



**The Quarterly
Magazine of
Fisheries
Management**

FISH

**50 Years
of the IFM**
1969 - 2019



- The Evolving World of UK Coarse Angling
- Fish Need Water
- Rewilding Oysters in Essex
- Providing Passage for Migratory Prawns in Liberia, Africa
- Salmon on the River Tweed
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Fish 135

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If you would like to contribute to FISH please get in touch.

The theme for this edition of FISH is the IFM at 50 and the 2019 Annual Conference, which had the title: 'Learning from the past to inform the future'.



Over 135 people attended the conference, including a minibus load of Sparsholt students thanks to George Hyde. It was a fantastic event, which covered a wide range of topics over the three days including sessions on: Fish tracking technology, Governance and economics, Fish, Historical perspectives, Rewilding, Fish and fisheries challenges, Fish monitoring and Environmental challenges. As always it was brilliant to catch up with friends, join in the social events (including winning the quiz!), exploring some of the Nottinghamshire countryside on the field visit and be treated to such a wealth of excellent presentations.

It's impossible to cover everything in this edition of FISH but I have cherry-picked some gems, which I hope you find interesting.

Dr Pete Spillett, our retiring President, opens this edition by reflecting on 50 years of the IFM, for which he has been an active member - man and boy. John Ellis of the Canal and River Trust then waxes lyrical about the evolving nature of UK coarse angling. As is tradition, I have included an article from the other side of The Pond, from the American Fisheries Society's representative Jason Olive, Assistant Chief of Fisheries Management, Arkansas Game and Fish Commission. This is then followed by articles that range from oysters in Essex, salmon in the Tweed and migratory prawns in Liberia!

As some of you may know, this is my last edition of FISH after nearly ten years at the helm. It's been really enjoyable and I am sure that Karen Twine and Harriet Alvis, who are the new editorial team, will do a great job.

If you would like to contribute to FISH please get in touch.

Lawrence Talks - FISH editor
fish@ifm.org.uk



View from the Chair

Wildlife crime

IFM is a member of the Wildlife and Countryside Link (WCL), one of 54 organisations forming the largest environment and wildlife coalition in the UK.

Together we form a strong environmental voice that is more effective at influencing government policy. One of its working groups is on Wildlife Crime and in October it published its 3rd annual Wildlife Crime Report. Headlines from this are:

- Wildlife crime is a significant threat to conservation, animal welfare and the wider environment.
- However, most wildlife crimes in England and Wales are not centrally recorded.
- Enforcement officers are working hard to tackle this area of crime, but they are hindered by the lack of a proper recording and reporting process.

- The report shows the scale of wildlife crime in England and Wales and calls on the Government to ensure this crime is tackled effectively.

Fisheries crime is not well represented in the report, so we will be working to ensure that next year it properly reflects the reports of thefts of coarse fish from stillwaters and the poaching of salmon and trout from rivers.

Some of you will know that, when not IFM Chair, much of my work is for the recovery of the European eel, via the Sustainable Eel Group. One of the most significant risks to the eel's recovery is the illegal export of young eels ('glass eels' or 'elvers') to eastern Asia for the aquaculture market. Europol estimates that, in 2017, 100 tonnes of glass eels (350 million fish) were exported (25% of the natural stock) with an upstream value of €2.3billion, making this this one of the most

significant wildlife crimes on the planet. 99% of those eels come from France, Spain and Portugal, and whilst the illegal export of British eels is believed to be minimal, temptation to the lucrative spoils are an increasing risk, so we are urging the UK authorities to be vigilant.

Changing of the guard

There are a number of changes happening at IFM HQ.

Firstly, editor of FISH magazine will change after this 135 edition. A huge thanks to Lawrence Talks who has coordinated dozens of compelling and professional productions over the last 10 years. This period also recently saw the transfer to FISH digital, that change managed by Lawrence and Director of External Affairs, Adrian Taylor. Adrian is also stepping down from that role and retiring from Council, and I'd like to pay tribute to Adrian for many years of service to the Institute. Karen Twine and Harriet Alvis will be the new FISH editors after this one and I thank them for the enthusiasm and relish they have shown in rising to this challenge.

