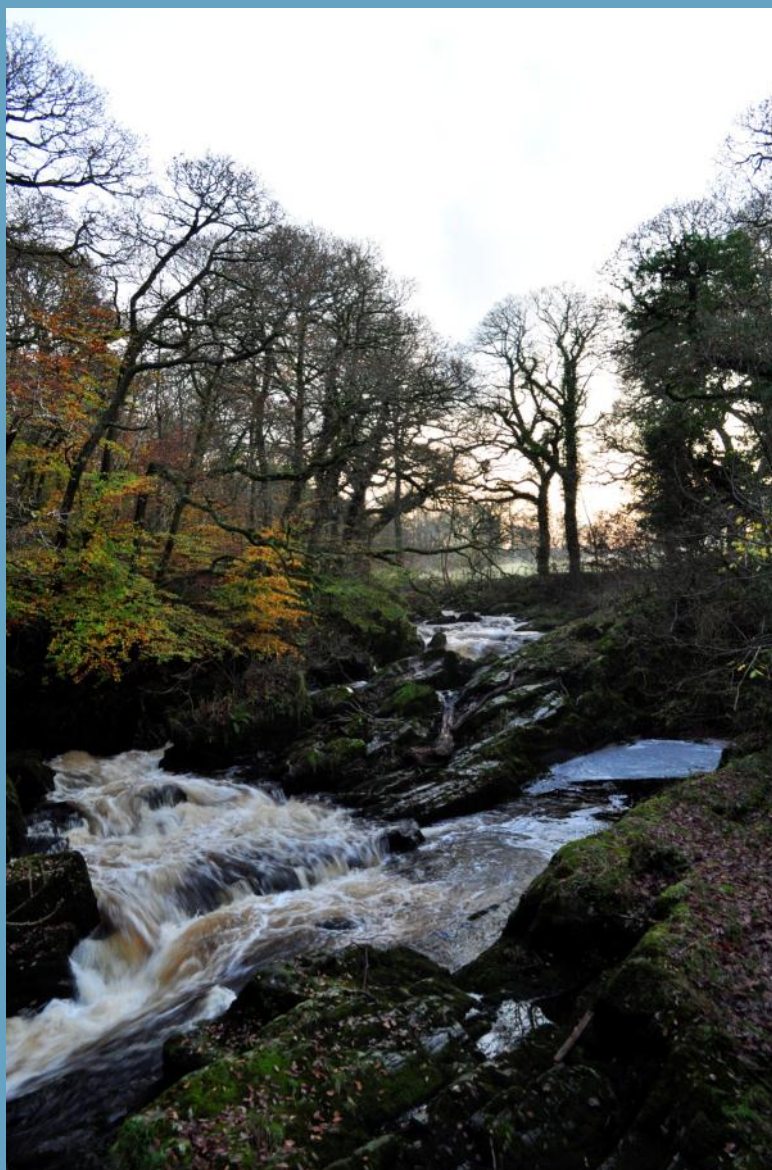
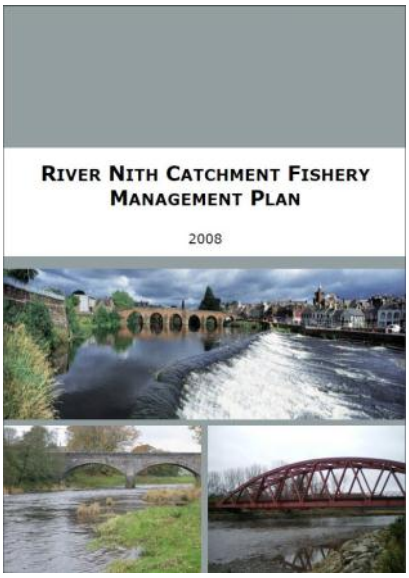
Nith Catchment Fishery Management Plan

Review of Implementation 2008 - 2012

February 2013





The River Nith Catchment Fishery Management Plan can be found at www.river-nith.com/uploads/PDFs/RNCFMP%20%28emailable%29.pdf.

RIVER NITH CATCHMENT FISHERY MANAGEMENT PLAN

2008—2012

The River Nith Catchment Fishery Management Plan was prepared by the Nith District Salmon Fishery Board in 2008 and published following public consultation. Within the plan, local management priorities were identified as part of a national programme supported by the Scottish Government and the Rivers and Fisheries Trusts of Scotland (RAFTS). These plans linked national, regional and local priorities for all-species fisheries management across Scotland and were implemented by Fishery Trusts and Salmon Fishery Boards. This publication summarises all of the fisheries management initiatives implemented between 2008 and 2012 by the Nith District Salmon Fishery Board and, once established in 2009, the Nith Catchment Fishery Trust .

Nith District Salmon Fishery Board

Nith Catchment Fishery Trust

RAFTS

The Scottish Government

Nith District Salmon Fishery Board

Nith District Salmon Fishery Board (NDSFB) is a statutory body that was established in 1862 and is responsible for the protection and welfare of salmon and sea trout within the Nith catchment. The NDSFB is empowered under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 and other legislation to conduct such acts as it considers expedient for the protection, enhancement and conservation of stocks of salmon and sea trout.

The NDSFB's objectives are to preserve, protect and enhance stocks of migratory salmonids in the Nith catchment and to preserve, protect and enhance the fishery.

Nith Catchment Fishery Trust

Nith Catchment Fishery Trust (NCFT) is a Scottish registered Charity which was formed in late 2009 to conserve and enhance all native freshwater fish and their habitats located within the inland and coastal waters of the River Nith catchment and the jurisdictional area of the Nith District Salmon Fishery Board.

