



Annual fisheries report 2015 to 2016

December 2016

We are the Environment Agency. We protect and improve the environment.

Acting to reduce the impacts of a changing climate on people and wildlife is at the heart of everything we do.

We reduce the risks to people, properties and businesses from flooding and coastal erosion.

We protect and improve the quality of water, making sure there is enough for people, businesses, agriculture and the environment. Our work helps to ensure people can enjoy the water environment through angling and navigation.

We look after land quality, promote sustainable land management and help protect and enhance wildlife habitats. And we work closely with businesses to help them comply with environmental regulations.

We can't do this alone. We work with government, local councils, businesses, civil society groups and communities to make our environment a better place for people and wildlife.

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Foreword

Being Head of Fisheries for the Environment Agency is a mission, it is certainly far more than just a job that pays the bills and I thoroughly enjoy it.

Fisheries face many challenges from the pressures on our natural resources, to climate change and the changes in society that may be leading to fewer young people taking up angling.

On our side is the fact there is a wealth of people (often voluntary) and organisations that share the Environment Agency's passion for fantastic fisheries and angling in England.



In last year's report we introduced our new partnership approach for fisheries and in this year's report you will see just how much more we have delivered as 'TeamEngland' working together. However, there is more to be done. The partnership approach has given us a better way of working but it will be in future reports that we will be able to show the difference that the new rod licence arrangements will make. The changes will see us not only ensure the funding we need, but also help get more people into fishing, stay fishing and crucially get more youngster involved.

Finally, I would like to take this opportunity to say thank you to all the TeamEngland partners for their contribution and wise advice in 2015-16.

Serent Church

Sarah Chare Head of Fisheries Environment Agency

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1. Introduction

1.1. What are our responsibilities?

We, the Environment Agency, are a non-departmental government body. We are guided by the Department for Environment, Food and Rural Affairs (Defra) with responsibilities relating to the protection and enhancement of the environment in England.

The Environment Agency has been guided by government (Defra) to achieve 3 key objectives. These are:

- to ensure the conservation and maintain the diversity of freshwater fish, salmon, sea trout and eels and to conserve their aquatic environment
- to enhance the contribution salmon and freshwater fisheries make to the economy, particularly in remote rural areas and in areas with low levels of income
- to enhance the social value of fishing as a widely available and healthy form of recreation.

In addition to this we prioritise putting customers at the centre of everything we do and strive to continuously improve to provide them with the service they require.

The outcomes can be summarised as:

- an improved environment and more fish
- more people fishing and more places to fish
- more satisfied customers

1.2. What is this report about?

We are frequently asked by anglers 'where does our rod licence money go?' and by other stakeholders 'what are you doing for fisheries in England?' It is vital that we maintain transparency and allow those who have interests in fisheries and those who buy rod licences to understand how the Environment Agency works to protect and improve this valuable resource.

This report has been compiled to form a record of the broad range of fisheries activity, partnership working and our expenditure for the 2015 to 2016 financial year. Our specific duties for fisheries are set out in <u>appendix 1</u>.

The report gives information on what we have done to achieve the outcomes outlined above for Fisheries in the 2015 to 2016 financial year and how rod licence fees income has been spent. Read about fisheries projects in your area.

A summary of where our funding is spent is outlined in the graphic below.



What we did for angling and fisheries in 2015 to 2016

2. Where our funding comes from and how we spend it

2.1. Income

The fisheries service is funded by a combination of income from the sale of rod licences, net licences and authorisations, recharges for work undertaken by and for other parts of the Environment Agency and government Grant in Aid (GiA).

The main component of our income is rod licence fees received from anglers and in the 2015 to 2016 financial year we planned for income of circa £20.9m. Rod licence sales in your part of England are shown in <u>Appendix 2.</u>

We invest rod licence income into angling and fisheries improvement funding programmes and where opportunities are available we seek match funding with partners. For every £1 of rod licence income invested into these programmes an additional £2.25 of funding from other sources is generated.

2.2. Expenditure

Expenditure by type and activity against planned 2015 to 2016 rod licence income for England (£20.9m) is shown below.



The activities listed in the figure above are taken from the standard Business Operating Model for the Environment Agency and show the contribution to this model from the £20.9m of income received from rod licences in the 2015 to 2016 financial year. The activities covered within these headings include:

Area Delivery includes the work undertaken in our 23 operational area teams within our 16 areas. A more detailed breakdown of these activities is shown in the figures below.

Operational Services describes a range of national activities undertaken more efficiently nationally once. These include the National Enforcement Service responsible for rod licence administration and prosecutions and also including the payment to our supplier (the Post Office Limited), our National Monitoring Services (which include the National Fisheries Laboratory providing a fish health and disease service and specialist technical advice service to our area staff on issues such as fish pass design and permitting). Operational Services also includes our National Customer Contact Centre which last year handled more than 30,000 rod licence calls and administrated just less than 9,000 pieces of the rod licence work.

Enabling of Delivery describes the provision of essential support required to allow our area and national teams to operate effectively. This includes our offices, IT and communications equipment, vehicles and our legal and procurement services.

Supporting Government and direction for delivery includes our head office fisheries team and also our fisheries evidence team facing and advising government and setting the strategic direction for our the organisation. It also includes the national project portfolio of some £2.9 million in 2015 to 2016. This was used to fund the activities of our partners to help deliver our objectives and provide match funding. This portfolio also provides an operational Fisheries Improvement Project fund for delivering practical improvements with our numerous partners. It also funds our rod licence marketing activities and development work being undertaken on a new rod licence system due to be implemented from 2017.

Support services include Finance and Human Resources.



Percentage of rod licence funded Area Operations Time Spent on Fisheries Activities for 2015 to 2016

Area fisheries activities and description of work

Activity	Description of activity	
Fisheries monitoring	Fisheries monitoring allows us to make an assessment of the health of fish stocks. The data is used to make fisheries management decisions, fulfil reporting requirements, and to demonstrate that we are delivering our fisheries duties.	
Fisheries media and communications	Using communications we can efficiently provide advice and guidance to our customers. This may be in the form of angling club meetings and presentations, bank side advice and regular newsletters.	
Create and manage habitats and fish passes	We undertake Fisheries improvement projects to create habitat, improve fish passage and increase opportunities for angling participation. This work also helps contributes to our aims under the WFD.	
Work to deliver fisheries partnerships	Working with Fisheries interests we are able to make our money go further. For example working with local angling clubs or national fisheries and conservation organisations to deliver shared objectives or projects.	
Provide fisheries advice	We provide specialist advice to our customers. This may be in the form of advisory visits to fisheries or holding workshops for fisheries consultative. We also provide advice through on line material and local campaigns.	
Fisheries permitting, planning and compliance	We input into the activities of others via permits or planning to protect fisheries.	
Fisheries enforcement	We undertake fisheries rod licence compliance checking and intelligence led fisheries enforcement work to protect fisheries. Associated enforcement and prosecution work is completed along with this work.	
Strategic planning and reporting	We are required to report on specific aspects of the environment, for example the inclusion of priority salmon actions in our plans.	
Prepare for and respond to incidents	We respond, investigate and act on incidents impacting fisheries and angling. This may be connected to issues with water quality, fishery enforcement or fish disease.	

3. Our partnerships

3.1. Working together to make fisheries and angling fantastic in England

In recent years the 3rd sector has grown significantly and has shown itself to be invaluable; the establishment of the Angling Trust and expansion of local rivers trusts being two prime examples. The Environment Agency and these organisations ultimately share common goals. We needed to strengthen relations and increase partnership delivery of our fisheries priorities. This concept supports the Government's thinking on working with, and delivery through, others.

In light of this, during the 2015 to 2016 financial year we made a significant change in the way we carry out fisheries work. We proposed a new 'partnership approach' and consulted widely our plans; after broad agreement these were subsequently approved by Directors and signed off by the Environment Agency Board in November 2015.

We now have clarity on how fisheries work, funded by rod licence and other income, is split into 3 areas (also seen in the diagram below):

- **Core regulatory work:** protecting fish will be done by the Environment Agency. Including issues of fisheries authorisations, enforcement, managing incidents and advice to all other parts of the organisation to ensure conformity with fisheries legislation.
- Added value partnerships: working with others on fisheries improvements, where doing so provides benefits, enhances impacts, and makes the money go further.
- Commissioned partnerships: promotion of angling and increased participation will be undertaken under contract by others who are better placed to deliver and can secure additional funding.

Duty Maintain Improve and Develop Fisheries FISH FISHERIES FISHING				
Principle Creating an environment that anglers can enjoy		Principle Promoting anglers' enjoyment of the environment		
<u>Delivery</u> Environment Agency core role	Delivery Work with partners where we can deliver more for our money	<u>Delivery</u> Commission Partners on our behalf		

In the following section we will describe in more detail the commissioned relationship with the Angling Trust to do specific work on development and promotion of angling and the expansion of the voluntary bailiff service (VBS).

Then we will outline the progress with improvements to fisheries habitats and stocks by working with others, such as the Rivers Trusts and the Wild Trust Trust, where we can deliver outcomes

with added value. These partners have excellent relationships with local communities and are able to secure match funding for projects to make our rod licence budget go much further. By working with others with common goals we can pool our strengths and make rod licence money go further enabling us all to deliver more.

3.2. Leading the way

High level engagement in England occurs at the England Fisheries Group; this is where the Environment Agency is joined by representatives from our partner organisations. Our partners include Defra, the Angling Trust, Rivers Trust, Canal and Rivers Trust, Atlantic Salmon Trust, Salmon and Trout Conservation UK, Wild Trout Trust and Institute of Fisheries Management. Collectively we work together as 'Team England'.



Following our Board's approval of this new partnership approach we are developing a joint fisheries strategy. The England Fisheries Group is committed to working together for fisheries and angling in England. We all have a common goal for:-

'Sustainable, thriving fisheries that are a valued part of England's biodiversity and natural capital, enjoyed by anglers and more people than ever before benefiting rural and urban communities'.

The desired outcomes are:

- · Salmon stock abundance and diversity is restored
- Trout and sea trout thrive in our rivers
- We reverse the decline in eel stocks
- · Coarse fish in our rivers, canals and still waters support top quality fisheries
- We ensure the conservation status of our rarest protected fish species

- We grow the social and economic value of angling participation and infra-structure
- Naturally functioning catchments delivering benefits beyond fisheries such as reducing flood risk
- We control and where possible eradicate invasive species that damage fisheries.

The strategy goes on to identify the top 5 priority actions for the 2016 to 2017 financial year:

- 1. Support the Team England launch of the 5 point approach for improvement of salmon stocks.
- 2. Support the Environment Agency in the development of the new rod licence with the aspiration of increasing angling participation and fisheries income for the future.
- 3. Build capacity, fisheries capability and skills in all England delivery bodies.
- 4. Produce agreed priorities for fisheries research and development.
- 5. Embed the Fisheries Partnership Approach and the Rivers Trust's Your Fisheries initiative.

The new way of working with partners is not just about high level fisheries engagement via the England Fisheries Group and regular meetings with our counterparts in Defra. It is also about having the day to day conversations and practical actions that occur across the country.

In the 2015 to 2016 financial year we worked with upwards of **160 partners** across the country. These partners included angling clubs, piscatorial associations, wildlife and rivers trusts, Natural England, drainage boards, councils, universities, schools, landowners and farmers, local action groups, highways authorities, water companies, parks associations, research institutes and even zoos.

3.3. Our commissioned partner – Angling Trust

The Angling Trust was awarded our contract to deliver the National Angling Strategic Services (NASS) contract following a competitive tender exercise in the first half of 2015. The contract commenced on 17th August and will run initially until 31st March 2017 with the option to extend for a further 2 years. It is clearly focused on 3 specific services:

3.3.1. Growing angling

The success of angling and fisheries very much depends on the popularity of the sport. We are dedicated to increasing numbers involved in the sport and we are addressing the decline in rod licence sales and with an aim to boost income. Our target is initially to have 1 million licensed anglers each year and to grow participation in future years. Priority areas include:

- Encouraging current anglers to stay with the sport
- Recruiting new anglers with initial key focus on juniors, younger males and new and diverse participants.
- · Encouraging former anglers to come back to their sport

The Angling Trust has highlighted its intention to support organised participation events, coaching schemes and develop pathways for anglers. They raise awareness of angling, and address issues that are preventing people from going fishing, most notably: where to fish; when to fish; who people can fish with; and how to fish.

A key feature for the Angling Trust is working with other partners involved in participation work to focus delivery of our key aims. They are working with the Angling Trades Association and Get Hooked on Fishing as well as a host of coaches, clubs and fisheries throughout the country, to achieve this.



We supported a number of events with partners that have now been combined into the service contract. In 2015 there were 15 large-scale Family Fishing events organised by the Angling Trust across the country attended by 10,095 participants. In addition to supporting these, Get Hooked on Fishing organised a series of their own local events which attracted a further 10,000 people. These popular activities were well covered in the local media.

The Angling Trust also organised 27 Let's Family Fish programmes delivered nationallywhere a total of 575 participants were engaged on a weekly basis. The aim was for children and parents to become better anglers and be more likely to continue to fish and to enjoy it. These tuition programmes generated 80 media articles.

National Fishing Month (NFM) introduced more than 14,000 new people to angling in 2015. They took part in a nationwide schedule of 300 special events held across just six weeks during July and August.

'Take A Friend Fishing' (TAFF) is a campaign run by the Angling Trades Association where anglers are encouraged to take a person out who they feel would benefit from a day's fishing. There were three TAFF campaigns in 2015; at Easter, Father's Day (at the start of the river fishing season) and during the summer holidays. The Environment Agency lends further support by providing participants with a free one-day rod licence (worth £3.75) through a number of angling newspapers, magazines and websites, to allow them to take a









friend or a family member on a fishing session. Between March and August 2015, NFM and TAFF campaigns generated 105 media articles across national and regional consumer media reaching an audience of nearly 10 million. In 2015, 1216 vouchers were registered on the TAFF website.

Sportivate is a £56 million Lottery funded London 2012 Sport England legacy project that gives more young people the chance to discover a new sport. The programme gives 11-25 year-olds who are not particularly sporty access to six-to-eight weeks of free or subsidised coaching in a range of sports. In 2015 the Angling Trust secured over £20,000 to run events in the community targeting young people to try out angling.

We are supporting the Angling Trust's Angling 4 Health pilot in association with the Derbyshire NHS Mental Health Trust to promote the therapeutic benefits of angling for people with mental health problems. We are gathering evidence that angling has a positive impact on mental health, well-being and can contribute disability targets. The aim is to roll out this intervention nationwide from 2017 onwards.

The benefits from working with the Angling Trust and its associated partners on angling participation are substantial, they have:

- Service level agreements with 34 County Sports Partnerships. These are bodies funded by Sport England with a remit to support delivery of participation outcomes.
- **700 qualified and licensed angling coaches.** As the National Governing Body for angling, it is the only organisation that offers a coach licence, proving to parents, children, groups and organisations that a coach is appropriately qualified and regularly engages in training to maintain the highest possible coaching standards. It also provides assurance that a coach has met the highest safeguarding standards established and supported by the NSPCC and Child Protection in Sport Unit and that full and appropriate safeguarding checks are undertaken and a record is kept of any reports of improper behaviour that can be shared with others, informing them of any potential risk and appropriate action taken.
- **100 "Club mark for Angling" accredited clubs.** Recognised by Sport England as the standard accreditation for clubs working with, or aspiring to, work with young people across all sports. This network, allows promotion of angling participation and rod licence sales and provides an opportunity to communicate with over 300,000 anglers.
- **14 County Angling Action Groups.** These are constituted bodies of stakeholders (e.g. tackle shops, clubs, coaches, fisheries) in the angling community, all with a shared interest in growing angling participation and rod licence sales.
- 1,800 Angling Trust member clubs and fisheries.

We continue to work with the Angling Trust to promote <u>www.fishinginfo.co.uk</u> as the major source of angling information for anglers; to embed it as an entry route to the sport for potential anglers, where they can obtain information to help them fish and become aware of angling regulations, including the need for a rod licence online and provide a channel to buy one online or via Direct Debit.



- Go fishing, it's affordable and inclusive
- Use <u>www.fishinginfo.co.uk</u> for all your angling information
- Use <u>www.fishinginfo.co.uk</u> for news of events and campaigns, such as, Take A Friend Fishing, National Fishing Month etc
- Buy a rod licence via <u>www.fishinginfo.co.uk</u>

3.3.3. Engaging with anglers – it's good to talk

The Environment Agency requires good, proactive, local engagement with anglers, their representatives and others engaged in managing, protecting or exploiting fisheries. We want effective, regular, place-based face to face arrangements to share our information and consult on new fisheries issues and our priorities. This has now been fulfilled through the work of the Angling Trust that has now been formalised through the NASS contract.

Fisheries Forums

The Angling Trust is responsible for organising fisheries forums across the country; on average there are at least four in each river basin district, resulting in more than 30 meetings during the 2015 to 2016 financial year. The average attendance level was 30 people.

The forums were open to all and were promoted to anglers and angling organisations, regardless of any affiliations. They encompassed all aspects of freshwater fisheries and angling disciplines. The meetings provide a four-way working arrangement between the Agency, the Angling Trust, the angling community and other organisations involved in fisheries catchment management (such as the Rivers Trusts and Wildlife Trusts).

Key themes have been to encourage anglers to engage with habitat improvement work and where possible work alongside other catchment interests. The issues on predation, pollution and enforcement were regularly discussed. There were also successful single issue forums such as the plight of salmon in the North West and the Future of Broads fishing in the East of England.

As the contract progresses, the Angling Trust is expecting to identify and improve the forums to ensure the meetings are interesting and lead to action so that those attending can see the value of participating.

We will not be relying solely on face to face forums to engage with anglers and better share information. There is an expectation for closer communication and team working between staff from both organisations to complement forum discussions. With the Angling Trust we will make more use of electronic contact and social media to engage with anglers.



3.3.4. Angling Advice

Advice is at the heart of our new way of working with our fisheries partners. The expertise and local knowledge our fisheries officers possess is put to good use answering thousands of enquiries from anglers, angling clubs and fishery owners. Each of our 16 areas cover hundreds of wide ranging fisheries. We receive emails or phone calls and offer advice on stock management, habitat improvements, fish in distress incidents and illegal activities. The value of these relationships and outcomes is illustrated throughout this report.

Case study: Community group acquire fishery in Kidderminster

Environment Agency fisheries officers have helped a local community group which recently acquired a fishery in Kidderminster to calculate the biomass of fish within their pool. A combination of fisheries officers and local volunteers helped haul a seine net around the pool and pull it into the banks. Due to the size of the pool, only a section was sampled and only a handful of fish were captured including pike, carp, bream and roach. A second



netting is planned for this winter which will inform the long term stocking and monitoring plan.

Our partners such as the Angling Trust and the Wild Trout Trust also work across the country to provide specialist, expert advice to landowners, fishing clubs and other community groups on issues around fisheries management and conservation. <u>Read about fisheries projects in your area</u>.

To succeed there needs to be good communication between us, our partners and other fisheries stakeholders. This will ensure enquiries are passed to the responsible organisation with the best sources of information. It requires a good understanding of who does what; people are busy so ensuring there is good transfer of information or responsibility requires conscious effort. We need to further understand the issues and put in place suitable plans and checks but a good starting principle is shown by the figure below.



Fisheries Management Advice, driven by the customer experience

As part of the NASS contract the Angling Trust helps clubs and fisheries experiencing problems associated with:

- predation and the presence of seals in freshwater fisheries
- invasive non-native species (INNS) and good bio-security practice
- tackle related incidents affecting other wildlife (in particular preventing swan injuries and deaths)

The service provides a clear point of contact for fishery owners and anglers. It raises awareness of the roles and responsibilities of those involved and provides high quality and consistent advice. The Angling Trust will actively work with other organisations to resolve issues, where necessary liaise between the angling community and other parties and in so doing use new and innovate ways to engage.

There has been good progress with all the issues, information is available electronically and leaflets and posters have been extensively circulated and well received.

Two particularly successful initiatives are non-native invasive species awareness and fish eating birds:

Non-native invasive species awareness

The Angling Trust has helped to share biosecurity 'Check Clean, Dry' advice and implemented training by ensuring all staff and fishery managers they are working with have completed the online training package.



In addition the Angling Trust's PhD student (Emily Smith) has been making good progress with her study to understand the risks associated with anglers travelling to and from Europe to fish.

Fish-eating birds



We are collaborating with the Angling Trust to address the issue of fish-eating birds. Two fisheries management advisors are employed by the Angling Trust and paid for by the Environment Agency to provide expert advice on cormorant predation and how to protect fisheries.

There is a range of non-lethal techniques, such as scaring tactics, or the advisors can help fisheries apply for a licence to shoot a limited number of birds. As part of the trial period

affected fisheries in a catchment were encouraged to work together and were able to collectively apply for an Area Based Licence (ABL) from Natural England.

The trial was overall considered a success and the report produced was received and signed off by the Minister. ABLs are set to continue and the Agency is funding the advisors for a further year up until March 2017.

3.4. Reinvesting rod licence income – Angling Improvement Fund

The Environment Agency's NASS contract asks the Angling Trust to effectively manage the allocation and operation of the <u>Angling Improvement Fund</u> (derived from rod licence income) for the delivery of angling projects. The objective is to allow third parties to undertake projects that improve angling facilities, and to meet the <u>National Angling Strategy</u> outcomes resulting in increasing numbers of anglers, with added social or economic benefits.

Applicants need to source at least 50% match funding and it is essential that its availability is well promoted and applicants have necessary guidance. Bids are evaluated against robust selection criteria, and following the allocation of funds, projects are closely monitored to ensure delivery against agreed specification and outcomes are well promoted.

'In 2015 to 2016 we reinvested £260,000 of rod licence money in 67 angling improvement projects, matched by £735,000 from other sources'.

The budget year on year varies based on rod licence income and other funding demands. The programme has themed releases and helps address issues in other parts of the contract. This fund provides excellent opportunities to fund work on still water fisheries in particular.

There were 14 angling projects supported through the first release of funding in the spring of 2015. The themes were 'Protecting Fisheries from Predation' and 'Getting Kids Into Fishing' and together they shared £50,000 of rod licence funds.

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Case study: Successful applicants for Angling Improvement Fund

Smithills Angling Club is based at Smithills School in Bolton, they work closely with partners including Bolton & District Angling Association, the Canal and Rivers Trust (CRT) and Curley's Fishery to host angling activities for young people and families at a range of safe local venues.



The award allowed the purchase of coaching aids and rods and tackle to loan to young anglers. It also

allowed new coaches to be trained to licensed Level 1 and 2 standard. The club is committed to linking up with other secondary schools in the area to offer taster sessions and help them set up their own angling activities.

CRT is a major partner in the project, providing access to canal facilities, working parties and marketing and promotion. Coaching activities will be backed up by skills awards (CAST and Aim) and Sports Leader qualifications and a key goal will be to signpost young people to other local clubs, to ensure their interest in fishing is sustained.

In autumn of 2015, we allocated a further £200,000 of income from rod licence sales in England to the Angling Improvement Fund (AIF). With more than 300 applications submitted to the first two rounds of the AIF, we decided with the Angling Trust to re-evaluate and fund a further 21 of these projects.

In addition, 8 projects for otter proof fencing were approved for venues across the country.

The final AIF round was announced in November 2015. The focus was on projects aimed at making fishing much more accessible to those new to the sport, community waters such as urban ponds and initiatives between clubs or fisheries and local schools and colleges.

Local public park waters offer unparalleled opportunities to get out fishing, safely, cheaply and close to where you live. However, they tend to face a number of challenges, including poor water quality, litter and general neglect. 18 projects were funded to revitalise these types of fishery. 7 angling intervention projects involving schools aim to connect with children, boosting confidence and offering valuable learning opportunities and life skills. All aim to put in place a long-term arrangement with the school or college.



Angling Improvement Fund: locations of successful applicants. Round 1 and 2 from the 2014 – 2015 year and Round 3 and 4 from the 2015 – 2016 year.



Case study: More successful applicants for the Angling Improvement Fund



Just a few of the children who will benefit from the new AIF funded facilities at Godalming Angling Society's Marsh Farm complex



Harrogate&Claro Conservative Angling Association. An automatic access gate completes the club's fencing project.

Supporting fishery development

The Angling Trust also provided guidance and support for clubs seeking to develop and implement angling-related projects, in particular to secure additional funds and grants (for example, via Heritage Lottery Funding and Sport England's Inspired Facility small grants). Its staff ran a series of 'grant writing workshops' to provide best practice advice that also covered how to organise, and deliver, a successful project. Sound project management advice will ensure works are well planned and executed, and safely completed.

A total of 10 workshops were run in the 2015 to 2016 financial year.

3.5. Making fishing fairer

Poaching and fish theft concerns many anglers. The Voluntary Bailiff Service (VBS) which was launched as a pilot in 2012 is a volunteer service designed to increase our eyes and ears on the bankside, increase our intelligence base and allow us to target our resources and enforcement capabilities in an efficient way. An enhanced phase of the service involves specially trained volunteers who are able to check rod licences on the bankside.

As part of the Environment Agency's NASS contract the Angling Trust commenced the roll out \underline{VBS} phase 1 to all 12 remaining areas and the enhanced phase 2 in the 4 pilot areas. This involved the recruitment and training of additional volunteers and also the creation of a number of co-ordinator posts.

To increase lawfulness in the angling community the Angling Trust also expanded enforcement operations with partners to cover wider geographical areas and publicise successes. A series of fisheries enforcement workshops were run to raise awareness of how fishery owners and clubs can help themselves and better work with law enforcement agencies to counter illegal fishing activities.

The Angling Trust plays a vital role in engaging with partner organisations, fishery owners and anglers to raise awareness of impact of fisheries offences using their website, social media, conferences and other events. The Angling Trust will continue to publish a list of prosecutions which the Environment Agency has taken on-line.

There has been opportunities to recruit migrant anglers and those from Eastern European background into VBS and extend the success of the <u>Building Bridges Project</u>, which included making multi-lingual education material on fishing legally more widely available.

For more information on our partnership enforcement work please see Section 9.4.

3.6. Getting greater results with projects in partnership

We are committed to make the best use of the rod licence income we receive to benefit fisheries and anglers. We deliver projects with a range of partners. Some of these outcomes in the 2015 to 2016 financial year are described in the following sections.

3.6.1. Fisheries Improvement Programme

In addition to the Angling Improvement Fund, the Environment Agency provide a dedicated fund for local fisheries teams to target environmental improvements that improve fisheries in rivers and natural waters. In total spent £375,000 of rod licence income on 74 projects with £700,000 match funding.

'In 2015 to 2016 we reinvested £375,000 of rod licence income on 74 fisheries improvement projects with £700,000 match funding.'

Rivers and natural still waters benefited, and funded works improved coarse and trout populations. The aim was to spread investment across all areas in the country. Each of our area teams was offered the same budget; in the end some spent more and some spent less.

Projects cover a wide range of improvements but some examples include:

- Installation of fish passes
- Removal of excess shading to ensure plant growth is sufficient to support an invertebrate population for feeding fish
- Addition of large or coarse woody debris to create changes in water flow velocity preferred by some fish species
- Alteration of flow velocity in order to clean downstream spawning gravels
- Removal of impoundments or obstructions
- Creation or restoration of habitat such as backwaters to support and provide refuge habitats for juvenile fish



Snapshot: Improving habitat and benefitting anglers on the River Idle

The Fisheries Team worked in collaboration with Nottinghamshire Wildlife Trust and Derbyshire County Angling Club to install some Coarse Woody Debris (CWD) along a stretch of the River Idle within the grounds of Idle Valley Nature Reserve, Retford. Silver Birch was used from the surrounding woodland and 'pinned' into place using wire. The purpose of the CWD is to provide in-channel habitat for fish and other aquatic fauna, as well as providing flow variation, leading to cleaner gravels and thus improving spawning habitat for resident fish species. The CWD was funded through the Fisheries Improvement Fund, which comes from anglers' rod licence income.



It was desirable that the projects could also lead to WFD improvements and there were two key criteria that we asked our area teams to meet:

• This money should be spent in partnership with others and that the final project is at least double the value.

• This money should only be spent on fisheries or angling clubs that have an active junior section or events.

You can find more detail on improvement projects for your area on GOV.UK.



Harpers Weir Removal (before and after) on the River Medway (KSL) and bankside fencing on the River Loud (C&L), part funded through the FIP 2015/16.



Case study: Angling society secures Fisheries Improvement Programme funding (CFPAS)

Cambridge Fish Preservation and Angling Society (CFPAS) was successful in securing a £7000 bid, from rod licence income for a habitat restoration project funded through the Fisheries Improvement Programme.

The project at Andersons Lake near Longstanton in Cambridgeshire involved the removal of three large fallen tree trunks which were preventing angler access, shrub and bramble maintenance, opening up a previously unfishable area, creating a layered boundary hedge and applying calcium carbonate in the form of Siltex to reduce the quantities of organic silt.

Sourcing the equipment and materials required and the delivery of this project was led by CFPAS, and a venue suitable for providing the clubs angling coaching requirements, and ultimately encouraging more youngsters into the sport has now been created.

Case study: Angling society secures Fisheries Improvement Programme funding - Gwash

As part of the promotion of angling in and around urban areas we have developed a phased project to improve fishery habitats in the green spaces on the east side of Stamford. This stretch of the river is fished by the local community and more recently by the Gwash Fishing Club. Several partners are involved in the works including the Wild Trout Trust, Gwash Fishing Club, Stamford Town Council and landowners such as Burghley Estate. The latest improvements include large brushwood filled deflectors, submerged vanes and woody debris introduction (including laying of trees and scrub).



The main incentive for the work is to improve habitats, in particular spawning and refuge areas for the benefit of resident stocks of brown trout and coarse fish, plus migratory sea trout which have now been witnessed in this lower part of the catchment. As a result of the works, other species of flora and fauna have of course benefitted and the kingfishers and other birdlife have already been making good use of the woody material.

Case study: Boost for West Thames Area fishing pond

In recent years there's been something of a quiet revolution going on at Bracknell Town Council's Braybrooke Community Centre. Behind the centre itself, quiet corner is Jean's (or Braybrooke) Pond, a productive fishing pond of less than 1 acre. Thanks to the efforts of council's Recreational Facilities team assisted by the Thames Valley Angling Association, the lake has attracted a considerable amount of funding from both the Environment Agency and the Angling Trust. Last year the



council started replacing the 14 ageing concrete fishing platforms with new softer and more permeable surfaces more suitable for the increasing number of junior anglers using the facility. This in turn has attracted further investment from the Environment Agency's Fisheries Improvement Programme enabling the introduction of floating reed-beds and a pond dipping area boosting both habitat for fish and wildlife and the educational value of the site to visiting school children.



The lake has also seen the launch on 1st April 2016 of the Braybrooke Community Nature and Fishing Club (BCNFC) which is a community based club for people wishing to fish and be involved with the management of the pond as a natural resource.

3.7. Wild Trout Trust Partnership

In the 2015 to 2016 financial year we continued the highly successful partnership with the Wild Trout Trust (WTT) that saw us funding advisory visits, project proposals, practical demonstration events called river habitat workshops or practical visits. The Trout in the Town project continued to thrive and eight Trout Habitat Delivery Projects were completed.

All targets met or exceeded for the core deliverables - 40 advisory visits, 25 project proposals and 40 River Habitat Workshops/Practical Visits (RHWs/PVs). The work involved 1,200 volunteers and it was estimated that £630,000 of match funding was raised.



The WTT puts a great deal of work into dissemination of information for both general and specialist audiences, including the promotion of angling as a stepping stone to conservation. Their website, http://www.wildtrout.org/avs, now carries reports from 570 previous advisory visits and Project Proposals, spanning 15 years. In the 2015 to 2016 financial year we helped fund the updating and publishing of the Wild Trout Survival Guide; an essential reference for those interested in protecting and improving the species. It is heartening to report that the up-take of advice to practical action exceeded 80%, the 8 projects implemented at a cost of £40,000, incorporated a further £89,000 of match funding. Feedback from clubs and fisheries receiving advice and practical demonstrations is consistently excellent.

Case study: Bypass channel installed on the River Witham

On the river Witham in Lincs, 600m of new channel was created to bypass a 2mhigh weir (more at http://www.wildtrout.org/news/new-old-section-channel-riverwitham). An adjacent landowner, having seen this work, is now keen for a similar project on his river reach!



Porter's Brook Restoration

In urban rivers, WTT has had technical input to major projects for example Porter's Brook restoration headed by Sheffield City Council saw sections of river deculverted, concrete bed broken up and in-stream habitat much improved.



Restoration of the River Wandle

The benefit of fixed-point photography...restoration of the river Wandle at Butter Hill, carried out by the South East Rivers Trust. This is the site of a WTT advisory visit in 2010 and subsequent, hands-on, in-river training sessions for the rivers trust staff and volunteers.





Case study: Wild Trout Trust Day on the River Lugg

Eaton Angling Club hosted a Wild Trout Trust demonstration day on their waters on the River Lugg. These events are funded by the Environment Agency and aim to show how angling clubs can improve fish habitat for very low cost.