Lawrence is to take on the role of the Institute's Executive Director, co-ordinating the delivery of our affairs. Lawrence is succeeding Jim Gregory who I thank for undertaking this role for the past two years.

Lastly, an enormous thanks on behalf of us all to Peter Spillett who is retiring as President. Peter has been a member of IFM since 1976, a member of Council since 1985 and President since 2008. As such, he has provided a significant contribution to the IFM and we are indebted to him for his insight and leadership. His presence will be greatly missed. We will also miss the 'politically correct' jokes that accompany his after-dinner speeches! Succeeding Peter, I am delighted to welcome Chris Mills as our new President. Chris comes with the experience of a distinguished career, which includes being Director of Environment Agency Wales, and Council member of the RSPB. I look forward to working with Chris and the rest of IFM Council to lead the development and delivery of the best possible services to fisheries management and IFM members over the next 10 year strategy period.

Politics and environmental legislation

As I write this, UK politics continues its roller-coaster ride, with a general election on 12 December. At this moment then, the outcome is uncertain, though whilst all parties are doing their best to sell their wider manifestos to the electorate, Brexit continues to be the most influential issue. By the time this is published the outcome will be known, and maybe, at last, will have some certainty on our nation's relationship with our neighbours and we can all get on with our future. However, the UK Government has been progressing its environmental legislation; the following updates are courtesy of our President, Peter Spillett, attending the Environmental Policy Forum.

The Environment Bill had its second reading in October, a month before falling as Parliament closed down. Green groups were surprised at how much had been included in the Bill – for example, climate change and target setting, and also how much support there was in the House for the Bill to go forward.

There is continued debate about the independence of the Office of Environmental Protection (OEP). It will be based in Bristol with 120 staff (30 staff in the Office of Climate Change) with the Secretary of State appointing the Chief Executive. Funding will be via a five year budget. The OEP will have its independence set out as a legal requirement in writing. As to a role model, the Government would find something like the National Audit Office (NAO) too challenging, and will probably prefer something similar to the Office of Budgetary Responsibility (OBR). When it comes to enforcement the OEP will employ orders in court rather than imposing financial penalties.

Defra will be setting environmental targets for the Environment Bill in conjunction with an Expert Panel. These will be based on a 25 year horizon with intermediate five year targets. Eventually a complete suite will need to be set by October 2022 but the process will start next year.

As ever, your views on anything IFM or fisheries management are appreciated and you are welcome to contact me direct at chairman@ifm.org.uk.

With best wishes.

David Bunt | IFM Chairman



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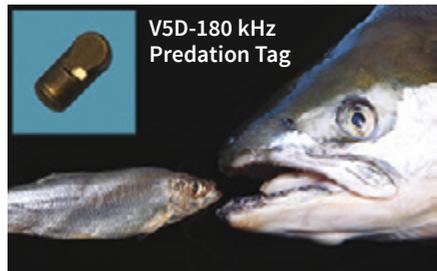


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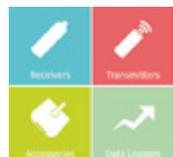


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50 Years of the IFM

1969 - 2019



Dr Peter Spillett, the Institute's President, gave the John Gregory memorial lecture at the Annual Conference and used this as an opportunity to look back over the Institute's 50 years.

Throughout this period it is apparent that several themes kept recurring, which have impacted upon the evolution of our august organisation. These included the close relationship with the water industry in England and Wales; worries about our financial situation; concerns about membership; the importance of our publications and other communications; the value of working with partners; the popularity of our annual conferences and specialist courses; the key role played by our training provision; and the impact of all these factors on the profile of the Institute.

Key individuals

Looking at the key individuals over the years, it is clear that the various presidents and chairmen have played a major role in determining the direction of the IFM. There have been relatively few presidents, namely: WJ Menzies, 1969-71; PJ Liddell, 1971-79; PH Tombleson, 1979-87; Sir H Fish, 1987-98; PE Bottomley, 1998-2002; JF Solbe, 2002-08; and PB Spillett, 2008-present.