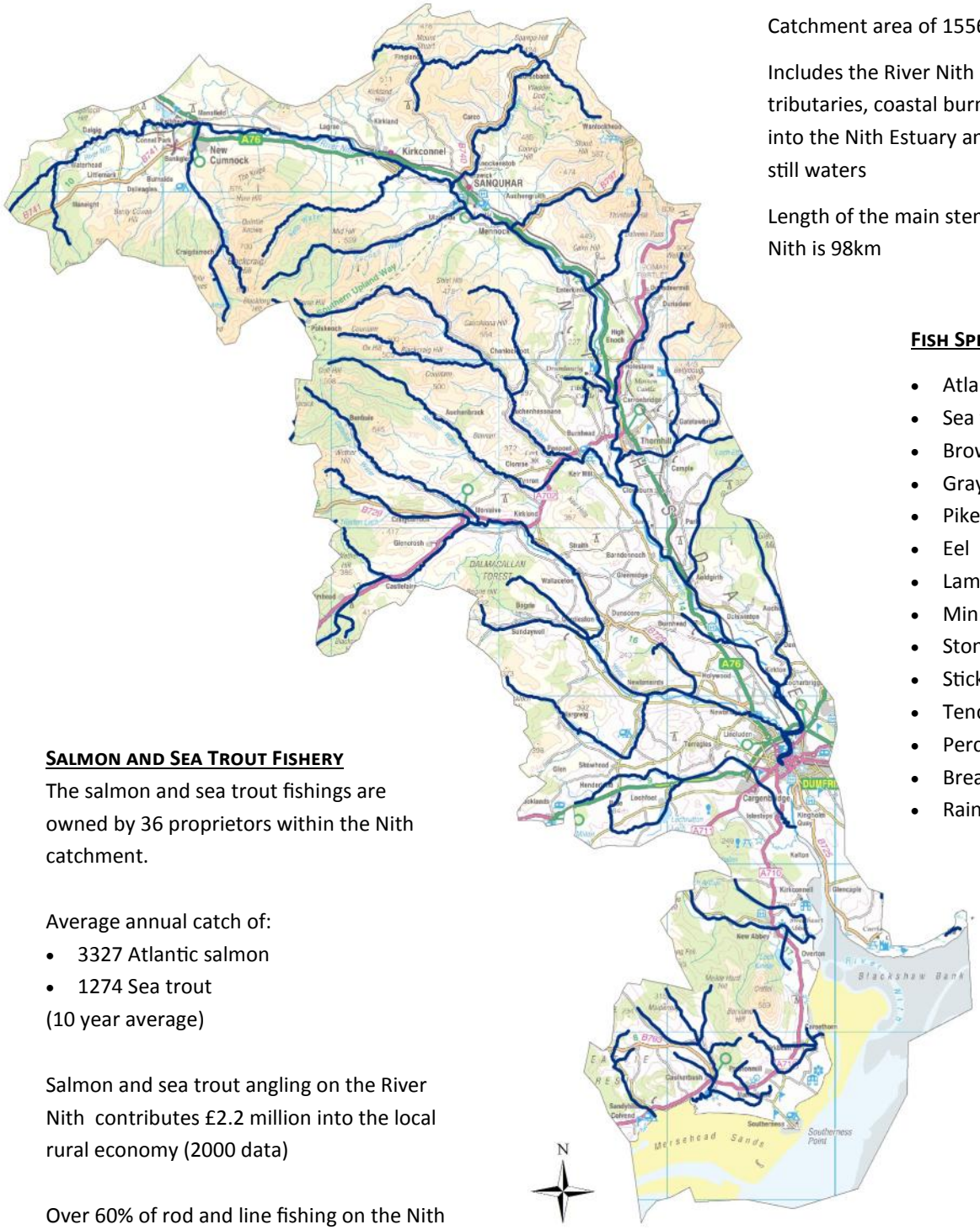
The aims of the Nith Catchment Fishery Trust are:

· To advance environmental protection and improvement by conserving and enhancing all species of freshwater fish and their environs within the River Nith catchment, for public benefit.

· To advance the education of the general public through raising awareness of aquatic ecosystems including their fauna, flora and economic activity within the River Nith catchment.

The fisheries management initiatives implemented by the NDSFB and the NCFT as a result of the River Nith Catchment Fishery Management Plan have been supported by, funded by and involved with the following organisations:

The River Nith Catchment



Vital Statistics

Catchment area of 1556km^2

Includes the River Nith and its tributaries, coastal burns that drain into the Nith Estuary and connected still waters

Length of the main stem of the River Nith is 98km

Fish Species Present

- Atlantic salmon
- Sea trout
- Brown trout
- Grayling
- Pike
- Eel
- Lamprey
- Minnow
- Stone loach
- Stickleback
- Tench
- Perch
- Bream
- Rainbow trout

Salmon and Sea Trout Fishery

The salmon and sea trout fishings are owned by 36 proprietors within the Nith catchment.

Average annual catch of:

- 3327 Atlantic salmon
- 1274 Sea trout

(10 year average)

Salmon and sea trout angling on the River Nith contributes £2.2 million into the local rural economy (2000 data)

Over 60% of rod and line fishing on the Nith is controlled by Angling Associations

Commercial fishing methods used in the Nith catchment include a stake net, haaf netting and a net and cobble fishery.

Other fisheries

The Nith also has a healthy brown trout and grayling fishery which are owned by landowners throughout the catchment. There are also a number of still water trout and coarse fisheries within the catchment. Sea fishing is popular at the quay at Glencaple and off the coast.

Roles and responsibilities in the management and conservation of fisheries within the Nith catchment

Local Bodies

Nith District Salmon Fishery Board (est. 1862) - www.river-nith.com

- Protection of salmon and sea trout fisheries
- Inputs into national fisheries policy
- Enforcement of fisheries legislation
- Advises on conservation measures/guidance on the whole river
- Employs permanent and seasonal staff

Nith Catchment Fishery Trust (est. 2009) - www.river-nith.com

- A Scottish registered charity
- Involved in the conservation of all fish species within the catchment
- Provides best scientific advice to assist with management decisions
- Employs permanent and seasonal staff

Salmon Fishing Proprietors

- Potential to stand as Members of the Board
- Sell permits to anglers to fish their beats
- Set rules and conditions for the management of individual beats

Riparian landowners

- Manage the riparian fringes of the river
- Can sell permits for "white fishings" only

Anglers and Netsmen

- Obligation to fish legally according to national legislation and local beat rules
- Responsible for following the conservation measures laid down by the Board, Trust and fishery owners
- Obligation to respect the land and wildlife and to follow the Country Code

National Bodies

Marine Scotland Science—www.scotland.gov.uk/Topics/marine/science

- Provide scientific, economic and technical advice and services in support of the policies and regulatory activities of the Scottish Government

Scottish National Heritage— www.snh.gov.uk

- Promote, care for and improve Scotland's natural heritage
- Help people enjoy it responsibly and promote its sustainable use

Scottish Environment Protection Agency— www.sepa.org.uk

- To protect and improve the environment by regulating and monitoring Scotland's air, land and water
- Advise Scottish Government

Rivers and Fisheries Trusts of Scotland— www.rafts.org.uk

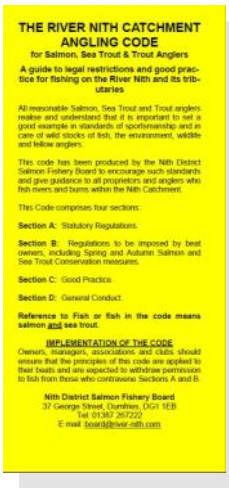
- Represents Scotland's national network of 25 Rivers and Fishery Trusts and Foundations
- The conservation and enhancement of native freshwater fish and their environments in Scotland
- Supports Trusts at a local level and represent their interests at a national level

Association of Salmon Fishery Boards— www.asfb.org.uk

- Represents Scotland's 41 District Salmon Fishery Boards
- Develops policies to conserve fish stocks and the habitats on which they depend
- Promotes best practice for fishery management within Scotland
- Coordinates and delivers training covering fishery management and enforcement

Conservation Initiatives

New Angling Code produced


THE RIVER NITH CATCHMENT ANGLING CODE
for Salmon, Sea Trout & Trout Anglers
A guide to legal restrictions and good practice for fishing on the River Nith and its tributaries
All reasonable Salmon, Sea Trout and Trout anglers realise and understand that it is important to set a good example in standards of sportsmanship and in care of wild stocks of fish, the environment, wildlife and fellow anglers.
This code has been produced by the Nith District Salmon Fishery Board to encourage such standards and give guidance to all proprietors and anglers who fish rivers and burns within the Nith Catchment.
This Code comprises four sections:
Section A: Statutory Regulations
Section B: Regulations to be imposed by beat owners, including Spring and Autumn Salmon and Sea Trout Conservation measures.
Section C: Good Practice.
Section D: General Conduct.
Reference to Fish or fish in the code means salmon and sea trout.
IMPLEMENTATION OF THE CODE
Owners, managers, associations and clubs should ensure that the principles of this code are applied to their beats and are expected to withdraw permission to fish from those who contravene Sections A and B.
Nith District Salmon Fishery Board
37 George Street, Dumfries, DG1 1EB
Tel: 01387 267222
E-mail: board@river-nith.com

In 2011 the NDSFB produced a revised River Nith Catchment Angling Code for salmon, sea trout and trout anglers. The revised code is a guide to the legal restrictions and good practice for fishing on the River Nith and its tributaries. Particular consideration was given to fish conservation measures when developing the code and the following additional regulations were decided upon: - to return all salmon caught before 1st June, to return all hen fish caught in November, that all sea trout under 10" and over 3lb must be returned, that no more than two salmon and two sea trout should be retained in any day and barbless hooks to be used until the 1st June and in November. This code has been in place now for one season and the majority of anglers appear to have adopted these conservation measures. The full angling code can be found at www.river-nith.com

Encouraging catch and release


Fishery Biologist leads by example!

The primary aim of any fishery manager is to ensure that stocks of fish are present in sufficient numbers, or if numbers are below the natural carrying capacity of the river, to try to increase stocks. There are a variety of different methods that can be used to improve the freshwater habitat that salmon and sea trout utilise. For instance, barriers to migration can be taken down, the amount of diffuse pollution entering watercourses can be reduced by restricting access by farm stock and planting trees, and hatcheries can be used to stock juveniles. All of these methods work with varying degrees of success but it is not just down to fishery managers to ensure the future conservation of salmon and sea trout stocks. Fishermen and women can certainly do their bit by returning salmon and sea trout that they catch back to the river. This is a well-recognised conservation method and on some rivers a total catch and release policy has been adopted.

Unfortunately, current catch and release rates on the Nith are very low compared to other rivers in Scotland. An average river in Scotland is returning 70% of the total number of salmon and grilse caught each year where as in 2011 only 30% of Nith salmon were returned. In response to this, efforts have been made by the Board and the Trust to raise awareness of the benefits that returning fish can have to the overall production of a river. It is estimated that if the return rate of salmon increased on the Nith to 70%, that would be an additional 4.7 million eggs being laid down. That is nearly half of all the salmon produced by hatcheries across Scotland and about 30 times more than is produced by the NDSFB hatchery every year. Slowly the perception of anglers is changing and salmon are being seen more as a resource rather than a food source. The most beneficial action an angler can take to increase the number of salmon and sea trout in the River Nith and its tributaries is to release more of the fish they catch.

Percentage of salmon released	Number of additional salmon eggs laid down
30%	1,723,500 (1.7 million eggs)
40%	2,700,000 (2.7 million eggs)
50%	3,375,000 (3.4 million eggs)
60%	4,050,000 (4 million eggs)
70%	4,725,000 (4.7 million eggs)
80%	5,400,000 (5.4 million eggs)
90%	6,075,000 (6 million eggs)
100%	6,750,000 (6.7 million eggs)

Table showing the number of additional eggs that could be laid down in the Nith as the percentage of salmon released increases

Enforcing Fisheries Legislation

Enforcement of Fisheries Legislation

Water Bailiffs in Scotland have similar powers as the police to enable them to enforce fisheries legislation as found in the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 and other fisheries related legislation in Scotland. The Nith District Salmon Fishery Board has been in operation since 1862 and has seen its fair share of fisheries related crime. In the 1980's poaching on the River Nith was at an all time high, with many cases appearing before the courts annually. In one year, 103 persons were reported for prosecution. This poaching activity varied from organised gangs netting the river under the cover of darkness or pouring toxic chemicals such as Cyanide into a stretch of water, killing all the fish over a considerable distance. Poachers also lamped salmon as they made their way onto the spawning grounds or foul hooked salmon as they gathered beneath falls waiting for a flood to let them continue upstream. Today poaching still occurs but at a lower level than in previous years. Gangs still net the river at night and locals still lamp for fish but there are easier criminal activities to make money these days.

Sea trout taken from poachers

Harbour porpoise killed in a coastal gill net

Since 2008, the NDSFB has trained five members of staff and volunteers as Water Bailiffs to Institute of Fisheries Management (IFM) level. The majority of work carried out by the Water Bailiffs is covert so often they will not been seen for weeks at a time, spending their time patrolling through the night. Specialised night vision equipment assists them to cover large sections of the river, looking for suspicious activity and signs of poaching. Since 2008 cases have been taken to court including illegal coastal nets, "snatching", gill nets set across the river and fishing without permission. When the Water Bailiffs are not taking part in covert activities, they are found patrolling amongst the anglers checking for valid permits and ensuring that legal fishing methods are being practised.

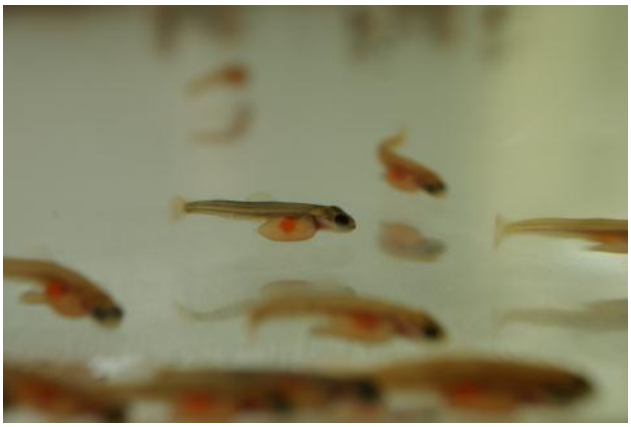
Along the coast, a different but just as damaging method of illegal fishing takes place with mono-filament gill nets being set to catch sea fish, however, salmon and sea trout are intercepted and caught as they move along the coast towards their river of origin. It is illegal to catch salmon and sea trout using this method and unfortunately it is indiscriminate in the species targeted. Harbour porpoise, guillemots and other protected species have been found caught up and drowned in these nets. In an attempt to police the inner Solway the Nith DSFB Bailiffs work with the Scottish Government and utilise helicopter patrols to combat incidents of estuarial gill netting.

Helicopter policing the Solway coast for gill nets

Enhancing Using a Hatchery

The Nith Hatchery

Nith District Salmon Fishery Board has operated their hatchery programme for more than 20 years, rearing both salmon and sea trout. The Board recognises the contribution that hatchery produced stock can contribute to fisheries management, in appropriate circumstances. Modern scientific opinion has evolved since the commencement of the Board's hatchery operation and now suggests a precautionary approach when contemplating stocking. Advancements in the field of fish genetics have highlighted the potential to corrupt the genetic profile of wild stocks by introducing hatchery reared stock in inappropriate locations.



Salmon alevins from the NDSFB hatchery

The Nith Board continues to maintain its hatchery programme with the primary aim of providing compensatory restocking of fish for losses due to pollution or issues created by the mining industry. The Board's hatchery is operated in compliance with the Association of Salmon Fishery Board's code of practise for hatchery operations, SEPA licencing, Fish Health Inspectorate and takes cognisance of the current opinion on genetic integrity.

Hatchery to the rescue in major pollution incident

In any river system pollution can be a potential problem but in the Nith catchment this risk is perceived to be higher than normal due to the extensive open cast coal mines located at the top of the catchment. Thankfully, regulations surrounding the discharge of water from these sites is strictly controlled by SEPA and pollution incidents are infrequent. However, when they do occur, their impact can be significant as was experienced in June 2009 when a settlement lagoon on a coal site north of Kirkconnel was inadvertently permitted to discharge into one of the burns draining the site. The grey slurry flowed straight down into the River Nith and the plume of sediment could be seen for miles downstream. Electrofishing surveys were carried out to assess the impact that the incident had on fish populations and it was found that in the worst affected section of the river, immediately down stream of the site, salmonid fry had been lost. In order to prevent losing the salmonid production in those couple of miles of river it was decided to restock with hatchery produced fish. Since then, monitoring has taken place annually to ensure that fish populations have returned to their former densities, and thankfully they have.

Stocking and monitoring of hatchery produced fish

In the spring, anglers assist with planting out salmon and sea trout fry into areas that have been identified as areas that will benefit from stocking and will not impact on the genetic structure of the wild fish populations. It is important to be able to prove that the salmon and sea trout fry that are stocked into watercourses within the catchment are surviving. As part of the annual electrofishing programme, sites which have been stocked are surveyed during the summer. The densities of salmonid fry and parr present at the sites are recorded and this information used to assess if the stocking programme has the potential of producing smolts. It is only through the mechanism of monitoring that we are able to evaluate the benefits of stocking.

Angler from Upper Nithsdale Angling Association assisting when planting out salmon and sea trout fry

Monitoring our Rivers

Electrofishing

The Board and the Trust survey approximately 150 sites annually throughout the Nith catchment using electrofishing techniques to monitor the number of juvenile salmon and trout that are present. When compared year on year, this data allows trends to be identified and highlights areas where juvenile salmonid populations are under performing, influencing future management decisions such as stocking and habitat restoration. During the course of these surveys other species of fish are also noted, including adult brown trout, lamprey, eels, pike, grayling, stone loach and minnow. The presence of these species is recorded and used alongside juvenile salmonid data when assessing areas of the catchment.

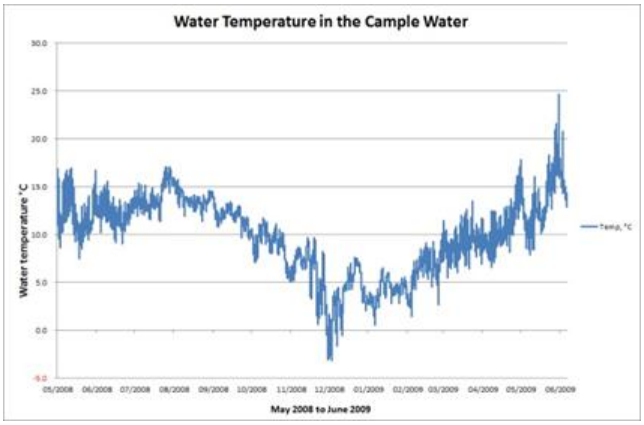
Electrofishing for juvenile salmonids

Renewable energy development

Since 2008 there has been an increase in the number of proposals to develop renewable energy and as a result the number of electrofishing surveys being commissioned has increased. These mainly include wind farms and micro hydro proposals. To ensure that the burns in the vicinity of the proposed developments are not adversely impacted by these works, pre and post construction surveys are carried out. Often, due to the location of these developments, small burns that may not ordinarily be surveyed are now being surveyed and this data augments the annual electrofishing data. Interestingly, we are finding areas of the catchment, where previously salmonids were thought to be absent, that do in fact sustain viable populations of these species. Other species such as eel are also being documented high up in the catchment, often in surprisingly small burns.

Collection of annual water temperature data

The River Nith, along with other rivers around the Solway basin, has seen a decline in the numbers of adult sea trout returning in recent years. In an attempt to try to understand what is happening to sea trout and juvenile trout within rivers surrounding the Solway, a forum known as the Solway Sea Trout Group was formed. One of the concerns of the Solway Sea Trout Group was the perception of increased temperatures in small tributaries utilised by sea trout. It was agreed that rivers on the English and Scottish sides of the Solway would start monitoring temperatures in spawning tributaries in an attempt to establish if temperatures are exceeding the tolerance levels for this species. The NDSFB purchased 10 temperature gauges and sited them throughout the Nith catchment. The data from these probes enables graphs showing trends to be produced. Periods when the temperature exceeds the optimum temperature for the survival of juvenile trout can then be identified. This data identifies areas where habitat enhancement may be utilised to redress the issue and programme of work focusing on habitat restoration and climate change is currently being developed. There are a number of sites throughout the catchment where habitat restoration is currently being considered, particularly in sea trout burns on the Cample, Mennock and Cairn Waters.



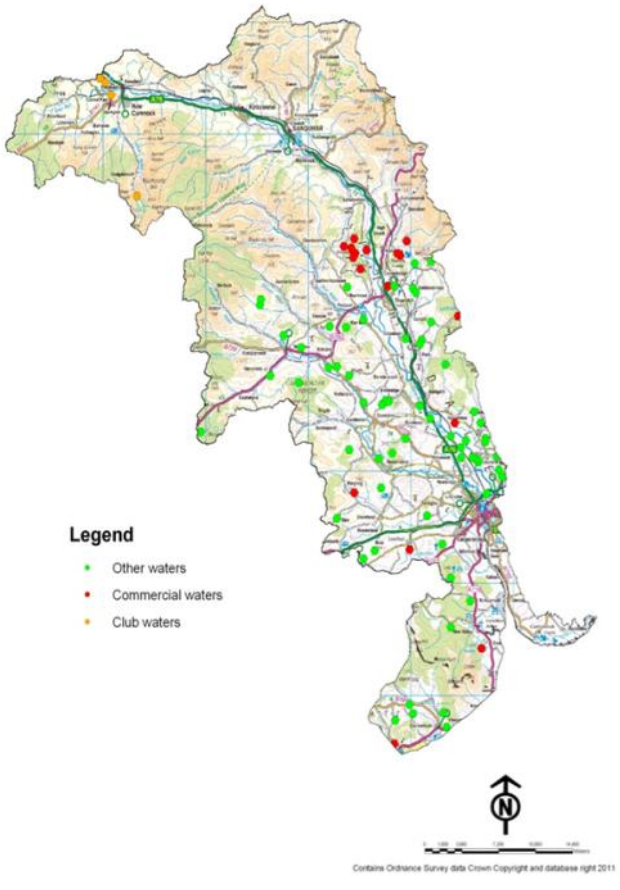
Graph showing water temperature during 2008/9

Monitoring our Rivers and Still Waters

Aquatic Invertebrates

Mayfly nymph typically found during a kick sampling survey

Invertebrates such as stonefly and mayfly nymphs and caddis fly larvae, are an important part of an aquatic ecosystem and due to their importance in the food chain, their absence can have a detrimental impact on other species of animals and birds. The presence or absence of certain species of invertebrate can be a good indication of the quality of the water i.e. if it is being affected by diffuse pollution or acidic runoff. The Trust has recently started carrying out surveys to monitor invertebrate populations within the Nith and uses this information in conjunction with fish population densities to assess any changes in water quality and to monitor any restoration projects. In a bid to involve anglers on the Nith in this important work, Louis Kitchen from the Riverfly Partnership assisted the Trust in setting up a Anglers Monitoring Initiative day where volunteers from various angling associations were trained in techniques to monitor invertebrate populations. Volunteers were allocated sites to survey on a monthly basis and the resulting data provided to the Trust for analysis, enabling long-term trends in the abundance of certain invertebrate groups to be monitored. If a site is found to be below an agreed tolerance level, SEPA would be alerted and investigations into the cause carried out.