The day was led by Tim Jacklin from the Wild Trout Trust and a number of techniques were discussed and demonstrated including installing brashwood revetments, creating brashwood bundles and tree hinging. The day was attended by lots of angling club members and representatives from the



Environment Agency, Natural England, Herefordshire Wildlife Trust and the Wye and Usk Foundation. It was an enjoyable day and with everyone getting stuck in and gaining some practical experience in fish habitat creation. These new skills will allow the angling club to undertake future works on their waters to improve the habitat for their trout populations.

The Wild Trout Trust demonstration days are paid for by money from rod licence sales. It is part of our service to improve, develop and maintain your fishery.

3.8. Riverfly Partnership

Our support of the Riverfly Partnership is well established and helps us to better understand and protect rivers across England and meet our WFD responsibilities for these waterbodies.

The <u>Anglers' Riverfly Monitoring Initiative</u> (ARMI) is a project run by the Riverfly Partnership. The Partnership brings together anglers, conservationists, entomologists, scientists, fishery managers and relevant authorities to increase our knowledge, expertise and understanding of river fly populations.

The ARMI provides a means for anglers and other citizen scientists to make a direct contribution to the protection of fisheries and improvement of their local rivers, in addition to enhancing their understanding of the river ecosystem by carrying out a simple monitoring protocols to assess river water quality.

2000

volunteers

1200 sites

artnership



100

Monitoring

groups

currently there are about 2000 active ARMI volunteers monitoring on a monthly basis over 1,200 sites across England. The volunteers are organised into over 100 monitoring groups. Many of these groups are part of one of 30 regional hubs. The hubs are often administered by Rivers Trusts or Wildlife Trusts personnel.

In support of their work, local ARMI groups and hubs raise matched funds locally, levered as a result of their affiliation to ARMI. Local funding sources include local government, water companies and conservation trusts. At least £250,000 matched funding has been raised by local groups to support ARMI monitoring work of fisheries since 2010.

In the 2015 to 2016 financial year the in-kind voluntary contribution was estimated to be £438,000 for the regular monitoring undertaken. Local groups raised £1,000 to cover costs for each ARMI training workshop (for monitoring equipment, tutors expenses, venue hire), often sourced from 'Awards for All'. A total of 71 new training workshops were run last year.

Funding bids submitted for several Riverfly+ projects; outcomes are still awaited or advice has been provided for a future resubmission.





3.9. Your Fisheries – The Rivers Trust

We have been funding the Rivers Trust to develop the Your Fisheries initiative. This is a web-based system to allow the creation of catchment fisheries reports as part of Defra's Catchment Based Approach (CaBA). The Your Fisheries system is designed to provide a simple mechanism for collating and sharing fisheries related evidence between all stakeholders in any given catchment. The outputs will be live documents that provide a framework for fisheries focused management but also identify opportunities to align interests and deliver outcomes for multiple benefits.

By adopting an inclusive, weight of evidence based approach these reports are intended to help guide local fisheries management actions, maximize the benefits of working together to deliver them, and ensure evidence and actions are recognized and integrated into wider catchment management objectives and the activities of associated partner organisations. The Your Fisheries system is designed to be adaptive, enabling new versions of the report or additional nested sub-reports to be created for sub-catchments, sections (both defined using simple in-built GIS functionality), or particular species of interest, as and when the need arises and/or new information becomes available (such as annual survey data).

The plan is to pilot Your Fisheries in one catchment per river basin in the coming year, and beyond this the intention is to roll it out across the whole country.

3.10. Award in Applied Fisheries Management

We have funded and developed a course with the Institute of Fisheries Management (IFM) which will be available to our Fisheries Officers and people within the fisheries community from August 2016 to further develop their skills and knowledge if required.

The not for profit basis of the organisation allows them to provide the course development at a reduced cost.

The intention is that by using their established processes it allows candidates to receive credits towards a formal qualification. The modules will be on the subjects of:

- Stillwater Fisheries Management
- Predator Impacts and Management
- Fish Stocks and Stock Management
- Fisheries Legislation
- Water Quality

Each module will have a lead trainer, and there is an overall Course Manager from within the IFM team. , Delegates enrolled on the course undertake a written assignment for each module and are supported in their studies with course handbooks, additional resource packages for each module and mentoring should they require it.

The full course will include a two day field course and a management project that is investigated and reported. The course will run over 2 years with the first intake of students planned in the autumn of 2016. Initially the enrolment will be Environment Agency staff, however, the intention is that in the future it will be offered to other organisations and individuals who want to improve their fisheries management knowledge.





4. Angling

4.1. Rod licence sales

In the period between 2000 to 2010, the annual sales of Environment Agency rod licences for England increased by 37.5%, from 1.02 million in the 2000 to 2001 financial year to 1.4 million in the 2009 to 2010 financial year.

Rod licence sales increased by 11.4% in the 2009 to 2010 financial year compared to the previous year to set a record high of 1.4 million licences sold. The total income received that year was \pounds 24.1 million.

Since this peak the number of licences sold has reduced (by 13.8%) and the income generated has fallen by 12.5% or £3million. Sales in 2015 compared to 2014 were up in quantity by 4,155 licences but down in income by £36,000 reflecting an increase in sales of short term and concessionary licences.

In addition to this we issued 413 worthy causes licences last year enabling well over 4,000 disadvantaged people to experience the joy of angling.

Early indications for 2016/17 season indicate that sales and income will be down compared to 2015/16 season figures. Bad weather, sporting events and economic factors all contribute to a reduction in rod licence sales. There has been a targeted marketing plan to encourage lapsed anglers to return to the sport and short term anglers to upgrade to full term licences rather than short term licences.

The breakdown of rod licence sales for the 2014 to 2015 financial year across England. Appendix 2 shows more detail.



Remember you can now file your catch return online Anglers already release most of their salmon catch alive - could you?







4.2. Rod licence marketing

After 4 years of relatively low levels of activity on marketing rod licences however, sales dropped and continued to fall. As a result the Environment Agency embarked upon a programme of rod licence marketing to slow down and then reverse this trend aiming to:

- retain more existing licence holders
- re-recruit lapsed anglers
- up-sell short-term licences to annual licences

Overall our efforts were successful and analysis showed that we had significantly slowed the decline in licence sales. In total we generated £750,179 more than predicted had the declining trend continued. Other highlights from our analysis of the marketing programme included:

- We have been successful in persuading more people to buy their licences on line with a net movement of 6.38%. For the first time, on line was the most popular means of buying a licence (see figure below).
- Re-recruited over 16,000 lapsed anglers (this is on top of the 20,000 from the previous year).
- Sold licences to 984,708 individual anglers (just 1.5% short of our stretching 1 million target). This was an increase of 1,247 anglers from 2014/15.





While these results were positive and showed the slow in decline of licence sales which helps stabilise funding for the future; we did learn some very important lessons for the future:

- While we recruited more anglers into the sport, income is still declining. This is largely because of an ageing angling population. As more people become eligible for concessionary licences, our income continues to fall.
- In addition, the continued fall in junior licence sales (a further 9% reduction from the previous financial year) is a cause for concern for the future of angling.
- Along with the Angling Trust we are developing clear objectives and targets to strengthen links between angling participation and rod licence marketing and to drive sales amongst newly recruited anglers, especially juniors.
- We are also working with the Angling Trust to engage with angling clubs and fishery owners to assist by ensuring anglers are fishing with a valid Environment Agency rod licence. We will continue to engage with and provide support to these fisheries interests to help boost licence sales.

4.3. Market research

We undertook a significant piece of market research in 2015 to help us better understand peoples motivations for going fishing, their perception of the Environment Agency and the effect our marketing interventions have on licence buying behaviour. The survey involved over 1,200 anglers plus a further 4 regional focus groups.

The survey showed that most people went fishing for rest and relaxation and that the biggest limiting factor stopping them fishing was insufficient time.

Anglers' perception of the Environment Agency was most likely to be enforcement driven but they respond most to more positive messages, for example around the benefits of fishing, or showing how rod licence money is spent to benefit fisheries and the environment.

Many anglers who buy short term licences did so because time pressures restricted the amount of time they could fish but many had not considered the overall cost of several trips using 1 day licences compared with the cost of a full licence.

Young anglers were most likely to be sceptical about the value of the rod licence, and perhaps unsurprisingly, respond better to messages on social media than more traditional routes.

That said, anglers responded very positively to the reminder letters and e-mails we send to them

These and other findings will help shape the communications we use to ensure we maximise income from rod licence sales.



We last updated our rod licence duties in 2010, since when they have remained unchanged. During the interim period, we have received calls from many anglers and angling bodies to review the types of licence we issue. Many people have asked us to introduce a licence which runs for a full year from the date of purchase and carp anglers have asked us to introduce a licence to cover 3 rods to save them having to buy 2. During 2015 we carried out market research specifically aimed at gathering evidence to support a change to duties and types of licence we issue. The research showed overall support for the proposed changes including a potential increase in duties. Armed with this evidence we will be developing options to put to government in 2016 with the aim of introducing a new system of licensing, including :-

- Free licence for juniors (12-16)
- A licence which runs for 365 days from date of purchase rather than until the end of March irrespective of date of purchase
- A new 3 rod licence to save anglers having to buy 2 separate licences
- The ability to upgrade from a short term licence to a full licence recognising the money already spent on the short term licence
5. How do we know if fish stocks are healthy?

5.1. Fisheries monitoring

Monitoring of all fish species is vital to our assessment of the condition of the environment. Surveys of fish populations, including coarse fish, are used to assess the status of stocks and contribute to the overall assessment of ecological status of a water body.

If you are interested in the classification of your local water body then you can use the <u>Catchment</u> <u>Data Explorer</u> interactive online web base tool which allows you to view maps and download all Water Framework Directive (WFD) classifications including for fish. The data explorer has been recently updated with the latest 2nd Cycle River Basin Management Plans baseline classification data for 2015. This latest version adds updated measures pages, catchment summary page improvements and data about the links between protected areas and water bodies.

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Fish water body classification data available from Catchment Data Explorer

The information collected is used to describe the health of fish populations and to prioritise where we, and others, invest resources to improve the environment. We use our monitoring data to:

- · measure the number of species, population abundance and size distributions
- assess the status of fish populations and how this changes with time
- · report on the status of single species or populations
- manage species specific fisheries, such as salmon and eel
- predict what effect certain changes will have (for example, climate change or management controls) on fish populations

The WFD requires us to assess the ecological status of rivers in England. We have developed a tool for determining the status of fish in rivers by analysing data collected through our fisheries monitoring programme. In England, we have 3,924 riverine type water bodies (see table below).

Riverine water bodies includes rivers, canals, and surface water transfer schemes which have been formally designated as such within the 2nd cycle river basin management plans.

Operational area breakdown of WFD river catchments and the number water bodies assessed for WFD fish classifications in 2015.

Area	Number of Water bodies assessed for fish in 2015	Total number of Water bodies in programme
Cambridgeshire and Bedfordshire	67	175
Cumbria and Lancashire	193	362
Derbyshire Nottinghamshire and Leicestershire	88	206
Devon and Cornwall	185	381
Essex Norfolk and Suffolk	99	177
Greater Manchester Merseyside and Cheshire	83	183
Hertfordshire and North London	40	82
Kent and South London	70	133
Lincolnshire and Northamptonshire	60	210
Northumberland Durham and Tees	185	336
Shropshire Herefordshire Worcestershire and Gloucestershire	107	269
Solent and South Downs	98	169
Staffordshire Warwickshire and West Midlands	92	209
Wessex	131	316
West Thames	102	247
Yorkshire	244	469
Grand Total	1,844	3,924

In 2015 within England we assessed the status of fish populations in 1,844 of these riverine water bodies. For various technical, logistical and legislative reasons, not all WFD water bodies require fish classification assessments. Monitoring of fish species is carried out at different frequencies, ranging from annually to once every 6 years. We use different techniques depending on the type of species or habitats surveyed, including electric fishing, netting and hydroacoustic surveys. Sites are monitored on a rolling programme or in an investigative capacity when required.



During 2015 to 2016 staff from our Staffordshire, Warwickshire and West Midlands Area sampled 22,304 fish across 23 species and 49 sites.



One of these sites is the River Anker which is a Reference Principle Coarse Fishery with five survey sites which are monitored annually. This provides a good long term dataset and can be monitored for changes in fish species diversity and abundance. In 2015 Roach were the dominant species with a total of 16 different species recorded, including; eel, bleak, chub and perch.

Collated by Environment Agency operational areas, the figure below shows the data (expressed as percentage in each band class) for WFD. Riverine type water bodies where fish assessment was conducted in 2015. The fish classification band class range from High, Good, Moderate, Poor, Bad. Water Bodies assessed as "Good" or "High" are regarded as passing the WFD standard for fish, those water bodies in the lower band classes are regarded as WFD failures. In 2015 42% of WFD riverine type assessed water met the WFD standard for fish and 58% did not achieved good status or better.



Fish Classification - WFD 2nd Cycle 2015 Data Release (percentage and number of fish monitored water bodies in each class by EA operational Area)

The chart below compares the status of the Water Framework Directive (WFD) fish element classifications from the years 2013 to 2015. The data sets are comparable because they all use the second cycle WFD data sets.



Comparison the of fish population status (2013 and 2015, WFD 2nd Cycle data)

The Water Framework Directive requires that we aim to achieve good status (or potential) in all water bodies by 2015. This improvement in status can be realised through future cycles of the WFD, ending in 2027.

Where water bodies are non-compliant for fish, we have conducted investigations to identify the reasons for not achieving good status or better. The full list of reasons for not achieving good status is presented in <u>Appendix 3</u> for national Significant Water Management Issue (SWMI), SWMI Activity and SWMI pressures, respectively. This information shows that significant pressures affecting fish populations including habitat alterations, barriers to fish passage and sediment inputs into our rivers. These datasets are available to download at on <u>DATA. GOV.UK</u>

We have also identified the technically feasible and cost beneficial measures that will be required to allow fish to achieve good status. We will continue to improve this information as we move through the next cycles of the WFD. Funding and delivery of these measures will be challenging. Catchment based partnership working will be an important part of achieving the benefits associated with achieving good status.

Case study: 'Big haul of silver' while monitoring on the River Ouse

In Cambridgeshire and Bedfordshire we conduct around 72 routine fish population surveys on the rivers and drains throughout the Great Ouse catchment every year. These build on a 6 year programme that includes over 600 Surveys. We use various techniques including electric fishing, netting and sonar – or hydro-acoustics, as well as match results.



We sometimes get a surprise, and this was the case on the River Lark at Mildenhall, a small tributary of the main river Ouse near Ely, Cambs. The team, who visit the same location each time a site is visited, seine netted the river, which involves sectioning off a 110m section with stop nets and netting the area in between. After speaking to local anglers and members of the public the guys were unsure of what might be lurking in the river and what they would catch. What the guys certainly did not expect was how full the net was going to be when they drew it in.

The survey catch was made up of 8 species, and of these nearly 3000 were roach (2953 to be exact) ranging between 6 cm – 26 cm (a 26cm roach is nearly a pound!). The survey also produced chub and common bream, these are species that we'd expect in this location, so a lack of trout for example isn't always a bad thing. The fish are individually measured to the nearest millimetre, (our computer software then works out the weights) but we do a lot more than that, our teams map the local habitat, and vegetation and a small number of fish have scales removed and are then aged at our National Fisheries Laboratory. Fish ageing informs us about growth rates, competition and the health and size of populations, helping us better assess the state of the fishery and local ecology. We then report on these findings, and help produce management plans, where necessary, to improve the fishery. We always invite the controlling angling club, in this case Lark Angling Preservation Society to attend our surveys, as we realise how important it is for you to see for yourselves what your fishery has to offer.

5.2. Status of salmon stocks

The 2015 assessment of England's salmon stocks showed a slight improvement on 2014, though the status of salmon remains concerning. Our assessment places each rivers' salmon stock into one of four categories with the strongest classed as 'Not at Risk' and the weakest as 'At Risk'. In 2015, 34 of England's 42 principal salmon rivers were assessed as being 'At Risk' or 'Probably at Risk'. None were categorised as 'Not at Risk'.

State of England's 42 principal salmon rivers 2015





Percentage of England's 42 principal salmon rivers in each risk category assessed against the management objective, for 2004-2015 and as predicted for 2020



2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

Rod Catch - The final rod catch for England was 9,455 salmon, which is 16% higher than 2014, but 29% below the 5 year mean of 13,217. Of these, 7,375 (78%) were released alive, the highest percentage to date. The rod catch of multi-sea winter salmon was up, but one sea winter salmon (grilse) were well below the recent 5-year mean.

Net Catch – In 2015 there were 23 coastal and estuarine net fisheries operating in England. The net fisheries caught a total of 16,995. The majority of these (15,914) were taken by the drift, T and J nets off the North East coast fishery. The catch in 2015 was 52% higher than that of 2014 and 1% below the five year mean of 17,094

The poor state of Atlantic salmon is not unique to England but is reflected across its range including the UK.

Ο

Case study: Salmon monitoring on the River Tees

The monitoring of salmon passage at the Tees Barrage continues to be a major element of our work. Monitoring is carried out using a resistivity fish counter in the existing Denil type fish pass. This has recently been combined with hydro-acoustic monitoring of a number of different potential routes for fish passage across the main radial gates, through a canoe slalom and through a navigation lock.



Using an ARIS hydro-acoustic device in 2015 we confirmed that the major route for fish passage is across the main radial gates with initial results suggesting almost twice as many fish use the gates as opposed to the fish pass. The use of hydro-acoustic monitoring has provided us with the evidence to adjust the operation of the barrage and the canoe slalom to improve the opportunities for fish passage. The monitoring will continue for three years and will guide any future changes to barrage operation. An additional genetics study as part of a wider study on salmon genetics has demonstrated that many of the salmon that approach the Tees barrage are in fact destined for other rivers and are exploring the lower River Tees on their route to their home river. The initial findings suggested that less than

20% of salmon sampled below the Tees barrage were originally from the Tees. Hydroacoustic monitoring at the Tees Barrage is funded through the Canal and Rivers Trust.

The Annual Assessment of Salmon Stocks and Fisheries in England and Wales has been produced for the International Council for the Exploration of the Seas (ICES) since 1997 and takes data from rod, net and trap catches, fish counters and other sources to describe the status of salmon stocks and fisheries. The latest (2015) edition can be read at https://www.gov.uk/government/publications/salmon-stocks-and-fisheries-in-england-and-wales-in-2015

5.3. Status of sea trout stocks

Of the 44 principal sea trout rivers in England (with a rod catch of >50 fish), 33 rivers are classified as "Not at risk" and "Probably not at risk", 11 rivers are "Probably at risk" and none are "At risk" (as assessed by fishery performance rather than stock level), which is an improvement on 2014.



State of England's 44 sea trout rivers

The declared sea trout rod catch in England for 2015 was 17,935 which was 4% more than in 2014 and 0.5% above the 5 year mean of 17,830. Of these, 13,989 sea trout (78%) were returned alive.

The total declared sea trout catch by nets and fixed engines in England for 2015 was 61,552 which was 30% up on the catch recorded in 2014 and 51% up on the average of the previous 5 years.



Our salmon and sea trout monitoring is funded by a combination of GiA with some match funding from the European Maritime and Fisheries Fund, a part of our salmon (and eel) monitoring being eligible for support under the EU Data Collection Framework.

5.4. Status of eel

Every 3 years, a progress report on delivery of our Eel Management Plans (EMPs) and latest status of eel in England is sent to Europe. The 2015 Eel Management Plans progress report was published 17 August 2015 by Defra. Read the eel management plans progress report on <u>.GOV.UK</u>

This triennial EMP describes actions taken to help conserve and restore the eel stock. This includes:

- regulation of fishing
- · protection and improvement of river environments
- removal of barriers and making of fish passes
- screening of high priority water intakes and restocking of elvers

Much has been done and is continuing to be done to protect eels. Yet only 1 of the 9 river basin districts (RBD) in England meets EU targets . Silver eel escapement or the percentage of eels which are able to return to the sea in the South-East RBD was assessed to be at 42% of the predecline level but 6 RBDs were assessed to deliver silver eel escapement at less than 10% of predecline levels.

It should be noted that a number of assumptions and uncertainties are attached to our assessment of eels. Nonetheless, it is clear that the stock remains in a reduced condition and there is a clear need for continued improvement measures.

The stocking of elvers (juvenile eel) to improve populations is a relatively minor activity in England, with only 122kg in 2011, 23kg in 2012 and 55kg in 2013 reported. However, records indicate that authorised elver fishers now make in excess of 60% of their catch available for restocking with some going for this purpose to other parts of the UK and Europe.



Case study: Monitoring eels on the East Coast

We are continuing to run elver counters on a number of rivers in our area to monitor the recruitment of elvers on the east coast. Eel telemetry work on the reservoirs of Essex has helped mitigate against pressures eel face in these types of still waters. We have undertaken fyke netting and tagging surveys to see where eels gather and to highlight suitable areas for installing eel passes or improved screening arrangements.



Our elver traps are run between April and July each year and help us to monitor the strength of the glass eel run. The data helps us prioritise measures to improve passage and river habitats for eels

Case study: Eel Counting in Wessex

Wessex Area has 3 eel monitoring stations within the River Parrett catchment where seasonal eel migration trends are recorded.

During early spring, 'glass eels'/ elvers enter the tidal Parrett from the Bristol Channel seeking access to freshwater. When the tidal gates at Oath Lock are closed glass eels and elvers gain access to the river by means of a bristle board eel pass to the side of the structure. A camera mounted above the pass allows for video recording and accurate counting.



At Greylake sluice on the King's Sedgemoor Drain, yellow eels (>elvers) are recorded in a similar manner with counting normally occurring from spring into autumn.

During late autumn/ early winter, images of migrating silver eels are captured by an underwater acoustic camera on their return journey to their breeding grounds in Sargasso Sea. The camera is positioned on the Huntspill River where it discharges into the Parrett estuary.

Comparing eel data with climatic conditions can often reveal interesting migration patterns. The summers of 2010 and 2011 were particularly dry and the eel count was low. This contrasts with the wetter summers of 2012 and 2014 when migration was much higher. The mild winter of 2015 shows an extended migration period possibly due to the 'El Nino' effect that year. Water temperature, rainfall and moon phase all have an influence on migration trends.

Eel catch return reports

England and Wales Eel catch returns are reported annually to Europe via the UK ICES (International Council for the Exploration of the Sea) report. The 2015 UK ICES report is available to view as part of the full ICES Countries Report.



80% of our eel monitoring work is funded by the European Maritime and Fisheries Fund, the remainder is funded jointly by rod licence income and GiA.

5.5. Net licence sales

Net licence sales

Region	Licence Type	Number of licences	Number of Licensees			
North East -	Combined	3	3			
Northumbria	Drift	7	7			
	T/J	22	22			
North East -	Drift	1	1			
Yorkshire	T/J	27	27			
Anglian	Drift nets	16	15			
	Other nets (various)	5	5			
South East	Seine nets	1	1			
South West	Seine nets	17	17			
Devon and Cornwall	Drift nets (Camel)	7	7			
Midlands	Lave nets (half season)	26	26			
	Seine nets (draft)	1	1			
	Fixed engine ranks:	5 locations, 700	5 (1 fisherman with 3 locations)			
	4 units (50 putchers per unit)	instruments				
North West	Haaf nets (Solway)	51	51			
	Drift nets (Ribble)	4	4			
	Haaf nets (Lune)	11	11			
	Drift nets (Lune)	7	7			
	Lave nets (Kent)	4	4			
	Lave nets (Leven)	2	2			
	Coop traps (Eden)	3	1			

Eel, Elver, Lamprey and Smelt netting

Fishery	Method	No of Licences	No of Instruments
Adult eel	Small wingless traps	14	229
	Fyke nets	65	1760
	Fixed traps	7	7
Elver	Dip net	528	528
Lamprey	Pot traps and Fyke nets	4	90
Smelt	Pot traps and Fyke nets	9	604

5.6. Catch statistics

5.6.1. Salmon

Net

In 2015 there were 23 coastal and river estuary net fisheries operating in England. The net fisheries caught a total of 16,947 salmon, of which the majority (15890) were caught by the drift, T and J nets of the NE Coast fishery. The catch in 2015 was 52% higher than that of 2014, and 2% below the five year mean of 17206.



Rod

In 2015 a total of 7,625 salmon were caught by rod and line in England. Of these, 5,947 (78%) were returned alive. The 2015 catch was 26% lower than that of 2014, and 47% lower than the five year mean of 14,261.



5.6.2. Sea Trout

Net

In 2015 the 23 coastal and river estuary net fisheries caught 61,552 sea trout. The catch in 2015 was 34% higher than that for 2013, and 54% above the five year mean of 40,054.

Rod

In 2015 a total of 14,464 sea trout were caught by rod and line in England. Of these, 11,223 were returned alive (78%).



5.6.3. Eel

In 2015 a total of 10.394 (3.946) tonnes of silver eel, and 41.548 (25.275) tonnes of yellow eel, were caught by small traps, fyke nets and fixed traps. A total of 2.805 (11.849) tonnes of elver were caught by dip net. 2014 figures are given in parentheses.



5.6.4. Lamprey

We authorise the use of fyke nets and small traps for the exploitation of lamprey in Yorkshire and Nottinghamshire. In 2015 only 285Kg of lamprey were taken, (compared with 1028 Kg in 2014) as high river conditions made fishing difficult.



5.6.5. Smelt

We authorise the use of fyke nets and small traps for the exploitation of smelt in Yorkshire and East Anglia. In 2015, a total of 9.92 tonnes of smelt was taken in these fisheries, compared with 11.0 tonnes caught in 2014.



6. Fisheries improvements

6.1. Salmon and Sea trout

6.1.1. Factors impacting on salmon

The biggest single factor impacting the status of salmon populations has been the decline in marine survival, which has nearly halved over the last 20 years. This has been largely linked to climate change induced environmental changes affecting feeding opportunities. To give salmon greater resilience in the face of environmental change it is critical that their freshwater phase is improved and protected allowing for maximum smolt production.

Significant investment over the last 30 years, particularly in improving river water quality, has seen salmon return to rivers such as the Mersey. However, there is a significant amount more to be done with 26% of England's 42 principal salmon rivers currently not achieving Good Ecological Status under the WFD. The most significant reasons for not achieving good status are physical modifications including obstructions to fish passage, degraded habitat and diffuse pollution.

6.1.2. Improving salmon populations

In response to the status of England's salmon stocks, the Environment Agency, Defra and partners have developed a new approach to addressing the pressures impacting salmon fisheries across England. The salmon five point approach describes the high level commitments, the necessary actions and key measures to improve the future for salmon. Our mission is to restore the abundance, diversity and resilience of salmon stocks throughout England. We will do this by:

- Maximising the production of healthy wild salmon smolts in freshwater and seeking to reduce salmon mortality at sea
- Working in partnership across Government, its agencies and partner organisations to introduce new initiatives and improve the delivery of existing measures to protect and maximise salmon stock performance.



This shared vision aims to address pressures at different life stages of salmon and is a vital part of restoring and maintaining England's salmon populations. The 5 points are:

- 1 Improve marine survival
- 2 Further reduce exploitation by nets and rods
- 3 Remove barriers to migration and enhance habitat
- 4 Safeguard sufficient flows
- 5 Maximise spawning success by improving water quality

You can read more detail on the Angling Trust Website.

6.1.3. Improve marine survival

To reduce pressures in international marine waters, the Environment Agency supports Defra in working closely with NASCO (North Atlantic Salmon Conservation Organisation) and the European Union. Key outcomes from the 2016 NASCO meeting include:

- In Greenland a three year regulatory measure was introduced in 2015 to limit salmon catches to 45 tonnes per year and introduce more stringent monitoring and reporting. For the Faroese fishery there is a three year agreement for no salmon fishing.
- NASCO is to support the proposed International Year of the Salmon, which is scheduled for 2019. Covering both Pacific and Atlantic salmon, in what has been described as the 'salmosphere', its aim is to improve scientific understanding of the factors influencing salmon abundance and to raise public engagement and awareness of the challenges facing salmon and what needs to be done to conserve and enhance them. Its strap line is: 'Salmon and People in a Changing World'.
- Progress has made with NASCO's flagship research programme SALSEA-Track, which has been established to identify the migration routes of emigrating post-smolts and to quantify the mortality occurring at different points along the migration route, how this mortality varies from year to year and the factors causing the mortality, e.g. predation, aquaculture or renewable energy installations. Smolts from rivers draining into the Gulf of St Lawrence have been tracked through the Strait of Belle Isle and smolts from rivers entering the Gulf of Maine have been tracked as far north as Newfoundland. The Atlantic Salmon Trust and University College Dublin are testing an eDNA probe to detect whether salmon are being caught by pelagic fishing boats. A range of tracking studies are in development.

6.1.4. Further reduce exploitation by nets and rods

In managing net exploitation, Net Limitation Orders (NLOs) were reviewed in 2015 in the estuaries of the rivers Teign, Dart and Dee and for the Anglian coastal fishery. The following restrictions were introduced:

- Teign estuary: the NLO* was maintained at three seine nets.
- Dart estuary: a reducing NLO of zero was introduced for the seine net fishery; the remaining nets have now been bought out in perpetuity.
- Dee estuary: the reducing NLO* of zero was maintained for the seine and trammel net fisheries. (No fishing has taken place since 2009 following a buy-off of all nets).
- A new regulatory measure was introduced for the Anglian coastal fishery maintaining the reducing NLO to phase out the fishery.

* A reducing NLO means that the number of licences issued will be reduced to the specified number as existing netsmen leave the fishery.

For rod fisheries, since 1999, catch and release has been a statutory requirement before the 16th June. In addition to this, together with partners, there has been a concerted effort to promote voluntary catch and release. Annual catch and release rates have increased from 10% in 1993 to 78% in 2015. As salmon populations continue to decline we are working with our partners to see further increases in catch and release rates which are sufficient to enable recovery of stocks. Within the salmon 5 point approach the Angling trust are looking at the best way to increase catch and release rates and maximise the survival of released fish.

In response to stocks being at risk on the Leven and Crake, a novel approach has been introduced whereby salmon catches are limited through the provision of carcass tags, which are administered by the fishery.

Illegal fishing continues to pose a risk to vulnerable stocks and intelligence-led targeted operations are carried out by the Environment Agency, often jointly with Inshore Fisheries and Conservation Authorities (IFCAs) and the police.







In the North East, the Environment Agency working with the Police caught two gangs illegally gill netting on the River Tyne seizing 20 large migratory fish together with nets and a car.



Case study: River Lyn fishery restrictions

The EA leases fishing rights from the National Trust for the River Lyn in North Devon. This is used to provide affordable salmon and sea trout fishing to the public. Due to significant disease outbreaks in 2013 and 2014, where a large proportion of the fish were felt not to have survived to spawn fishing restrictions were imposed on the Environment Agency fishery in 2015 to reduce exploitation and provide the greatest opportunity for those fish in the river to survive to spawn. Private owners of rights on the river were approached in meetings and agreed to voluntarily implement similar measures.



6.1.5. Remove barriers to migration and enhance habitat

A catchment based approach by the Environment Agency, Natural England, Rivers Trusts, fisheries stakeholders and landowners is being taken to address barriers to fish migration and improve river habitats supported by the requirements of the WFD and Habitats Directive. On England's 42 principal salmon rivers, during 2015, work was undertaken on 8 barriers to fish migration, improving access for salmon to 280km of river.



Remove barriers to migration and enhance habitat



Case study: Hexham Fish Pass

One recent success of removing a barrier to migration is a new fish pass on the River Tyne. Here the Tyne Rivers Trust worked with Northumberland County Council and the Environment Agency to build Hexham fish pass which opens up access to many kilometres of spawning and juvenile habitat.



It was fabulous to see it open earlier this year and it has had lots of positive feedback. Completing this challenging project was cause for celebration and it illustrates that when we give nature a helping hand it responds well. In fact, as soon as the fish pass was opened fish began to use it.

6.1.6. Safeguard sufficient flows

Ensuring sufficient river flows is essential for salmon to complete their lifecycle, access spawning habitat and for juvenile recruitment.

The Environment Agency's Restoring Sustainable Abstraction (RSA) programme, since 2008, has prevented damage (or the risk of damage) to the environment associated with 265 unsustainable abstraction licences, of which 77 licences were on England's 42 principal salmon rivers: 50 had a licence condition added (such as, hands-off flow condition); 18 licences had unused headroom removed (removing the risk of 32,159,219 m3/year being abstracted



Safeguard sufficient flows

and impacting the environment); three licences were reduced/revoked in the flows amount the licence holders could abstract (which resulted in 9,358,261 m3/year being put back into the environment); and six unused licences were revoked (removing the risk of 109,861,147 m3/year being abstracted and impacting the environment). These benefited the following rivers: Itchen, Avon, Teign, Exe, Dart, Erme, Taw, Wyre, Ehen, Eden, Derwent, Yealm and Wye. A further 20 licences relating to salmon rivers will be modified under the RSA programme by 2020.



Case study: Parr monitoring on the River Derwent, Derbyshire

Five sites have been monitored along the River Derwent following the installation of fish passage on several large weirs. Selected areas of favourable habitat are mapped for consistent replication year on year. Electric fishing has been conducted using the standard catch per unit effort technique with pulsed direct current.



Salmon parr were first found back the river in 2013. 2015 saw the most salmon parr found compared with previous years. Eight parr were caught at Duffield Bridge (North of Derby), ranging from 78-106 mm and assumed to be 0+ age class. These parr were found upstream of several fish pass installations, providing evidence that these passes allow upstream access to suitable spawning grounds.

However, a number of barriers upstream from Duffield Bridge are only passable at high flows or are currently impassable. The plan for 2016 is to include additional monitoring sites further upstream of Duffield Bridge to assess how far the salmon can currently migrate. These data will also be used to inform future fisheries management decisions.

6.1.7. Maximise spawning success by improving water quality

Salmon require very high standards of water quality, especially as eggs incubating in gravel are particularly sensitive to diffuse pollution and siltation.

The Water Companies' National Environment Programme (NEP) 2015-2021, in meeting requirements for protected areas and no deterioration under the WFD, is scheduled to deliver 42 improvements, 160 investigations, 15 catchment schemes and 10 water resource schemes on England's 42 principal salmon rivers. To help address rural diffuse pollution a new Countryside Stewardship scheme has been established. Targeting action will be critical to reduce diffuse pollution and improve spawning success.



Maximise spawning success by improving water quality



To provide some resilience to the impacts of climate change, the Keeping Rivers Cool project, which is now led by The Woodland Trust, saw in 2015 an additional 55,000 trees planted and 27.5 km of fencing erected. From the original pilots on the Ribble, Wye and Usk and Hampshire Avon, the geographic coverage of the project has expanded and now includes the Tyne, Arun, Yare, Bure, Test and Itchen catchments. Funding sources have diversified with the latter two catchments benefitting from Rotary Club funding.



Case study: Land use change study

Fisheries and Biodiversity officers have been working with Gloucester University and Overbury Estate to initiate a PhD study to assess the benefits, or otherwise, of adopting innovative farming practices, such as green manures, minimum tillage, winter cover crops and sediment traps.

The study, which is in its early stages will investigate how these changes affect sediment loss, surface water flooding/runoff, water quality and changes in farmland flora and fauna.



6.1.8. Stocking

Kielder Salmon Centre was built to mitigate for habitat loss due to the construction of Kielder Water in 1978 to 1979 which impounded approximately 7% of the River Tyne catchment when construction was complete. Each year adult salmon are captured alive from the River Tyne system to provide eggs that are fertilised and hatched and grown at the Salmon Centre to return young salmon in sufficient numbers to mitigate for the loss of spawning habitat. The Centre has also grown young salmon to support restoration schemes in a small number of rivers where stocking offers a suitable response and previous limiting factors have been reduced or removed. In 2015 young fish were provided to the river Yorkshire Esk. These were produced from eggs from adult salmon captured in that river.



A population of Arctic charr exists in Ennerdale Water in the Lake District which are thought to be genetically different from other populations in Britain. They have suffered severe decline over the past two decades and there was a risk that they would become extinct if support was not given. Adult charr are captured during their spawning migration and taken to Kielder Salmon Centre where they are stripped and the eggs grown on. The young are then returned to the wild. Kielder Salmon Centre is funded through the Water Resources budget - 95% of which is derived from abstraction licence fees of the local water company.



Our Salmon and Sea trout improvements receive 90% funding from GiA and 10% from rod licence income.

6.2. Coarse and trout

As our most popular form of fishing we recognise the importance of developing and improving coarse and trout fishing in England.

Through working with partners to ensure rod licence fees go as far as they can, we have introduced a number of funding channels and programmes which continue to make a difference year on year to coarse and trout fishing.

The Angling Improvement Fund is a key initiative which is building pace and redirects rod licence income directly back into improving angling. In 2015 to 2016 we reinvested £260,000 of rod licence money into 67 angling improvement projects matched by £725,000 from other sources. You can read more about this in section 3.4.

The Fisheries Improvement Programme is another major channel to ensure improvements in fisheries. In 2015 to 2016 we reinvested £375,000 of rod licence income on 74 fisheries improvement projects with £700,000 match funding. Please refer to the section 3.6 for further detail.

Case study: Installing roach spawning boards on the River Severn

The Environment Agency has contributed funding for the ongoing roach spawning board project with the Severn Rivers Trust. Materials for the spawning boards were supplied to the Severn Rivers Trust, and volunteers have been busy assembling them ready for installation in rivers for the spawning season. Spawning boards mimic the natural spawning substrates the roach and other coarse fish spawn on and a similar project has had great success on the River Avon. If you are interested in obtaining some spawning boards for your stretch of river please contact the Severn Rivers Trust.

We continue to monitor the status of English fish stocks under the WFD and use this as a driving force to progress improvements to water quality, geomorphology and fish passage throughout our river system. Since 2009, 269 waterbodies which we monitor for fish have improved status under WFD.

Case study: Roach overwintering investigation in Lincolnshire

During Winter 2015 the Lower River Witham in Lincolnshire underwent a mobile sonar survey to assess how fish populations use the available habitat when water temperatures drop and shelter becomes highly important for survival. This is the first time it has been attempted using high frequency multibeam sonar. The sonar images revealed large shoals of roach utilising boat moorings, marinas and trial Environment Agency habitat improvement shelters of staked trees and gabion baskets. In many fenland rivers during winter suitable habitat is at a premium. The size and ages of the fish found using each type of shelter in the Lower Witham gives insight into the types of habitat needed for young and old fish to thrive. This work has led to a much greater understanding of the roach population within the river, what influences it and what constrains it. It provides vital information to anglers on the river about fish stocks and likely fishing locations during winter. From a management perspective it helps to inform decisions for future improvement schemes and increases the chances of them being successful.

The WFD in particular has placed a duty on all organisations to improve the quality of water bodies. Fish populations are recognised as a key indicator of quality within that assessment.

As a result, in the financial year 2015 to 2016 the Environment Agency was able to invest $\pounds 6,022,397$ from across the Environment Agency into improvements to angling and fisheries which would not have been impossible just a few years ago. The legislation and our drive to work in partnership with others led to a further investment of $\pounds 2,731,967$ from outside the Environment Agency meaning that we delivered $\pounds 8,754,364$ worth of environmental improvements to angling and fisheries.



Investment into angling and fisheries in the 2015 to 2016 financial year

Case study: Lower Avon Fry Bays and Floodwater Refuge Project

During September 2015 a pair of fry bays intended to produce improved habitat for coarse fish fry were completed on the Hampshire Avon between Ringwood and Christchurch. The work was co-funded by the Barbel Society and Environment Agency, and the bays are designed to provide improved habitat for coarse fish fry, as well as enhancing wetland-type habitat for a range of invertebrates, birds and plants. Advice and logistical support was also provided by the Wessex Chalk Stream and Rivers Trust, WCSRT, and the work was fully supported by Natural England.



Shallow warm water, with dense marginal vegetation is viewed as good nursery habitat for barbel, roach and chub fry in the early spring, and also as shelter for fry of all species in flood events, and it is expected that the bays will require a minimum of maintenance.

Pete Reading, Conservation Officer for the Barbel Society said "We are delighted that the Environment Agency has helped us to continue to fund our programme of habitat works on the Avon, and are looking at other sites on the river where habitat for barbel and other fish fry can be improved"

Andy Martin, Fisheries Technical Specialist at the Environment Agency said "We have worked with the Barbel Society for a number of years now to improve habitats for barbel and other coarse fish on the lower Avon, and it is great to see this latest set of fry bays completed before winter flows set in. These works form part of a wider programme to improve coarse fish habitat on Hampshire and Dorset rivers, being delivered by a range of fishery organisations with our support"

More direct improvements include the stocking of selected water bodies with coarse fish. Fish stocking

The **National Coarse Fish Rearing Unit** at Calverton, produces 9 species of fish for stocking into rivers and lakes throughout the length and breadth of England. These fish are used to improve stocks in rivers and lakes after habitat or water quality improvements and also to create fisheries in areas where there is a shortage of angling opportunities. All of the work at Calverton is funded by Rod Licence income. During 2015 we produced **452,220 fish**. This was the most fish stocked in any year. You can see a breakdown of species stocked below and in addition to this we stocked more than 1.3 million larvae into rivers and lakes throughout England.



Case study: National Crucian Conservation Project in Worcestershire

As part of the National Crucian Conservation project (NCCP) a fishery in Worcestershire has recently benefited from stocking of 390 individuals in a bid to help restore. Crucian carp are in decline due to the stocking of goldfish and common carp with which they interbreed.





The project is ongoing and we would be keen to hear from any fisheries interested in taking part although there are a number of restraints to be aware of:

• The site must be a still-water (such as pond or lake).

• Sites that contain common carp, carp variants, crucian carp hybrids or goldfish at any density cannot be considered. This is to prevent hybridisation of this pure crucian carp stock.

- Some other fish species are not good companions for crucian carp due to competition as fry or due to preferential predation of crucians. Still-waters that do not contain high densities of roach, perch or pike are preferred.
- Sites that will be managed as a native still-water fishery, or which have access for anglers are preferred, however, this is not essential and any still-water or pond will be considered.
- Crucian carp spawn in weed during summer in shallow areas; suitable spawning habitat must be available at the site.
- We must have permission to crop fish from the site. This is so that in the future, offspring of the stocked fish may be used to stock other sites.

More details on the project can be found on the Angling Trust website.

The water quality in many of our traditionally industrialised rivers has improved dramatically in the last 30 years. This allows us to focus on improving fish stocks which we can be confident will now have a great chance of repopulating reaches. We have therefore accelerated restocking from Calverton of natural fish stocks and viable fisheries and the 2015 weather was ideal for fish production with the survival rate of fish that have been grown on the farm for 18 months being the highest recorded at Calverton. Many rivers and lakes throughout England have benefitted from these stockings. You can see some of our key stockings in the graphic below.

Case study: Avon Roach Project

The local area Fisheries team continues to support the Avon Roach Project (ARP) with its endeavours to enhance the historic and iconic population of roach in the Hampshire Avon. Previously, survey data was analysed which showed the decline of the Avon roach which then saw the formation of the ARP.



Where possible Environment Agency staff help in kind with advice, manpower and monitoring of growth rates etc.

Three year old fish were stocked from the ARP stew ponds within the Avon Valley to various locations including the famous Royalty Fishery at Christchurch with support from the Environment Agency team at Blandford who oversee this activity.





The National Coarse Fish Rearing Unit at Calverton is fully funded by rod licence income

6.3. Eel

During the financial year 2015 to 2016, a total of 27 Environment Agency funded projects were created which will contribute in full or part to the aims and objectives of our Eel Management Plans (EMPs). These plans are designed to bring back eel numbers to sustainable levels. The majority of these projects (44%) are for fish passage improvements, but 26% are for other projects to tackle the more expensive and ambitious challenge of restoring wetland and 19% tackle simultaneously both fish passage and habitats improvements (see figure below).

Case study: Eel pass improvements on the Exe Estuary

Our Hydrometry and Telemetry team have installed eel passes at three of our flow gauging stations on the Bristol Frome at Frenchay, Frampton Cotterell and on the River Marden at Stanley. A fish easement and eel pass was also installed on the weir immediately upstream of the Frenchay site as well, due to repairs being needed on this weir.

The improvements were made while major repair work was being undertaken at the sites, as a requirement of the Eel



(England and Wales) Regulations 2009. The eel passes are the longest we have built in our area, so there are resting pools included in the designs to make the climb easier for the eels. We have also installed cameras to monitor the number of eels using the passes and will report in the future on the success of these passes.

e species to enhance the woodland. nks and bed of the river; repair rels can migrate upstream

re 2015.



The local public at Frenchay were obviously very thrilled at the idea of an eel pass being installed; so much so, someone graffitied a 'Thanks' from the eels on one of our information signs.

A bespoke mechanism was designed and installed at the entrance to the Exminster marshes from the Exe estuary. This slows closure of the tidal flap to allow passage of elvers into the marshes. The marshes are a heavily protected area (SAC, SSSI, SPA, RAMSAR) and provide a significant amount of excellent habitat for eels and elvers.



Number and percentage of project types contributing to Eel Management plans 2015 to 2016



£

Our eel improvement work receives 50% funding from GiA, 30% from rod licence income and 20% from fisheries permitting income.

6.4. What's happening on the ground?

The Environment Agency has fisheries officers based in each of our 16 areas who identify, plan and deliver projects benefitting fisheries. Each year our officers deliver hundreds of projects through working with local stakeholders, land owners and partners such as the Rivers Trusts and Wild Trout Trust. Read about fisheries projects in your area on <u>GOV.UK</u>.





We removed obstructions and installed fish passes at **55** sites

We opened up **405 km** of habitat for fish



We delivered **169** Fisheries projects

Some of examples of the work we have been doing across the country include:

- Improving fish passage including installing of fish passes, removal of obstructions and culvert modifications
- Improving spawning opportunity for both coarse and salmonid fish
- Improvement of habitat
- Introduction of gravel to modified channels to improve spawning opportunities
- · Installation of fry refuges
- Installation of floating reed beds to give fish protection from predators
- · Stocking of fish where environmental conditions have improved
- Installation of pre-planted coir roll to create marginal habitat between angling pegs
- Installation of woody debris designed to change flow velocity and encourage various fish species
- Reparations of buffer strip fencing along grazing land to ensure rivers are protected from livestock
- River restoration
- Developing techniques for the control of signal crayfish numbers with a view to reducing impact to fish and their habitats
- Investigations into poor catch numbers
- Bankside improvements to benefit angling such as strimming of paths and banksides
- Invasive species control
- · Work to reduce sediment input in a bid to improve water quality
- Educational programmes



Our projects are funded through a mixture of rod licence income, funding from other parts of the Environment Agency and partnership funding.

7. Our research and development programme

Evidence underpins the work of the Environment Agency. Our research and development programme helps to ensure we have a sound evidence base to support risk-based decision making and deliver sustainable fisheries management.

In 2015, we undertook a range of scientific research projects to address key evidence gaps and improve our understanding of issues affecting angling and fish populations. Where possible, we work in collaboration with our partners to deliver shared research objectives more cost-effectively.

<u>Appendix 4</u> details National projects undertaken by the Evidence Directorate under the fisheries research and development programme. This includes projects completed in 2015, projects which are on-going and a list of publications available on the <u>GOV.UK.</u>

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Case study: Using eDNA to protect your fisheries

Environmental DNA or eDNA is DNA released into water by organisms through various means (skin, faeces, eggs, mucous etc). We can now analyse for species in the water environment by looking for traces of eDNA in water samples we collect.

We are currently investigating whether eDNA can help support our investigations into the presence of non-native species which may be harmful to our native species (specifically Asian carp). If investigations are positive this could reduce the cost of monitoring in comparison to traditional methods like netting or electric fishing.

We also carry out area based studies with local universities in a bid to improve understanding of fish distribution, behaviours and populations in various catchments.

Case study: River Teme barbel PhD study

Fisheries staff assisted with the collection of barbel from the lower Teme for a radio tagging exercise as part of the Teme barbel PhD study. Rod-and-line sampling by local anglers and an electric fishing team from the Environment Agency collected 23 barbel of various age classes for the study. The barbel were fitted with internal radio tags, which are about the size of a small battery, and radio receivers were installed along the lower Teme and the River Severn to track daily and



seasonal movements. It is hoped that this tracking study will help determine if Teme barbel permanently reside in the Teme or frequently move between the Teme and the Severn.



Our research and development projects receive funding from various source including GiA, rod licence funding, from other sections of the Environment Agency and from external sources including other UK government agencies, universities, NGO's and the European Union.

8. Incident management

Responding to fish kills and other environmental incidents is a vitally important part of what we do. We respond to thousands of substantiated incidents annually. There has been an overall reduction in the number of serious or significant pollution incidents with serious, persistent or extensive impacts to people, the environment or property. 485 such incidents have been reported this financial year, compared with 602 in the 2014 to 2015 financial year and 697 in the 2013 to 2014 financial year.

Members of the public report incidents through our Incident Hotline (0800 80 70 60) and we are able to respond 365 days a year and on any day, at any time, providing an effective and proportionate response. A proportion of these incidents are fisheries incidents and includes:

- illegal fishing
- · pollution incidents causing impacts to fisheries and angling
- weather related incidents (warm weather, drought and floods)
- · fish disease outbreaks
- algal incidents

In the 2015 to 2016 financial year we responded to 659 reported fisheries incidents compared with 719 reported incidents in the 2014 to 2015 financial year. All incidents are categorised according to potential and actual impact on the environment and the impact on our resources. We can then break this figure down into categories of incident as shown in the table below. Category 1 is the most serious and Category 4 is a reported incident with no impact.

Case study: Pollution incident causes fish kill in Lincolnshire

This incident was reported by an Environment Agency employee who noticed 20 dead bream near to a pumping station. Agency Environment Officers suspected that the fish kill was connected to a recent minor sewage pollution that had occurred nearby.

When investigated further, hundreds of dead fish (adult and juvenile) were observed. Ammonia and dissolved oxygen readings did not indicate an ongoing pollution. The minor sewage pollution was discounted as the cause of the fish kill.



Initial investigation revealed several possible causes of the fish kill, all of which may have had a cumulative effect on the Hundreds Drain:

- Operation of a pumping station upstream some of the juvenile fish had been chopped in half – pumps had probably operated after heavy rain following long spell of dry weather
- · Sewage discharge from nearby farm but may have contributed
- Effluent from nearby water company would have some impact at times of low flow even though compliant with their permit.
- Ongoing diffuse runoff issue from nearby maize silage clamp

Each issue has been investigated and improvements made where possible however this shows that sometimes it is difficult to trace the cause of an incident.

Fisheries incidents distribution by area and category 2015 to 2016



Number of incidents by severity 2015 to 2016. We respond to all incidents but may not be able to attend every incident reported to us.

Category	No. of fisheries incidents 2014 to 2015	No. of fisheries incidents 2015 to 2016	% Incidents attended 2015 to 2016		
1	51	48	92		
2	156	128	91		
3	425	407	63		
4	87	56	41		

8.1. Our response

Our response to incidents can range from giving advice to a fishery owner over the phone, to deploying our aeration equipment in a river which is suffering from low dissolved oxygen problems or, as a last resort, to rescuing fish at risk of dying and placing them in a more stable environment.

The level of our response will depend on the seriousness of the incident based on the number and species of fish killed, the effect on the environment and habitat and the impact on the fishery. We use our categorisation system to prioritise incidents as we may not be able to attend every reported incident but will do our best to respond appropriately and proportionately. We will respond

to incidents on rivers, canals and lakes, and on public, angling club and commercial fisheries. In many cases, commercial fisheries buy their own or share emergency equipment to protect their stocks, calling on us only when necessary.



We responded to 659 fisheries incidents and of the more serious incidents we attended more than 90% incidents and rescued and relocated almost 80,000 fish.

Case study: Conkers kill fish in Solent and South Downs Area

We were called to a fish kill on a tributary of the Western Rother where a number of brown trout had been killed following a "first flush" of heavy rain after a long dry spell. Nothing unusual in that maybe but we struggled to find anything nasty that might have entered the system. A lead for investigation came from a fortuitous conversation with a reporter and the Wild Trout Trust who related a story of fish killed similar circumstances.



Further digging revealed that a giant Horse Chestnut tree at the source of the stream had recently shed its fruit which had in turn been crushed by passing cars. Add heavy rain and it's likely that an active piscicide called Saponin was released from the crushed nuts and entered the stream through several drains, poisoning the fish in the process. Sceptical? Ok, maybe, but a quick Google search shows that North American native tribes have used this method to stupefy fish for generations!



Case study: Carp kill in York

Chapman's Pond fishery and associated nature reserve is owned by York City Council, and managed by a voluntary community group. We visited the site following a reported mortality of carp. Live samples of fish were sent to our National Fisheries Laboratory, Brampton for further analysis and advised the precautionary pond closure. Press releases were issued giving details of the situation at Chapman's Pond.

The pond was given the all clear following a full health analysis carried out by our experts. The likely causes of mortality were thought to be stress due to a high fish population in the pond and underlying water quality issues. The pond is now benefiting from further investment from York City Council to address water quality issues and the introduction of a voluntary bailiff scheme, highlighted in Environment Agency post-incident recommendations.

8.2. Fish health

The regulation of the movement of live fish and the monitoring and investigation of fish disease within England is shared between the Environment Agency and the Centre for Environment, Fisheries and Aquaculture Science (Cefas).

The Fish Health Inspectorate, based at Cefas Weymouth, monitor the health of fish in fish farms and of imports and exports of live fish through our ports and airports. They authorise all fish farms, requiring them to keep records, report losses of fish and hold biosecurity plans. They also have a register of fisheries, holding records of the fish species in each site. They carry out monitoring on wild salmon for the parasite Gyrodactylus salaris (an EU notifiable disease) and investigate outbreaks of EU listed notifiable diseases on fish farms and fisheries, placing controls where outbreaks are confirmed.

The Environment Agency prevents the spread of high risk non-native pathogens and new and emerging disease risks through our fish movement regulations – up to 80 fish kills are caused by disease each year.

The Environment Agency's risk assessment of fish health threats protect fisheries and the environment whilst minimising the impact on the businesses we regulate. Our advice helps fishery managers understand the risk disease poses to their fisheries and how they can prevent problems. We:

- · ensure best practice by examining samples of all fish stocked by the Environment Agency
- support area team investigations of fish kills, where disease or poor fisheries management is the suspected cause, through laboratory examinations and advice
- monitor and risk assess new parasite finds and emerging disease threats, ensuring fish
 movement controls are applied quickly where needed and lifted quickly where they are not
- provide internal and external technical advice and internal training courses to improve the understanding of the role of fish health in the management of our fisheries

A large proportion of the team's work is linked to private fisheries dealing with established threats like Koi Herpes Virus (KHV) or new and emerging conditions such as the eel virus, Herpesvirus Anguillae (HVA) or the gill parasite of carp, Gyrodactylus sprostonae.

Case study: KHV found in Greater Manchester, Merseyside and Cheshire Area

In July 2015 an incident was reported through the National Incident Recording System (NIRS). The report detailed 100 dead carp at a local fishery occurring over the last few weeks. We attended the site on the same day to investigate. Oxygen readings were taken and some moribund fish analysed. It was noticed that the gills on the fish showed signs of damage. They were grey in colour. This raised concerns and the advice given by the team was



to close the fishery over the weekend whilst further investigations could take place.

A netting team quickly attended collecting samples to be sent to our Fish Health Lab in Brampton. This resulted in a designation order being placed on the fishery and the results came back as being positive for Koi Herpes Virus (KHV).

Following the incident team members met with CEFAS and the fishery owner on site to discuss moving forward. Advice was given on fishery management and biosecurity.

Where new pathogens are found, we carry out a rapid risk assessment process to see if controls are needed. All of our work aims to prevent harm to managed and natural fish populations and to protect the quality of angling in England.

During the cooler months we conduct health checks in support of fish movements between permitted sites. Health checks are done to ensure that fish are fit for purpose and that they don't have any non-native, new or novel parasites or pathogens. We control the movement of fish from waters known to have these pathogens (also known as Category 2 listed diseases) as they can cause serious damage to fisheries. A recent addition to this list is the new and emerging condition, Carp Edema Virus.

In summer months, a large amount of time will be spent investigating fish mortalities where disease is suspected to be the cause. It's a service that's funded by rod licence income and provided to all waters that are fished - the vast majority of cases that we see are from still waters. By working closely with area teams we can build up a good picture of the fishery itself, and this helps to highlight any management factors that may be contributing to the losses. We can then advise fisheries on species, stocking, habitat management and improvement, monitoring and environmental factors all of which will have significant impact on a fishery.

Case study: Fungal disease in salmon

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In the last few years we have seen an increase in the prevalence of fungal infections in salmon and sea trout in some of our rivers. These have caused significant losses, reduced the performance of fisheries and caused growing concern from anglers and stakeholder groups. We have been monitoring the situation on all our major salmon rivers and are working with partner organisations to progress our understanding of these diseases.



We have provided information notes on these issues to raise awareness and clarify what people should do if they encounter dead or dying fish. We have also provided guidance to anglers to ensure consistent reporting so we can respond promptly to problems as they arise. Samples of diseased salmon and sea trout have also been submitted to Brampton for detailed laboratory examinations to confirm the cause of losses and to rule out the role of any new or novel pathogens.

We are continuing to work with partner organisations including Stirling University, Marine Scotland, Natural Resources Wales, and Centre for Environment, Fisheries and Aquaculture Science (Cefas) to improve our understanding of fungal infections in our fisheries. A PhD project in collaboration with Cardiff University has also been set up to address key questions about this disease. This includes a sampling programme to obtain isolates of fungus from rivers across England and Wales. These will be used to progress knowledge of the distribution, diversity and virulence of these infections. This project will also combine field and laboratory observations to identify what factors may be responsible for the recent increase in this disease.

This work will underpin future monitoring of our fisheries and help us understand key pressures on wild salmon populations.

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Most of our fish lab's work is funded by rod licence income apart from salmon and eel investigations which are funded by GiA (12.5% of the total amount).

8.3. Prevention

We continue to work to reduce the number of fisheries incidents by working closely with water companies and the agricultural sector to improve practice and infrastructure with a view to reducing the risk to the water environment. The Rivers Trust is increasingly playing a key role in providing advice and guidance to local communities and farmers.

Case study: Protecting fish from toxic algae on the River Thurne

During March and April 2015, an outbreak of the toxic algae Prymnesium threatened the fish populations of the River Thurne system. Our Fisheries Officers estimated that at least 1.25 million fish were estimated to be trapped and at risk of mortality from toxins; in fact so many fish were trapped that they were also at risk from the effects of depleted oxygen levels caused by their sheer weight of numbers.



Our Fisheries Officers carried out the largest ever fish rescue undertaken by the Environment Agency, moving almost three quarters of a million fish to safer parts of the system. Colleagues from other teams played a massive role to help monitor the incident and provide support.

Since the incident, we have been working with the Broads (2006) Internal Drainage Board (IDB) to install a fish refuge at their Somerton pumping station, where an estimated 1 million fish had sought refuge in May 2015. We have contributed £10,000 of rod licence funding to the project, which will allow the IDB to install a special pumping system to create a freshwater refuge during future incidents. The project will also install a dedicated 110V electricity supply so we can deploy specialist aeration equipment to protect fish stocks. We are hoping to run a multi-partner training event and incident response exercised during summer 2016 to test the new refuge.

Many incidents reported to us, particularly in the summer season, involve private or commercial still water fisheries. We continue to advise these fisheries on best practice on fishery management to allow them to reduce their risk of incidents caused by management issues and manage incidents at their own fisheries. We do this with an aim of improving the environment for their customers and fish and consequently reducing reliance on external parties for support. To read about how we can support commercial fisheries you can read our blog at <u>GOV.UK.</u>

Our fisheries incident management work for coarse fish and at still waters is mostly paid for through rod licence income. Pollution incidents particularly in rivers and involving salmon and sea trout are largely funded by government and other parts of the Environment Agency.

9. Regulation and enforcement

9.1. Legislation

We use byelaws, permits and other regulations to manage where, when and how people fish, and how many fish they can take. Many fishery owners impose additional rules and codes of good practice. You can download the angling byelaws for the area where you fish, from https://www.gov.uk/freshwater-rod-fishing-rules.

Newly created fisheries are stocked to get going (mainly still waters) and many existing coarse fisheries are sustained by occasional or regular restocking. To support these fisheries and fish supply businesses, we regulate live fish movements to reduce the risk of transferring fish disease and damaging non-native species between waters. Any fishery planning to restock and all fish suppliers must first be permitted by us and we apply conditions to permits to restrict which fish can be stocked into which waters and whether they must have a health check first.

We also have powers to require the owners of weirs and other structures to build fish passes or take other measures to reduce barriers to fish migration. We can also require water companies and other abstractors to place screens on their intakes to prevent fish from entering and potentially being harmed or killed.
9.2. Rod licence enforcement

During the 2015 to 2016 financial year a total of 62,076 (the last complete year of data) rod licences were checked by our fisheries enforcement staff. Our checks show us that evasion was relatively low with a national average of 5.65%. This ranged from a high of 8.69% in Yorkshire to a low of 2.64% in Devon and Cornwall.

Area	Rod Licence Checks	No. of Multiple Checks	No. of New Licences Checked	No. of Reports Issued	Evasion Rate
Essex Norfolk and Suffolk	4716	138	4578	432	8.62%
Lincolnshire and Northamptonshire	3710	63	3647	186	4.85%
Cambridgeshire and Bedfordshire	3260	88	3172	119	3.62%
Derbyshire Nottinghamshire and Leicestershire	6255	183	6072	295	4.63%
Staffordshire Warwickshire and West Midlands	5584	269	5315	265	4.75%
Shropshire Herefordshire Worcestershire and Gloucestershire	2046	53	1993	145	6.78%
Northumberland Durham and Tees	2628	149	2479	109	4.21%
Yorkshire	5990	263	5727	545	8.69%
Cumbria and Lancashire	2574	46	2528	158	5.88%
Greater Manchester Merseyside and Cheshire	4955	275	4680	253	5.13%
Hertfordshire and North London	4815	582	4233	303	6.68%
Kent and South London	4500	140	4360	159	3.52%
West Thames	4845	775	4070	237	5.5%
Solent and South Downs	2615	184	2431	177	6.79%
Devon and Cornwall	1479	43	1436	39	2.64%
Wessex	2104	98	2006	93	4.43%
Total	62076	3349	58727	3515	5.65%

Area breakdown of rod licence checks in 2015 to 2016

Case study: Patrolling the banks in Kent and South London Area

Enforcement work in the Kent and South London Area includes checking rod licenses at fisheries across the patch. In 2015/16 4,500 licences were checked in the region. Throughout 2015 fishery enforcement officers worked closely with the Kent rural partnership police to carry out fishery enforcement work. Working under the title of 'Operation Salmon' areas targeted included closed season offences, poaching of trout



from stocked rivers and sites where rod license evasion is particularly high.

The operation was a success on both sides, with intelligence shared between the two organisations and successful prosecutions as an outcome. A particular example of the police and environment agency working collaboratively against environmental crime was the 'day of action' that took place at Leybourne Lakes Country Park. The park has suffered issues including fisheries offences, crimes against wildlife and anti-social behaviour. A joint patrol around the lakes, including fishery officers, the police and the council, saw a number of rod licences checked.

The patrol helped to educated members of the public about the requirements to fish in the park and rules governing fishing nationally. The partnership between the Environment Agency and Kent wildlife police is continuing into 2016 under the working title 'Operation Dew'; numerous joint patrols are planned for the coming months.



Case study: Clamping down on rod licence evasion on the River Trent

Derbyshire Nottinghamshire and Leicestershire Fisheries Officers were out in force with our close partners Nottinghamshire Police on the first day of the close season (15 Mar) to send the message that anglers catching fish in our rivers, streams, drains during the closed season would get a rude awakening, indeed within the first hour of leaving Farndon Marina on the River Trent near Newark, 2 illegal anglers were caught.



As well as foot patrols Officers use a variety of boats on our patrols which allows us to get to the out of the way places where illegal anglers may operate. In addition to out of season anglers we look for lines tied to the bank and illegal nets and traps, all of which kill fish indiscriminately. Boats allow us to cover a vast distance of river without alerting illegal anglers to our arrival, a surprise to some!

Close seasons aim to protect fish stocks from disturbance during the fish breeding season. Anyone failing to comply with these byelaws could face prosecution in court and receive a fine of up to £50,000.

9.3. Rod licence evasion prosecutions

As a result of the rod licence checks made, 2043 anglers were prosecuted for rod licence offences. Each successful prosecution resulted in a total average penalty of around £252 with total fines issued totalling £ 269,160 over the 2015 to 2016 licence season (more detail is included in <u>appendix 5</u>). See figure below for the distribution of successful rod licence prosecutions across England.

Case study: Appearance in Bolton Court for licence dodgers

On 9 August 2015, two Environment Agency Fisheries Enforcement officers conducted an intelligence led rod license patrol to a fishery in the Greater Manchester, Merseyside and Cheshire area.

During the patrol the officers came across a group of 4 individuals, fishing together in a group on one water. Upon conducting a routine license check it was found that none of the individuals held rod licences.

All individuals were cautioned by the officers and the cases were proceeded and action taken. All four cases were later heard at Bolton magistrates court and all four individuals were found guilty and charged with an offence under S27(1)(a) of the Salmon and Fresh Water Fisheries Act. During the case one individual filed a guilty plea whilst the 3 remaining were proved in absence. Each individual received fines and the total amount fined combining all 4 offences was £2,818. The outcome was a great result for everyone involved.



Figure 20: Numbers of successful rod licence prosecutions across England.



All our rod licence work described above is 100% funded by rod licence income.

9.4. Regulating moving and keeping fish

The Keeping and Introduction of Fish (England and River Esk Catchment Area) Regulations 2015 came in to force in January 2015. Anyone moving fish between waters must now hold a supplier permit and anyone who keeps certain fish species will need to hold a site permit. Both permits have conditions to ensure that movements of fish are suitable and are healthy. The site permits are permanent, and greatly reduce the amount of administration for fisheries and the fish supply trade.

This change is enabling us to focus more attention on the highest risk fish movements, giving more freedom to many people to manage their own fisheries without unnecessary paperwork.

Since January 2015, we have issued 3,400 site permits and 240 supplier permits.



3,400 site permits

240 supplier permits

Our priority, since the launch of the scheme, has been to establish the new permits and ensure that the fish supply industry can continue to operate uninterrupted by the new scheme. We are now increasing the number of compliance checks we do, focussing attention on high risk activities.



Our regulation of keeping and moving fish receives 100% funding from rod licence income.

9.5. Invasive non-native species

Under the Keeping & Introduction of Fish Regulations, we continue to manage the risks posed by invasive non-native fish to our native species, fisheries and the angling opportunities they provide. Through the establishment of a dedicated national post in 2011 and development of a "National Virtual Team", drawing resource and expertise from across the Environment Agency, we have been able to take a strategic, risk based approach to the management and eradication of high risk invasive fish. To date we have successfully eradicated two highly invasive species from England, the fathead minnow and black bullhead catfish, and our five year WFD funded programme to eradicate the highly invasive topmouth gudgeon is now nearing completion.



Case study: Topmouth gudgeon eradications

The topmouth gudgeon Pseudorasbora parva, is a small non-native coarse fish from Asia. It is a highly effective invasive species, considered to be one of the most potentially damaging non-native fish to invade Western Europe; a priority species for action under the GB Invasive Non-native Species Strategy.



Following introduction, the species spread rapidly; 25

populations have been formally identified in England. Evidence from mainland Europe indicated that should topmouth gudgeon become established in our waters, the impacts on our native species and the fisheries they support would be severe.

We implemented a WFD 5 year eradication programme in 2011, with the objective of total removal of the species from GB by 2017. We developed new specialist tools and techniques, using organic piscicides to treat lakes, ponds and streams to remove this invader. We have now eradicated 20 sites and monitoring to date indicates that all operations have been 100% effective. With 3 new sites identified recently, there are only 5 sites remaining in England. Subject to continued funding, we are on target to achieve our programme objective, removal of topmouth gudgeon from all known sites in England, by 2018.

The tools, techniques and expertise we have developed through this programme place us at the forefront of invasive species management in Europe and provide us with the capability, not only to manage invasive fish, but to respond rapidly to new, novel threats from a range of invasive aquatic species including crustaceans, amphibians and invertebrates.

Case study: Tackling invasive species in Essex

0 Through the year we have worked with colleagues to raise awareness of invasive species such as floating pennywort, mitten crabs and American signal crayfish. In Essex our Fisheries Officer has been busy working with colleagues from across the Environment Agency and local angling clubs to tack-e invasive floating Pennywort at a number of locations. This plant can be hugely detrimental to river ecology and fish stocks by growing rapidly and blocking the surface of the water. This also makes fishing virtually impossible.



We have also worked in partnership with angling clubs and fisheries in Essex to review fish movement licences and carry out work to remove or relocate species such as catfish that pose a risk to the wider environment.



Staff working on the removal of invasive non-native species are funded with approximately 50% WFD funding from Defra specifically allocated to removing invasive species. The other half of funding comes from rod licence income and a variety of other sources depending on the operational teams contributing to the operations.

9.6. Fisheries Incident enforcement response

There are many causes of fisheries incidents such as poor management, adverse environmental conditions or natural changes in water quality and a few caused by actions of individuals. Where possible the Environment Agency will investigate to identify the perpetrator and follow up with enforcement action. This is particularly applicable to incidents caused by water pollution where sewage or agricultural pollution could be to blame.

Where we have sufficient evidence we will take enforcement action. In the 2015 to 2016 financial year we took enforcement action on 29 occasions where we were able to identify an offender. This consisted of 21 formal warning letters, 4 formal cautions, 1 enforcement undertaking and 3 prosecutions which were concluded in 2015 to 2016.

Case study: Farmer fined for polluting stream with slurry

In July 2015 our officers traced a pollution back to a pipe leaking slurry into a stream near Par in Cornwall, where eels and fish were seen in distress and gasping for air. Among the hundreds of fish killed were 30 brown trout and more than 1km of the river was polluted, potentially affecting angling opportunities within the catchment.

The farmer was prosecuted by the Environment Agency and ordered by magistrates to pay £8,957 in fines and costs after polluting a stream in Cornwall.

Magistrates heard there was a similar pollution incident on the farm in 2013. This had not resulted in a prosecution but our officers had referred the farm to Catchment Sensitive Farming programme. Had the farmer made the suggested improvements the impact of the 2015 would have been reduced.

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Case study: Following up enforcement in Cornwall

Our Cornwall Team dealt with four significant fish kills within six weeks in June 2015. These were on the River Gannel, a stream and pond in Par, a stream near Lanhydrock and a small stream near Tavistock. This resulted in more than 300 dead fish, recused fish and the use of hydrogen peroxide to ensure fish survival in areas that could not be rescued. Three cases have resulted in an Enforcement Undertaking for £8,500, a works notice and prosecution and a formal caution.

9.7. Regulating eel and elver fisheries

In 2015, we permitted 1996 nets and traps to catch adult eel (these were shared between 86 eel fishers). The majority (1760) were for fyke nets with a further 14 for small wingless traps and 7 for fixed traps. Although there are some additional local seasonal restrictions, fishing is restricted to 1 April to 10 December.





Elver fishing permits issued



restocked

We also issued 528 permits for elver fishing using dip nets. Elver fishing is restricted to the Bristol Channel (principally the River Severn and River Parrett) and the northwest of England, and between 15 February and 25 May. We do not cap the number of elver nets as the majority of the catch is used for restocking purposes. In 2015, 73% of the 2.8 tonne catch was restocked. The vast majority of restocking takes place in continental Europe, where the natural recruitment of eel is poor. The fact that eel form a single breeding stock means that restocking projects are targeted to deliver the most benefits for eel.

Eel and elver fishers continue comply with fishery regulations. Our enforcement officers patrolling the elver fishery focused their patrols on the most productive tides and only detected one fishing offence during the 2015 season.

We can require the owners or operators of barriers to eel migration to take action to improve passage, including by building eel and elver passes. However, most eel passes are built in partnership, often involving rivers trusts and other fisheries interests.

We are continuing to screen water intakes to prevent eel from entering and potentially being harmed or killed. The costs of screening existing intakes can be expensive, ranging from several thousand pounds to over a million. We are taking a risk-based approach, working with operators to incorporate improvements into planned refurbishment and maintenance programmes. This will deliver the best outcomes for eel, while reducing costs on operators. Wherever possible, we expect eel protection measures to be built into new water intakes.

Protecting eel at many of the larger water supply intakes is part of the water companies' current five year environmental investment programme, ending in 2018. We have been working with the water companies to identify which intakes should be screened or adopt other protective measures. Where screening is appropriate, we have agreed the size of screen necessary to protect the size of eel present (intakes in lower reaches need a finer screen to protect smaller juvenile eels). The current investment programme includes 150 schemes to improve water company intakes and outfalls to protect eel and other fish, as well as funding for 98 investigations to determine the level of risk and identify solutions at other water company sites. These investigations will feed into further improvements as part of the next water company investment programme, starting in 2019.

Many other priority intakes and barriers are flood risk management structures, owned or operated by the Environment Agency, Internal Drainage Authorities and other flood risk authorities. Where these structures are a barrier to eel migration, we need to ensure solutions selected are compatible with their flood risk management function and affordable. We are working with our flood risk management colleagues and partners to incorporate eel screens and passes into routine maintenance and refurbishment work, especially where this will deliver multiple benefits for eel and communities. In 2015/16, we allocated £3.4 million of capital expenditure to eel improvements in 44 flood risk management projects (with at least one barrier per project). In 2016/17, a further £2.2 million has been agreed to be spent on 38 projects, although some of this will be for ongoing work in existing projects.

We have continued to work with combustion and nuclear power companies to assess the risk of cooling water intakes to eel at power stations and assess the costs and benefits of screening. Where the costs of screening outweigh the benefits we are working with operators to identify other suitable improvements to protect and improve eel stocks.



Regulation of eel and elver fisheries is funded by recovery of our costs from net authorisations. Further work on screening and passes is funded by GiA.

9.8. Regulating Salmon and Sea trout fisheries

In 2015, we licensed 223 nets operated by 217 netsmen. We also licensed 28,584 anglers to catch salmon and sea trout in England. The total net catch was 78,547 fish and 172 tonnes. Anglers caught 22,089 fish, weighing 56 tonnes. As a result of statutory and voluntary catch and release, 78% of rod-caught fish were returned alive.

We reviewed the Anglian Coast salmon and sea trout net limitation order (NLO) in 2015, which was due to expire in 2016. The Anglian coast fishery catches salmon destined for different rivers along the east coast. Government policy in England is to phase out such mixed stock fisheries. Following statutory consultation with net fishers and other stakeholders, the NLO was confirmed by the Minister on 1 January 2016. It retains the same provisions as the previous order, only allowing existing net fishers to hold a licence. This will gradually reduce the number of licences to zero as existing licence holders leave the fishery. The only substantive change to regulating this fishery is that licence holders must report the accidental capture any protected species, for example sea birds and cetaceans, and also to keep a record of fishing locations.

We reviewed Net Limitation Orders for two Devon rivers in 2015. The River Dart NLO retained a three net limit. On the River Teign, the NLO has introduced a zero net limit, while angling interests have bought-out the remaining seine net licence holders in perpetuity.

We received reports of fungal infections affecting salmon (and sea trout) across England and Wales in early 2015, and in particular from the River Dart in Devon and Yorkshire Esk. In conjunction with Natural Resources Wales and with the collaboration of fishery owners, we monitored the affected rivers and took fish samples for analysis (in a three year study by Cardiff University). Given the potential impact of continued angling on already vulnerable fish, in mid-July 2015 and following the agreement of fishery owners, we introduced an emergency byelaw on the River Dart. This required the seine net fishery to release all salmon and to close early; prohibited spinning by anglers; and required all rod caught fish to be released. Although the byelaw was due to expire on 1 June 2016, we reviewed the level of risk and revoked it in March. This was the first occasion that we had used emergency byelaw-making powers. Following a change in the law in 2009, we are able to introduce (and lift) measures with immediate effect, in response to an unforeseen impact, such as fish disease or prolonged low flows.

In response to stocks being at risk, we introduced a voluntary carcass tagging scheme in 2015 on the rivers Ribble and Eden to encourage catch and release, and limit the take of salmon.



Regulation of salmon and sea trout fisheries receives 90% funding from GiA and 10% funding from rod licence income.

9.9. Tackling illegal fishing and poaching

The Environment Agency takes the threat of illegal fishing very seriously. While the actual level of salmon and sea trout poaching has reduced from the 1970s and, illegal fishing remains a risk to salmon stocks, especially where they are already under pressure from other threats. The incidence of coarse fish poaching has increased. While salmon, sea trout and, more recently, some coarse fish are targeted for consumption, specimen coarse fish are often also taken alive to illegally restock other fisheries, spreading the risk of transferring fish diseases and invasive non-native species.

Case study: Tackling illegal fishing in Southampton by moonlight

We take incidents of illegal fishing extremely seriously and work with the Police and other partners to seek out and take action against the few who seek to damage fish stocks, often for personal commercial gain. We carryout routine (overt) patrols in estuaries, rivers and stillwaters we know to be vulnerable to illegal fishing. And we carryout covert surveillance to tackle known hot-spots for criminal fish-related activity, often working with the Police. We seized these home-made fishing spears from four men in Southampton whilst on a routine night-time patrol. They were using torchlight to spot and then spear coarse fish. Catching those involved in criminal fishing activities is also one of the reasons we love the job!



We use a variety of tactics to tackle illegal fishing, including covert and overt anti-poaching patrols, as well as responding to reports of incidents from anglers and fishery owners. We are working with the police, the Angling Trust and other partners, to make best use of our combined skills and resources, including running high profile deterrent campaigns.

One of the most significant developments during 2015/16 was to commission the Angling Trust to deliver many of our angling services, including support of our enforcement work. This contract is funded by income from coarse and non-migratory rod licenses, so is focused on protecting these fisheries. The Fisheries Enforcement Support Service (FESS) provided by the Angling Trust covers several specific initiatives:

Regional Enforcement Managers

The Angling Trust appointed 6 regional enforcement managers, working under their National Enforcement Manager, to run its fisheries enforcement campaigns. All are former police officers, so are well placed to advise anglers and fishery owners on the law and enforcement, and to work with the Environment Agency and the police to deter poachers.

Environment Agency and Angling Trust Voluntary Bailiff Service (VBS)

The Voluntary Bailiff Service, described below, is being delivered in two phases. The Environment Agency has commissioned the Angling Trust to deliver Phase 1, whereas the Environment Agency is responsible for delivering Phase 2.

In Phase 1, Angling Trust volunteers are trained to provide a "Neighbourhood Watch" service, reporting information on illegal fishing to us through a secure website. These reports, combined with our own "intelligence" on illegal fishing, help our fisheries teams to direct their enforcement activities to areas that pose the greatest risk. Volunteers are also able to report live incidents directly to. Volunteers are appointed and directed by the Angling Trust, working closely and in partnership with our local teams. Following a pilot scheme in the southeast, we have worked with the Angling Trust to roll out Phase 1 to the rest of England. By 31 January 2016, the number of volunteers had increased to 215 from the 90 previously in place.

Phase 2 is a pilot where the Environment Agency selects volunteers from Phase 1 to be given more in depth training in fisheries law and conflict resolution. Successful candidates are issued a limited fisheries warrant which allows them to check rod licences. These volunteers will work alongside our enforcement officers for a probationary period, before working in pairs to check rod licences, still under the direction of our local fisheries team. This will allow our officers to focus on other enforcement priorities. We are piloting Phase 2 in the southeast of England and will assess its success before deciding on expansion of the scheme. By 31 March, we were in the process of appointing 11 volunteers, who will be deployed on licence checking later in 2016.

The VBS is funded through income from coarse and non-migratory rod licence sales, and so the service is purely for coarse fish and trout fisheries.

For more information on the Voluntary Bailiff Service and on future opportunities to be involved, please visit the Angling Trust website.

Operation Clampdown

Each year during the coarse fish close season, the Environment Agency and Angling Trust work together on "Operation Clampdown", making sure anglers are observing the close season and that poachers are not taking advantage when fewer anglers on the banks.

In addition to our close season patrols, Angling Trust volunteer bailiffs work in pairs with Environment Agency officers and the police to patrol rivers, reporting close season and other fishing byelaw offences. Until 2016, Operation Clampdown was restricted to the southeast. However, in 2016, we extended it to the rest of the country.



Fisheries Enforcement Workshops

Working on our behalf, the Angling Trust, together with the Institute of Fisheries Management and the police, organised a series of fisheries enforcement workshops around the country through May and June 2016. These raised awareness among anglers, angling clubs and fishery owners about fisheries law, how the Environment Agency and police work to tackle illegal fishing and what actions the angling community can take to help deter poaching at their waters.

Building Bridges

Angling is popular among eastern Europeans living in England, but finding out about angling laws and customs in England can be difficult, particularly where there are language and cultural barriers. The Angling Trust's Building Bridges project educates and integrates anglers through providing information about angling rules in different languages; engaging communities to encourage potential anglers to go fishing, buy a licence, fish according to the rules and organising angling competitions.

In 2015, the Angling Trust worked with angling clubs, local authorities and the police, on angler issues in Birmingham, Doncaster, Swindon, Gloucester, Cirencester and Devon. Through the Get Hooked on Fishing scheme, Building Bridges volunteers helped advertise and run an angling event in Peterborough.

Working with the Pike Anglers Club and supported by the Canal & River Trust, Building Bridges officers arranged a lure fishing competition between Polish and English anglers. This was very successful, with good coverage on social media. A similar carp fishing competition was organised by the Polish Carp Team. Future events are anticipated, involving anglers from other communities.

Volunteers from the Polish Anglers Association and Angling Trust attended three big Polish Festivals in Swindon, Bristol and Reading. They provided angling stands and organised fishing competitions for youngsters. Attendance was excellent, with many visitors asking for information about responsible and legal fishing in the UK.

Building Bridges is helping the newly formed Lithuanian Angling Association to develop a club constitution and has directed them to register their club with Angling Trust. The association see the positive changes towards Polish anglers that the Polish Anglers Association has brought and are keen to develop in the same way

The first two Polish angling coaches have completed their Level 1 training and two other volunteer coaches are starting their training in September.

Operation Traverse and Operation Leviathan

Under the umbrella of the National Wildlife Crime Unit's Project Poacher, the Environment Agency, Angling Trust, the Centre for Fisheries, Aquaculture and Environment Science (Cefas) and the police work together to tackle fish theft and poaching. Operation Traverse was set up in 2014 in the east of England, involving Lincolnshire and Cambridgeshire Police. In February 2016, it extended to also include the Northumbria, Durham, Cleveland and North Yorkshire Police areas.