There have been a few more chairmen, as they have been constrained by their quinquennial terms of office: GA Chattaway, 1969-70; N Mackenzie, 1970-76; B Stott, 1976-80; K Jones, 1980-86; JF Solbe, 1986-91; R Templeton, 1991-92; PB Spillett, 1993-98; J Gregory, 1998-2003; S Axford, 2003-08; I Dolben, 2008-13; E Cusack, 2013-18; and D Bunt, 2018-present.



A young John Gregory

If space allowed, one should also mention the vital roles played, and the hard work expended, by the vice-chairmen, the honorary secretaries, the training chairmen, the training secretaries, the honorary treasurers, the editorial teams, all the branch officers and all those involved in providing training courses.

Covering the history of all the branches would require another article in itself. Suffice it to say that the various regional branches have nearly all experienced fluctuating existences, periods of expansion followed by near-closure. The two exceptions are the London and Scottish Branches, which have enjoyed years of uninterrupted success. Apart from geographical location, the key to survival appears to be an energetic and enthusiastic chairman and/or secretary coupled with an active committee to share the workload.

The early days

Back in the late sixties there was much discussion amongst those involved in fisheries management about the need for some type of professional organisation for those employed in the field. Many fisheries people worked for

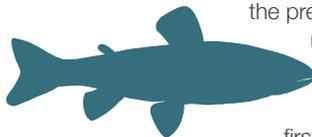


Fish farm tour

the river authorities, the universities, fish farms, angling clubs, private fishery owners and for the Ministry of Agriculture, Fisheries and Food (MAFF), and were seeking a body to represent their profession.

Key individuals who made things happen included Mike Amey, working for the Bristol Avon Rivers Authority and Peter Liddell who chaired the Association of River Authorities. Also heavily involved was Peter Tombleson, Executive Director of the National Anglers Council and a big wheel in the angling world. Eventually an inaugural meeting with over a hundred representatives was held in London on the 8th May 1969, and the Institute of Fisheries Management came into existence.

The amount of progress made in the first year was considerable and many of our current institutions were established very early on. These include the Council, the committee structure, the annual conference format, the rules and objects of the institution, types of membership, the journal – ‘Fisheries Management’, and the Certificate correspondence



training course.

We owe a great deal to those founding fathers whose vision and hard work laid down the template for the Institute’s later success. A look at the first Council established at the inaugural meeting reveals a pantheon of fisheries ‘greats’ – Jock Menzies (President), Peter Liddell (Vice-President), GA Chattaway (Chairman), Ron Millichamp (Hon. Secretary), and Mike Amey (Hon. Treasurer). Other luminaries included IRH Allen (MAFF), Margaret Brown, ED LeCren, Hugh Fish, Mike Bulleid, Eric Staite and Jack Jones of Liverpool University fame.

One early bone of contention, however, was the preponderance of River Authority members – a sign of things to come!

The first annual conference was held in Birmingham in 1970, the first regional branch – South West, was founded and the first issue of the journal was published under the editorship of Gordon Biely. Membership was around 250. Sadly Jock Menzies died the next year and in his honour the ‘Jock Menzies Memorial Lecture’ was instigated.

A major event for the water industry took place in 1973 – the Water Act – which was to have a considerable bearing on those engaged in fisheries management in England and Wales. In 1974 the 10 Regional Water Authorities were created absorbing all the various predecessor bodies, and the pioneering process of integrated river basin management was launched. Fishery departments of one description or another were set up in each of the new bodies with substantial funding coming in from rod licence sales.

The following year another key piece of legislation affecting fisheries was enacted – the Salmon and Freshwater Fisheries Act (SAFFA). New names were appearing in Council – Ron Linfield, Brian Stott, Robin Templeton. Graeme Harris had taken over as Editor of the journal and was in turn supplanted by Derek Mills, the ