerus eperlanus* is a slender, silver fish that inhabits the Cree Estuary and spawns in the River Cree. Called sparling in Scotland it is sometimes known locally as the 'spurlin'. Despite once being common in the mouths of many rivers along Scotland's Solway coast it has suffered a significant decline over the last 100 years and is now thought only to survive in the Cree.

The Cree population of the sparling spend the majority of their life in the estuary, returning to the tidal reach of the river in vast numbers for a brief period to spawn in fresh water. The unique reproduction strategy of a mass spring migration to shallow fresh water to spawn at night is both impressive and intriguing. While the advantages provided by this tactic are not fully understood it has allowed sparling to flourish for thousands of years. Perhaps the high oxygen content of the fresh water or a relative scarcity of predators justifies the effort required to swim upstream. There are also some environmental risks for the newly laid eggs where fluctuating water levels and falling temperatures will lead to a high death rate. In recent times the interference by people has multiplied the problems the fish encounter and led to their decline.

The sparling is a weak swimmer and has to make use of an incoming tidal flow to assist its journey up stream. During the spring-time migration it is at its most vulnerable and predators gather to greet the arrival of thousands of fish in the river. Sparling may fall prey to cormorants, herons, otters, seals and porpoises. When predators gather in the river it is a sign that the sparling are on their way to the spawning grounds.

It is an unfortunate coincidence that the highest tidal reach on a river is usually the lowest convenient crossing point and is where towns have often developed. Annan, Dumfries, Gatehouse and Newton Stewart are all located at river crossings. The growth of towns threatened sparling spawning sites with pollution or river engineering works. Weirs, dams and bridges create obstacles for sparling on their annual migration and can change the riverbed or water flows.

The close proximity of a town to the spawning site makes the sparling more visible and accessible for commercial netting but also means the sparling in the Cree have become a subject for research.



A delicate dish

The sparling has a peculiar smell of cucumber although some say the scent reminds them of violets or cut rushes. It was a highly prized dish described in 1758 as having flesh that *'is soft and tender, and of a delicate Taste, yields pretty good Nourishment, and is easy of Digestion'*.

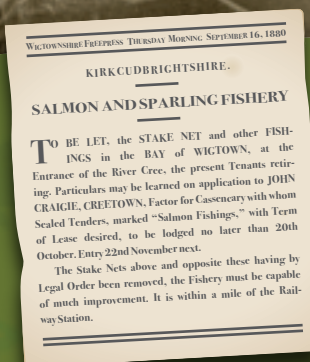
In the autumn, the season when they are in best condition for eating, shoals of sparling begin to gather in the mouths of rivers and, in the past, were caught by fishermen using a fine meshed net cast from a boat.

The arrival of the railways in the mid-1850s opened up speedy routes to English cities, which were profitable markets for Solway sparling. During the spring spawning event large quantities of sparling could be gathered in a single night and were so plentiful that local people used them as fertiliser on their gardens. Over fishing is believed to have contributed to the decline of the sparling in many of the rivers on Scotland's Solway Coast.

Sparling are inextricably linked with the identity of the Cree and the people who fished the river. One of the earliest records of the sparling is found in the Minnigaff Kirk Session Records from the early 1700s. *'It was an old custome to do so in time of spurline fishing'* was the defence unsuccessfully used by a man accused of indecent behaviour during Easter Week.

Commercial fishing for sparling continued up until the early 1980s but catches were unpredictable and sometimes the fish failed to appear at all. Most fishermen were only aware of the fish as an accidental catch during the summer salmon season and remember the distinct scent of cucumber on their nets.

When word got out that the "cucumber fish" had arrived in the shallow waters of the Cree local people remember the spectacle of the "river boiling" with sparling and the children "just picking them up with their hands" and taking them home as an annual teatime treat.





The science of an unpredictable fish

Galloway Fisheries Trust has been studying the sparling to understand its life cycle, the threats it faces and opportunities for reintroduction to other rivers. Factors influencing the timing and length of the spawning event include water temperature, tidal cycle, freshwater flow, salinity and lunar phase making the sparling difficult to research.

Studies of the Cree sparling show each female issues an average of 56,000 eggs into turbulent water as the smaller males release their milt. The sticky eggs adhere to stones and waterweed to prevent them from being washed out to sea. When the egg hatches the tiny sparling drift into the estuary where they appear to remain in coastal waters close to estuaries.

There is a plentiful supply of shrimp and small fish which allow sparling to quickly grow. Once mature the cycle is repeated with the sparling gathering in large shoals in the mouth of the river during autumn months followed by the migration upstream in the spring just as the daffodils come into flower.

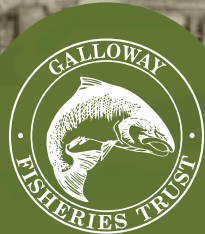
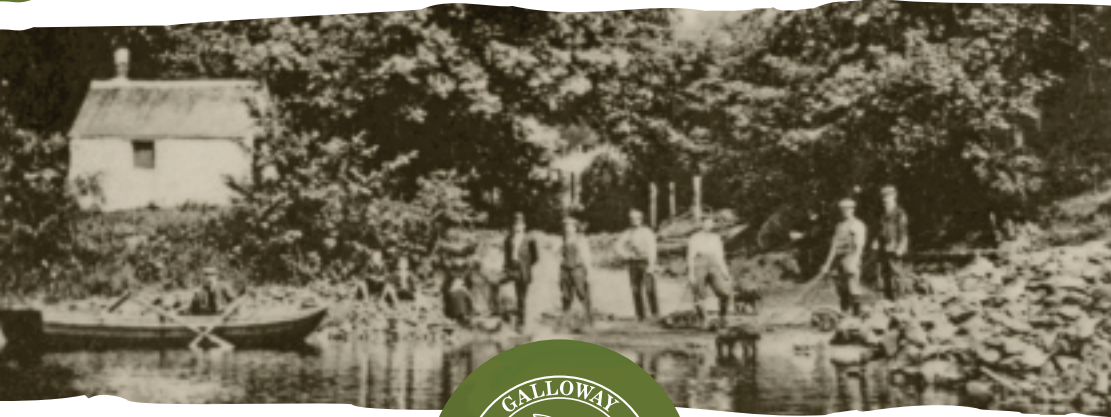
Galloway Fisheries Trust catch sparling to gather data on weight, length and sex as well as collecting scale samples to discover the growth and age of fish. The more that is known about this extraordinary fish the better it can be protected for future generations.

Historic reports suggest that the sparling from the Cree were larger than populations from other rivers.

Research using scale samples shows the sparling mature very quickly and begin breeding two years after hatching. Few adults live long enough to reproduce at more than two spawning events. The age sparling mature will depend on environmental conditions. A high mortality rate in adulthood appears to have selected Cree sparling to mature at a young age and invest greater energy into spawning over their short life. By adopting this strategy for survival the sparling are vulnerable to a sharp decline in numbers if a spawning event fails. Research shows a high percentage of the fish that return to reproduce have recently matured and that the current population in the Cree appear to be in a relatively healthy state although in lower numbers than they used to be.

If the reintroduction of sparling to other rivers on the Solway was undertaken it would help lessen the impact caused by a failure of a spawning event and ensure a brighter future for this special fish.

The Saving the Sparling Heritage Project has been supported by the European Maritime and Fisheries Fund, The Scottish Government and The Holywood Trust. The aim of the Galloway Fisheries Trust is to restore and maintain aquatic biodiversity, particularly native fish, in Galloway by means of practical, responsible and sustainable approaches to land, water and fishery management, based on sound science, for the benefit of the community as a whole.



The Holywood Trust



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