Distribution of still waters within the Nith catchment

Census of still waters within the Nith catchment

The Nith catchment contains a number of still water fisheries, some of which are well known and fished regularly whilst others are virtually unknown. A number of these unknown waters are part of large estates/private gardens and there is anecdotal evidence to suggest the presence of some interesting fish species. As part of the NCFT's remit to conserve all species of freshwater fish it was agreed that base line information was required in order to form a picture of still waters in the catchment. The information was gained through a variety of methods including using Ordnance Survey and aerial maps to establish size/type of still water, speaking to local anglers and owners to establish the types of species believed to be present and carrying out seine netting on waters where there was no historic information. It was interesting to find that a larger number of still waters contained coarse fish than previously realised but that few of them were fished. Only a small number of stillwaters are fished commercially and this information has proved useful in assessing potential biosecurity risks and is being used when distributing information as part of awareness raising campaigns.

Education and Awareness Raising

Encouraging Young People into Angling

New Cumnock Primary taking part in WWoW

Angling is a popular pastime throughout the United Kingdom but unfortunately the number of young people entering the sport has declined dramatically. As a way of trying to encourage more young people into angling a project called Fishing for Knowledge was successfully piloted on the Nith in 2008. The project was developed by Solway Heritage, SEPA Catchment Management Initiative, the Annan, Galloway and Nith Fisheries Trusts and a "not for profit" organisation called Borderlines into a 3 year project that introduced more than 755 children to fishing throughout Dumfries and Galloway. Fishing for Knowledge was run in 23 schools and brought fishing into the classroom over six sessions ranging from fish biology and basic entomology to setting up fishing tackle and learning how to cast. The sessions culminated in two field trips; one out to a local water body for a bug hunt and the other to put into practice all of the casting tuition and to try and catch a fish! Four family fishing days were also organised and introduced the whole family to the aquatic environment giving them opportunities to try their hand at fishing and kick sampling. In total 88 people took part in these days. In 2012 the Fishing for Knowledge Project evolved into the Wonderful World of Water project and was based within the Galloway and Southern Ayrshire Biosphere. The Wonderful World of Water was run in three schools, two in Dumfries and Galloway and one in Ayrshire, and followed a similar six session programme but involved the Nith, Galloway and Ayrshire Trusts to a greater degree than before and also included sessions from local Council Rangers. Funding is currently being sought to continue encouraging young people into angling as both of these projects were very well received and brought a lot of benefits into the local communities.

The Trust also provides opportunities for local schools to try a day out fishing. These days take place at a local rainbow trout fishery, Drum Loch, which is kindly provided free of charge and Borderlines provides angling instructors for the day to introduce the pupils to all aspects of angling. These days prove to be very successful and are always requested by pupils from Maxwelltown High School to be part of their annual activities week.

Maxwelltown High School Fishing Day on Drum Loch as part of their Activities Week

Education and Awareness Raising

Casting for Recovery

In 2009 the NDSFB and Borderlines ran a Casting for Recovery day for a group of ladies recovering from breast cancer. The day was held at Glenkiln Reservoir, which was kindly provided by Sir Henry Keswick, along with access to a bothy where lunch and indoor sessions were held. Casting assists in recovering from breast cancer as it creates movement of the joint and stretching of soft tissues. The day included a sessions on entomology, casting instruction and a peaceful afternoon spent fishing on the loch.

Casting for Recovery at Glenkiln Reservoir

Fintastic Tales and other events

In the spring we hold two open days as part of Dumfries and Galloway Wildlife Festival. Members of the public are invited to a guided tour of the hatchery where the story of the life of an Atlantic salmon is told. We then venture outside to a local burn for an electrofishing demonstration where everyone gets to meet the fish that live in the burn.

Rocky the Stone loach!

The Board and the Trust are involved in other events such as Dumfries and Galloway Environment Day, Wallacehall Rural Opportunities Days, Galloway Country Fair, Climate Change and the Environment school sessions and we also open the hatchery every winter to angling associations, haaf netters and other local organisations, such as the Youth Support Services and Dumfries Befriending Group.

Nith in the Classroom

The Board has been running Nith in the Classroom for the last 10 years and schools throughout the Nith catchment participate on a regular basis. This project is seen as a valuable asset to the communities within the Nith catchment and gives local children an awareness of the rivers and their inhabitants. The project provides pupils with an understanding of the interactions that occur between the animals, birds, invertebrates and humans that are a part of the intricate web that is a river system and raises their awareness of the conservation measures that can be carried out to help protect this environment and it inhabitants. Participating schools are invited to visit the hatchery where they get a chance to see adult salmon and watch them being stripped of their eggs. Later on in the year, the pupils are given salmon eggs to hatch in their classroom, viewing their development using a small microscope. The pupils then release the fry into their local river and carry out a basic river survey, including kick samples and flow and depth measurements. Later in the summer, the pupils join us on another field trip to electrofish the place where they released the fry. This enables the pupils to see how the fry have developed and the techniques used by the NDSFB and the NCFT to monitor juvenile fish populations.

Kelloholm Primary visiting the hatchery

Training and Other Events

Fish and Fisheries Awareness Day

It is important that the organisations that deal with the decision making processes surrounding development within a catchment are aware of the potential impacts that those developments may have on the aquatic environment. A free training day was organised aimed at the key stakeholders that are involved in the planning and decision making processes surrounding development applications.

Introducing some of the fish inhabiting a local burn

The Fish and Fisheries Awareness Day was held at Drumlanrig Castle and was well attended by key stakeholders within the River Nith catchment. These included representatives from Dumfries and Galloway Council, East Ayrshire Council, the Forestry Commission Scotland, SNH, Solway Heritage, Smiths Gore, Carillion, Scottish Water Solutions, SEPA, Buccleuch Estates, Dumfries and Galloway Constabulary and the Procurator Fiscal's Office. The day consisted of presentations to raise awareness of the fisheries within the catchment and the impacts that development and industry could have upon fish and their habitats. Best practise and case studies were also discussed during these sessions. The second section of the day involved a practical site visit to demonstrate the process of monitoring the health of a burn using electrofishing techniques and the importance of being able to monitor the potential impacts from development activities. The seminar received positive comments from those attending and was generally found to be beneficial in widening their understanding of fisheries.

Bailiffs Conference 2010

In 2010, the NDSFB hosted the national Scottish Water Bailiffs conference when over 60 Water Bailiffs from all over Scotland attended a two day event that included presentations from Jim Henderson and local Wildlife Crime Officers and practical demonstrations about poaching activities in the Nith catchment. A dinner was hosted in the Cairndale Hotel in Dumfries and the Roger Barnes Memorial Trophy was presented to Debbie Parke for achieving the highest marks in 2009's legal exam.

Bailiffs inspecting the coal mining machinery

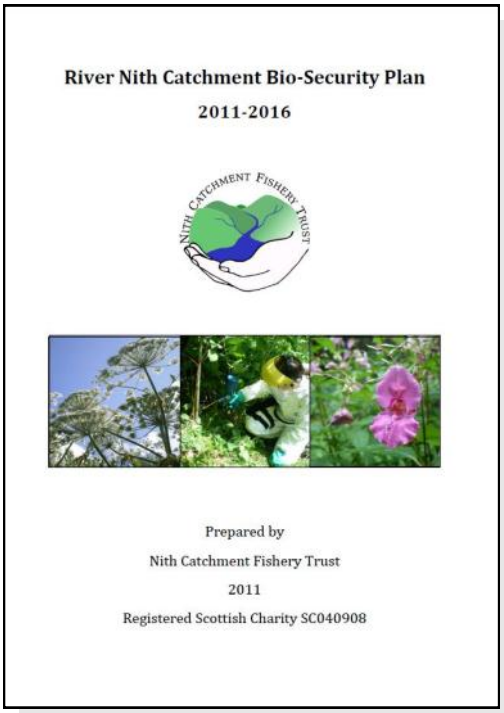
The event included delegates visiting the open cast coal mine owned by Scottish Coal near New Cumnock. Scottish Coal showed the workings of the mine and demonstrated blasting an open rock face for coal. In 2004 a large section of the River Nith was diverted as part of the coal extraction process. A guided walk along 400 meters of the channel showed delegates how the new channel had naturalised and established. The conference was well received by all of the Water Bailiffs and considered to be a success.


Talk covering poaching problems on the Nith

Alien Invaders

The Nith Catchment Biosecurity Plan

In 2010, as part of the RAFTS Biosecurity and Invasive Non-Native Species Programme, the Nith Catchment Fishery Trust developed a Biosecurity Plan that looked at the prevention, detection, control and eradication of aquatic, riparian and coastal invasive non-native species (INNS) within the Nith catchment. The Plan went out for public consultation and was published in 2011.



Nith Catchment Biosecurity Plan 2011—2016

The Plan identifies INNS that are considered to be high risk to the catchment, either due to their potential to cause damage to the diversity or economy of the Nith catchment or because of their close proximity to the catchment. This document ties in closely with the Nith Fishery Management Plan and has resulted in works being carried out which fulfil both documents. The timeline within the document indicates the proposed timescale of work, including the development of rapid response protocols and awareness raising within the catchment. The Nith Catchment Biosecurity Plan can be found at www.river-nith.com under publications.

American Signal Crayfish

One of the high priority species identified as posing a threat to the biosecurity of the Nith catchment is the North American Signal Crayfish (NASC). Signal crayfish out compete native species of invertebrate and fish, damaging aquatic ecosystems and reducing biodiversity. This can have a negative effect on fisheries such as salmon and coarse angling. NASC are present to the west and north of the Nith catchment. As a result, regular crayfish monitoring has been carried out at sites across the catchment that are considered to be high risk. This included areas where boats or canoes are regularly used, coarse fisheries and parts of the catchment close to neighbouring catchments known to contain crayfish. Unfortunately, as part of this annual monitoring scheme, signal crayfish were found to be present in Lochrutton, a loch in the lower section of the Nith catchment.

North American Signal Crayfish

Further in depth surveys have been carried out to identify the extent of the population and regular meetings have taken place with SEPA, SNH and Marine Scotland to determine if eradication is possible. Unfortunately due to the size of the loch and the fact that they have been found to extend down into the Lochfoot Burn eradication is not possible. The Trust is currently looking at ways in which to slow down the spread of NASC and raising awareness of the problem. Following the simple steps of Checking, Cleaning and Drying any equipment used in water related activities can prevent the transfer of invasive non-native species between water bodies.

Check Clean Dry campaign

Alien Invaders

Riparian Invasive Non-Native Species Project

In 2010, a project to control Invasive Non-Native Species (INNS) within the Nith catchment was launched. The project focused on the control of invasive species of riparian plants such as Japanese knotweed, Giant hogweed and Himalayan balsam, all of which were introduced into the Nith catchment as ornamental garden plants. Unfortunately, due to their invasive nature these plants have spread into the wild, often resulting in monocultures establishing which prevent many of our native species from being able to grow. This decreases the biodiversity along the river banks and it has been suggested that species such as Himalayan balsam, which attracts lots of bees, may actually be resulting in many of our native plants failing to be pollinated. The distribution of these plants has been facilitated by rivers transporting seeds and plants down catchment.

Giant hogweed control on the Islands in Dumfries

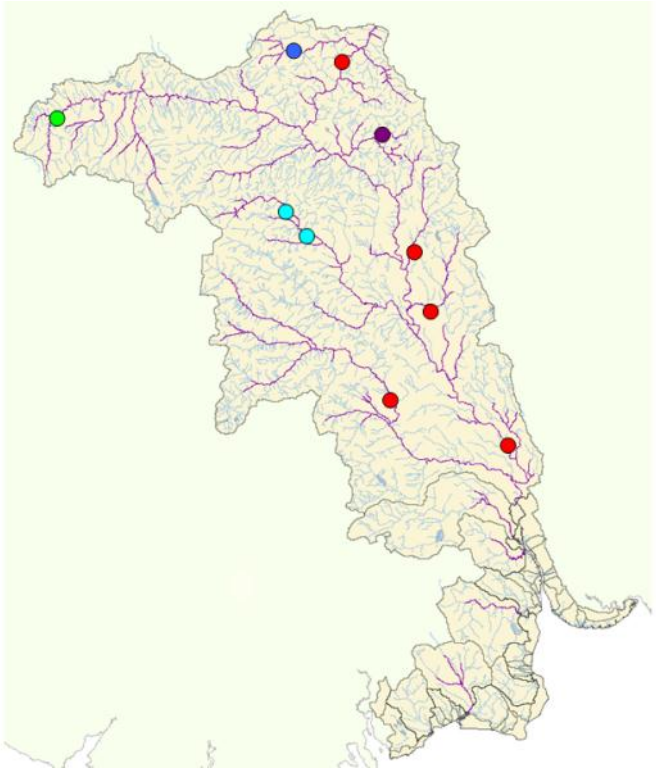
We have found that the most effective method to control Japanese knotweed and Giant hogweed is by injecting Roundup into their stems. With Japanese knotweed, the glyphosate gets drawn down into the rhizomes of plants and so far we have seen very encouraging results. Since 2010 over 16,000m^2 (80%) of the Japanese knotweed in the Nith catchment has been treated using this method and systems have been put in place to continue with this control beyond the life of the project by training volunteers. The control of Giant hogweed is carried out on an annual basis. A total of 52km of river bank along the Scaur Water and River Nith are walked and any plants found treated using Glyphosate. Since treatment began, a 65% decrease in the number of Giant hogweed plants germinating has been recorded. Himalayan balsam is the third invasive species that is being tackled in this project. Although Himalayan balsam is an annual plant it is considered to be one of the hardest of the three invasive species to control. This is due to its explosive method of distributing its seeds for metres around. One way to control this plant is by spraying large areas with Roundup, and the Tweed Forum have been experimenting using dilute concentrations to kill the Himalayan balsam leaving the native flora to thrive. The Trust carried out experiments of its own during 2012 to see how this approach works and has found that a very low dilution can work well. In order to maintain the control of these species beyond the end of the project a volunteer scheme has been put in place to train and equip people who work and enjoy recreational activities along the banks of the Nith and wish to assist with this project. In 2012, volunteers contributed over 156 hours of practical weed control to the project.