Mirroring Operation Traverse, Operation Leviathan was set up in June 2015, in partnership with West Mercia, Warwickshire, Cheshire, Gloucestershire, West Midlands, Dyfed-Powys and South Wales Police.

Examples of other Environment Agency-led enforcement activities

 On the evening of the 3rd October 2015, Environment Agency fisheries officers from our Greater Manchester, Merseyside and Cheshire team carried an intelligence-led boat patrol on the lower River Dee. They detected and seized seven unattended and unlicensed fish traps. In the subsequent investigation, they obtained Magistrates' warrants and on 10 November 2015 worked with Cheshire Police to search three nearby properties. The investigation is ongoing, but shows the value of a multi-agency approach to fisheries enforcement and of Operation Leviathan. This operation received television coverage, helping deliver our key messages about the risks posed by illegal fishing and widening the deterrent to would-be offenders. As part of Operation Leviathan, our officers carried out joint patrols with Police Community Support Officers in the Coventry and Warwick area following anglers reporting illegal night fishing to us. We detected and reported a number of fisheries offences.

Case study: Operation Stone on the Severn and Avon Staffordshire, Warwickshire and West Midlands Area enforcement officers were involved in a cross border initiative called Operation Stone which received multiple reports of licence evasion and fish being taken from both the River Severn and Avon. In the space of an evening, one angler was found with two dead bream and one dead eel and three anglers were found to be fishing without a licence. All offenders were issued with a seizure receipt and their equipment was tagged and placed in storage as evidence.



- We carried out a campaign to clamp-down on illegal sales of wild salmon and sea trout in Yorkshire. Fisheries enforcement officers visited restaurants, hotels, pubs and fishmongers to check coolers, freezers and fish storage facilities as well as giving advice on how to spot wild salmon and sea trout that have been caught illegally. Wild salmon and sea trout that have been caught legitimately must be fitted with an Environment Agency tag.. This tag must remain attached until the fish is processed. We only give carcass tags to net fishers, as it is illegal to sell salmon and sea trout caught by rod and line, or those caught illegally.
- In September 2015, a Sunderland man was sentenced for illegal fishing on the River Wear. He was seen on four occasions in September and October 2014 using an illegal gill net to take salmon and migratory trout at Low Southwick. He was arrested by Environment Agency officers on 29 September and again on 19 October, following enforcement patrols. We recovered the net along with two dead sea trout. The offender was given a three-year conditional discharge and ordered to pay £500 legal costs. All of his equipment was forfeited and destroyed.

Case study: Fish traps seized on the River Dee

On the evening of the 3rd October 2015, Environment Agency Fisheries Officers from the Greater Manchester, Merseyside & Cheshire Team undertook an intelligence led Enforcement Boat patrol on the River Dee. During this operation 7 unattended unlicensed fish traps were detected and seized.

The subsequent investigation gave the Environment Agency probable cause to suspect that person(s) associated with the area were involved in the commission of the offence.



Three Magistrates Warrants were issued to the Environment Agency for the search of 3 properties at the site. These warrants were executed on the 10th November 2015 in

conjunction with Cheshire Police. The outcome of this warrant execution shows the value of multi-agency approaches to fisheries enforcement, such as Operation Leviathan as promoted by the Angling Trust. This operation received widespread coverage on ITV, helping deliver our key messages.

- Following a report from a concerned angler fishing the tidal River Thames, we recovered a 50 metre long gill net from Teddington weir pool on 22 October. The angler had managed to release most of the fish alive, but many of the 100 or so adult coarse fish were dead. It was likely that the net had been set from a boat and that those involved knew it was illegal. We carried out a boat patrol to look for other illegal nets and appealed to local anglers and the public for information. We increased fisheries enforcement patrols in the area and publicised the incident on local television to raise awareness and deter any repeat of this highly damaging and illegal activity. This incident underlined the importance of reporting illegal fishing, allowing us, wherever possible, to respond and take enforcement action.
- In May 2015, Environment Agency fisheries officers supported the largest rural policing operation of its kind in the country. Operation Checkpoint aims to gather intelligence about travelling criminals, disrupt their use of the road network and bring anyone found breaking the law to justice. During the operation, the police used Automatic Number Plate Recognition to target vehicles suspected of being linked to crime. More than 10 vehicles were seized for offences including no insurance, failing to stop for police and no tax. Our role was to support police, carrying out fisheries enforcement patrols, specifically encouraging anglers and the wider angling community to report suspicious activity.
- In September, three men were arrested after we recovered two illegal fishing nets and 13 salmon and sea trout from the River Tyne in Northumberland. This was a joint operation with Northumbria Police and follows a similar operation in July when we arrested three men at the same location. The fish, nets, and other equipment were seized and the investigation is ongoing.
- We apprehended an angler for fishing illegally at Godmanchester Nature Reserve in Cambridgeshire. The case was passed to Cambridgeshire Police for prosecution. The angler was charged with theft and fishing without a licence, and was ordered to pay £325 in fines and costs.
- Our fisheries patrol boat 'Shearwater' carried out enforcement and regulatory patrols on the commercial salmon and sea trout fishery off the northeast coast in July. Heading out of Teesport, she steamed north before patrolling the River Wear estuary and then continuing north to Blyth. We checked eight licensed vessels between Sunderland and Blyth. All were compliant. However, we recovered two abandoned illegal nets from the Wear estuary. One of the nets had caught a sea bird which subsequently died, showing the indiscriminate nature of illegal nets and the damage caused to the environment by illegal fishing.
- We are collaborating in the Christchurch Harbour Fisheries Enforcement Partnership, cofunding a river keeper with Bournemouth Water to undertake routine patrols.



Funding for our illegal fishing and poaching work can come from various sources. For example, resource spent on a salmon poaching incident will be funded by GiA, while illegal fishing for coarse fish will be funded by rod licence income.

10. Appendices

10.1. Appendix 1: Statutory fisheries duties

We have a statutory duty to operate a licensing system for fishing under Section 25 of the Salmon and Freshwater Fisheries Act.

- 1. The Environment Agency has a duty under section 6(6) of the Environment Act 1995 "to maintain, improve and develop fisheries of salmon, trout, eels, lampreys, smelt and freshwater fish".
- 2. Government guidance on this duty is:
- to ensure the conservation and maintain the diversity of freshwater and migratory fish, and to conserve their aquatic environment
- to enhance the contribution migratory and freshwater fisheries make to the economy, particularly in remote rural areas and in areas with low levels of income
- to enhance the social value of fishing as a widely available and healthy form of recreation

The Environment Agency's role for fisheries encompasses protection of fish stocks and their environment and a service to anglers paid for from the rod licence duty to manage fisheries.

- 3. The powers of the Environment Agency to meet these duties are contained primarily in Salmon and Freshwater Fisheries Act 1975 (including licensing of angling and net fishing), the Water Resources Act 1991 (including making of byelaws to regulate fishing), Eels (England and Wales) Regulations 2009 (including powers to facilitate eel passage) and the Keeping and Introduction of Fish Regulations 2015 (including regulating the movement and introduction of fish).
- 4. There are specific powers relating to licensing of angling by rod and line and netting of fish in section 25 Salmon and Freshwater Fisheries Act 1975, which includes provisions for operating a licensing system for rods and nets and set-ting licence duties (fees) for them, and to authorising of other fishing methods in section 27A.
- 5. The duties and powers are imposed on the Environment Agency in relation to regulation of freshwater and migratory fisheries in England.
- 6. The Environment Agency also has a duty under section 6(1) of the Environment Act 1995 which states to promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and of land associated with such waters; the conservation of flora and fauna which are dependent on an aquatic environment; and the use of such waters and land for recreational purposes.

10.2. Appendix 2: Rod licence sales broken down by area

Area	Salmon and Sea Trout (All Licences)	Coarse and Trout (All Licences)	Total
Cambridgeshire and Bedfordshire	434	60568	61002
Cumbria and Lancashire	4013	46323	50336
Derbyshire Nottinghamshire and Leicestershire	482	83579	84061
Devon and Cornwall	2095	25328	27423
Essex Norfolk and Suffolk	505	93905	94410
Greater Manchester Merseyside and Cheshire	2009	94198	96207
Hertfordshire and North London	1242	93168	94410
Kent and South London	1099	107525	108624
Lincolnshire and Northamptonshire	327	56825	57152
Northumberland Durham and Tees	3747	41360	45107
Shropshire Herefordshire Worcestershire and Gloucestershire	1650	48567	50217
Solent and South Downs	1063	57663	58726
Staffordshire Warwickshire and West Midlands	1000	109386	110386
Wessex	1595	63634	65229
West Thames	1287	74202	75489
Yorkshire	2129	121663	123792
Unknown	499	7131	7630
Nationally	25176	1185025	1210201

10.3. Appendix 3: Reasons for not achieving 'Good' status within WFD standards





10.4. Appendix 4: Completed research and development projects

Title	Reference number	Start date	Completion date	EA Spend	Outcome
Cumulative effects of hydro-power schemes on fish migration and populations	SC120078	2013	03-2015	£26.9K	Considering the potential cumulative impacts of multiple hydropower schemes within a catchment on migratory species, such as salmon, will help inform our regulatory approach towards hydropower.
Lakes classification tool development using eDNA: Phase 1	SC140018	04-2014	08-2015	£35k	The research into the suitability of eDNA techniques to assess fish communities in lakes for WFD classification helps determine the best way to monitor fish species in lakes and to support delivery of WFD requirements. Phase 1 was undertaken by the Evolutionary Biology Group at Hull University working in collaboration with CEH and the results have been published in the scientific journal Molecular Ecology (2016).
ICES salmon stocks report	-	12- 2015	03-2016	In-house	Evidence has completed the production of the ICES 2015 salmon stocks report in collaboration with CEFAS & NRW. This work helps to inform management decision by ICES and the EA to protect salmon stocks.
Testing the effectiveness of fish screens for hydropower intakes	SC120079	2013	09-2015	£79.8k	Understanding the effectiveness of existing recommended screening requirements for hydropower operations allows us to ensure our regulatory requirements are

					delivering expected environmental protection and continues to inform best practise. This work is complete, final project report will be available soon.
Assessment of the impact of hydropower on weir pool features	SC120077	2013	05-2015	£40k	Assessing the importance of weirpool habitat for the sustainability of fish populations and modelling the effects on that habitat of changing the flow patterns across the weir structure provides information to inform or regulatory approach towards hydropower.
Studies of eel and fish behaviour in relation to in-river structures - post- doctorate fellowship	SC120061	2011	Autumn 2015	In house	This research will help us understand and improve fish and eel passage for the benefit fisheries and ecology, compliance with WFD, Eel Regulations, Water Resources and FCRM. A summary briefing with links to theses and publications is in preparation.
Review of protection measures for salmon and sea trout in inshore waters	-	2015	2015	In-house	A literature review was undertaken to assess the potential risks to salmon and sea trout from non-target inshore fisheries and has helped inform best practise recommendations for measures to minimise impacts. We are working with Inshore Fisheries Conservation Authorities to help implement protection measures.
Temperature threshold for catch and release angling	-	2015	2015	In-house	A literature review was undertaken to understanding the impact of temperature on the subsequent survival of catch and

					release salmon to help inform best management practise in catchments where summer water temperatures are high.
Fish behaviour in relation to acoustic and hydrodynamic signals	-	09- 2012	10-2015	£60k	Evidence supported two PhD's at Southampton University working on fish behaviour in relation to hydrodynamic and acoustic signals. Understanding the behaviour of eel and other fish in relation to man-made in-river structures informs best practise for fish passage and screening. The studies are complete with theses and reports awaited.

On-going projects/work areas

Title	Reference number	Start date	Completion date	EA or other Spend	Outcome
Valuation of Freshwater Angling in England	-	2015	Ongoing	£160k	This project will allow 1) estimation of the value of the sport of angling in England in terms of economic impact (household income supported and full – time employment support); 2) the non- traded values for angling of different types and differing quality, to assess benefits delivered by WFD programmes and local investment by businesses, NGO's, etc.
Lakes classification tool: Continuing development of eDNA approaches	-	2015	Ongoing	In-house	SEPA, EA and NRW are continuing to work collaboratively to gather more data and refine sampling methods with a view to building an eDNA-based lakes classification system

					applicable to UK waters.
Trophic cascades and endocrine disrupting chemicals	-	2015	2018	NERC- funded 3 year PhD	This research will investigate the transfer of endocrine disrupting chemicals through the food chain to better understand risk of chemical exposure in the ecosystem.
Lakes classification using traditional tools	-	2013	Ongoing	In-house	This piece of work is investigating the suitability of traditional methods/those developed in other countries for the classification of lake fish populations under WFD to help inform the UK's approach to assessment.
Screening for small eels at hydropower sites	-	2015	Ongoing	In-house	Work is continuing to understand the risks hydropower intakes pose to small eels (<30 cm) through literature reviews to help inform best practise screening recommendations for the sector.
Monitoring non- native species presence with eDNA	-	2015	Ongoing	£2k	This research is investigating whether eDNA can help support our investigations into the presence of non- native species (specifically Asian carp) and help reduce Operational resource requirements.

Evidence publications

SC120056: Assessing the impact of exposure to microplastics in fish. Available at <u>https://www.gov.uk/government/publications/assessing-the-impact-of-exposure-to-microplastics-in-fish</u>.

SC120077: Impacts of Hydropower on weir pools. Available at

https://www.gov.uk/government/publications/hydropower-assessment-of-the-impact-on-weir-pool-habitats

SC120078: Development of a model to assess the cumulative effects of hydropower schemes on migratory fish populations. Available at <u>https://www.gov.uk/government/publications/cumulative-effects-of-hydropower-schemes-on-fish-migration-and-populations</u>.

TO.J. Appendix J. Nou licence prosecutions

Area	Prosecutions Concluded	Successful Prosecutions	Success Rate	Fines	Average Fines	Average Costs
Essex Norfolk and Suffolk	131	127	96.95%	14,703	112.24	110.29
LincoInshire and Northampton- shire	49	47	95.92%	4,962	101.27	114.37
Cambridgeshire and Bedfordshire	109	104	95.41%	10,821	99.28	111.07
Derbyshire Nottinghamshire and Leicestershire	150	145	96.67%	18,856	125.71	112.12
Staffordshire Warwickshire and West Midlands	176	170	96.59%	20,672	117.45	116.64
Shropshire Herefordshire Worcestershire and Gloucestershire	52	47	90.38%	4,171	80.21	113.31
Northumberland Durham and Tees	82	81	98.78%	13,361	162.94	110.08
Yorkshire	253	244	96.44%	30,567	120.82	113.64
Cumbria and Lancashire	157	154	98.09%	22,257	144.53	109.17
Greater Manchester Merseyside and Cheshire	155	150	96.77%	18,520	119.48	115.41
Hertfordshire and North London	257	245	95.33%	29,663	115.42	110
Kent and South London	75	69	92%	10,966	146.21	113.59
West Thames	179	171	95.53%	20,954	117.06	108.03
Solent and South Downs	177	170	96.05%	21,316	120.43	108.80
Devon and Cornwall	31	31	100%	3,030	97.74	97.30
Wessex	145	140	96.55%	16,940	116.83	107.47
Total	2178	2162	96.09%	261,759	121.07	104.45

11. List of abbreviations

ARMI Angler's Riverfly Monitoring Initiative **BART** Bristol Avon Rivers Trust **CaBA** Catchment Based Approach Cefas Centre for Environment and Aquaculture Science **CFPAS** Cambridge Fish Preservation and Angling Society Defra Department for Environment, Food & Rural Affairs **EA** Environment Agency **EU** European Union **EMP** Eel Management Plans **EU** Enforcement Undertaking FCRM Flooding and Coastal Risk Management GiA Grant in Aid HVA Herpes Virus Anguillae **ICES** International Council for the Exploration of the Sea **IDB** Internal Drainage Board IFCA Inshore Fisheries and Conservation Authorities **KHV** Koi Herpes Virus **NASCO** North Atlantic Salmon Conservation Organisation **NASS** National Angling Strategic Services NCCP National Crucian Conservation Project **NEP** National Environment Programme (Water Companies) **NFM** National Fishing Month **NGO** Non-Governmental Organisation **NLO** Net Limitation Order NSPCC National Society for the Prevention of Cruelty to Children **RAMSAR** An international convention on wetlands (known as the RAMSAR convention) **RBD** River Basin Districts **RBMP** River Basin Management Plans **RSA** Restoring Sustainable Abstraction SAC Special Area of Conservation SPA Special protection Area **SSSI** Site of Special Scientific Interest **TAFF** Take a Friend Fishing **VBS** Voluntary Bailiff Service WFD Water Framework Directive

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