Japanese knotweed before and after photographs - first treated in 2011, after photo taken summer 2012

Using Genetic Research for Managing Fisheries

Focusing On Atlantic Salmon Management On Populations (FASMOP)

In 2009, a Scotland wide survey to map the genetic structure of Atlantic salmon was initiated. The project was a partnership between RAFTS, Marine Scotland Science and individual Fisheries Trusts throughout Scotland. Genetic samples were taken from juvenile salmon from over 30 locations within the Nith catchment and then the data from 17 genetic markers were collected. This data was analysed to evaluate the genetic relationships between sample sites.



Geographic representation of the relationships among sites. Locations with the same colour are more similar to one another and belong in the same cluster.

It was found that there were weak genetic differences between the sites sampled in the Nith catchment but that the greatest degree of difference could be seen between the Upper Nith, the Spango Water, the Mennock Water and the Scaur Water. In the lower sections of the catchment there is very little difference genetically between sites and it is possible that there is some reproductive mixing of individuals occurring between these sites. It has been felt that the use of microsatellites is not refined enough to provide the resolution desired and the use of single nucleotide polymorphisms (SNPs) is being considered. The Nith has so far provided samples from three sites to be processed using this new method and awaits results from the analysis.

Celtic Sea Trout Project - www.celticseatrout.com

The Celtic Sea Trout Project (CSTP) was formed in response to concerns regarding the decline in sea trout that has been seen in parts of the UK bordering the Irish Sea over the last decade. The aims of the CSTP are to: understand and describe sea trout stocks in the Irish Sea and thereby to enhance sea trout fisheries and strengthen their contributions to quality of life, to rural economies and to national biodiversity; and to explore the use of sea trout life history variation as a tool to detect and understand the effects of climate change. There are major unanswered questions in the understanding of sea trout, namely: where do they go at sea and how are their stocks structured and interlinked? What is their marine ecology (feeding, growth, survival and life history variation)? What environmental and other pressures are they exposed to? How do their life histories (and thus fishery quality) respond to environmental variation?

Marine sampling for sea trout

The NDSFB and the NCFT have been collecting freshwater and marine sea trout samples, and anglers throughout the catchment have been providing scale samples for the project. So far the Nith has provided over 300 scale samples and over 300 tissue/gut samples for analysis. These samples are being processed by scientists at Bangor University and the data analysed to try and answer some of the questions above. The resulting information gained will be fed back to the Nith catchment so that future management strategies can be agreed that will benefit sea trout stocks in the coming decades. Results from the CSTP project will be available in late 2013.

Improving and Protecting Fish Habitat

Habitat Schemes

Habitat improvement work is an important part of protecting the aquatic environment and recent research is pointing to the fact that habitat and water quality improvement may be more effective than other methods of enhancing wild fish stocks. Since 2008 a number of habitat improvement schemes have been put in place with a total of 12 hectares of land being fenced and over 10,000 native trees and shrubs being planted. The largest of these schemes took place on one of the most important salmon spawning tributaries in the Nith catchment where bank erosion is causing widening of the river and the Trust is becoming increasingly concerned that summer water temperatures may be becoming too high. Once tree cover is established it is hoped that this will help to combat the increasing water temperatures and stabilise the banks.

Afton Water habitat scheme—created in 1996


Crawick Habitat Scheme

Crawick Habitat Scheme

In 2010 the Nith Catchment Fishery Trust was approached by a farmer who was interested in improving the biodiversity on his farm. His farm neighbours an existing habitat scheme and he was aware that we were keen to extend this scheme as bank erosion is causing the River Crawick to widen and raising concern about increasing water temperatures and long-term juvenile salmonid survival. As a result, over 4000m of fencing was put up along both banks of the Crawick Water enclosing a 4.6 hectare area and a mixture of native trees and shrubs were planted to help stabilise the river banks.

Brandley Habitat Scheme

Following completion of habitat and electro-fishing surveys, the Loch Burn was identified as one which would benefit from a targeted riparian restoration project as it is accessible to migratory salmonids, in particular sea trout. The riparian habitat was impoverished, with very little draped cover being afforded from the over grazed banks. In total, a seven hectare corridor of riparian zone was fenced off and planted with a variety of broadleaf species including birch, alder, gean, rowan, hawthorn, willow and hazel.

Craigdarroch Habitat Scheme

The Craigdarroch Burn is a tributary of the Cairn Water and is recognised as an important trout and salmon spawning area. In 2008, a half hectare habitat scheme was created to augment a larger scheme that had been created further upstream in 2007.

Barrier Removal

Barrier removal is another very effective way of increasing natural salmon and trout production within a watercourse and in 2011 training was undertaken in a new barrier assessment method that had been developed by SNIFFER. This method enables barriers to be assessed for the passability of all fish species and provides a good estimate of not just if it is passable or not, but to what degree it is passable. This method is being used on the Nith catchment to assess the passability of barriers and any man made structures identified as being impassable are being targeted for removal. Currently an unused weir on the Lagan Water is being considered for removal.

Working with Industry

Open Cast Coal Mines and River Diversions

Open cast surface coal mining can be found at the top of the Nith catchment where large reserves of high grade coal exist. Kier Mining own and operate the surface coal mine at Greenburn near to New Cumnock and have been in operation for approximately 10 years. During this time the mine has migrated from its original starting site, through extension areas, following the extraction of coal and restoration of the land. If the mine is to survive and provide continuity of operations, it is necessary for the owners to locate coal in areas adjacent to the existing working site.

One area where coal has recently been found is to the south of the Greenburn site, near to the course of the River Nith. Having conducted detailed geo-technical surveys of the proposed site to the south, Kier considered it necessary to divert the course of the River Nith on to a new route to facilitate their plans effectively. Following extensive consultations with fisheries interests and other conservation bodies, these proposals were agreed provided that the experience gained from previous diversions of the River Nith in 2000 and 2004 were incorporated into the plans. The NDSFB's close involvement in these previous two major diversions of the River Nith has enabled the NDSFB to gain valuable experience in designing habitat features which benefit all indigenous species of fish found in those areas. These include creating in-stream habitats for juvenile salmonids, pools and spawning beds for adult salmon and a diverse riparian zone to benefit the entire aquatic ecosystem.

Fishery Director, Jim Henderson inputting to the construction of the new channel

In 2011 the first section of the new channel was dug and allowed to mature for a year before water was diverted down it in 2012. The opening of the new channel involved detailed input from various stakeholders including SEPA, the Nith Board and Trust and the local angling club. Prior to the full diversion of the river, the NDSFB undertook a fish rescue to remove all of the fish inhabiting the original channel, transferring them so that they could recolonize the new channel. The new channel will be monitored for the next 20 years to ensure that the channel functions properly and that full re-colonisation of fish populations occurs.

MSP Stewart Stevenson visiting the Coal Mines

Working with industries such as open cast coal mines is an important part of protecting the aquatic environment of the River Nith and its tributaries and is a vital part of both the Board and Trusts remit. Industry is required in order for the UK to progress and be economically sustainable, particularly in the case of energy production. There is often interest from the Scottish Government and other organisations to see first hand how the Nith works with industry, resulting in a number of site visits having been organised over the last few years. These visits have included Minister of Environment and Climate Change Stewart Stevenson, NASCO conference 2012 site visit, MSP Jim Hume, Louise Donnelly, Mike Russell and other key stakeholders within the planning and development sector.

Making the Most of Our Resources

Compilation of existing fishery data in GIS format

The NDSFB has kept detailed records pertaining to the work that has been carried out in the last 10-20 years. This includes data from electrofishing surveys, catch returns, habitat enhancement works, spawning tributaries, barriers, invasive species and stocking records within the Nith catchment. However, most of this fishery data is fragmented, stored in paper format or is contained within the memory of long term staff. In order to make this data more easily accessible and to safeguard it, it was decided to convert all the records into electronic/GIS format. This has enabled the data to be used to full effect when making important decisions regarding fishery management and can be used to plan and implement future planning and projects.

Categorisation of the status of rivers within the Nith catchment

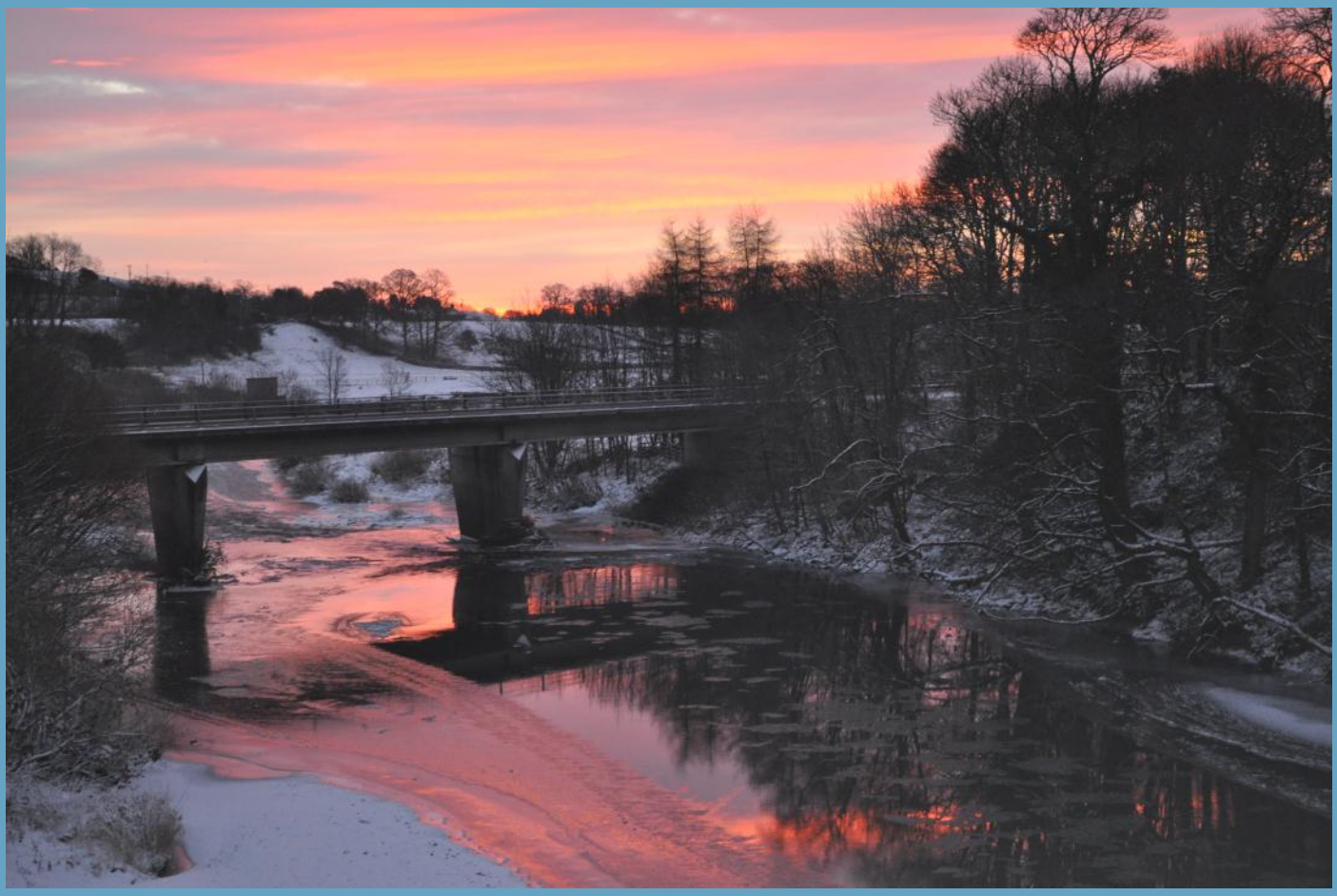
The Nith District Salmon Fishery Board has built up an extensive database of electrofishing data which has been gained throughout the Nith catchment over many years. In order for this information to be used to best effect, the Trust has been analysing the Board's historic data and creating a simplified categorisation system, similar to that used by the Water Framework Directive. The categorisation of the data into a five stage categorisation system has enabled the NDSFB and the NCFT to identify areas within the catchment that could be improved by the creation of habitat schemes, stocking programmes and other restoration works. This has formed a basis for combining layers, highlighting areas that need to be protected and that are considered highly sensitive to the impacts of microhydro, climate change, etc.

Training and CPD

In order for staff to be able to operate at optimum levels to achieve the objectives of the Board and the Trust in a safe and effective manner, it is important that training is carried out on a continuous basis. As a result of priorities being identified in the Fishery Management Plan and the formation of the Nith Catchment Fishery Trust, the following training has been carried out to assist staff in fulfilling their duties:

Qualification	No. of staff trained
Team Leader electrofishing	1
Team Member electrofishing	5
IFM Bailiffing and Keepering Duties	4
Powerboat 2	3
ArcGIS Foundation Training Level 1	2
Sage Instant Account Stage 1-3	1
RYA sea survival	2
Emergency First Aid training	8
Pesticide PA6AW (inc. volunteers)	9
ATV training	2
Country Sport Customer service training	1
Crayfish identification/trainer training	1
Scale reading preparation	1
Riverfly AMI training (inc. volunteers)	8
Chainsaw Felling basic & level 2	3
Seal Management SCQF Level 6	1
Water Vole Training	3
Barrier Assessment Workshop	1
Riparian INNS ID Workshop	7

SNIFFER Barrier Assessment course



This document has been produced by the Nith District Salmon Fishery Board and the Nith Catchment Fishery Trust as part of the Fishery Management Planning process implemented across Scotland in 2008.

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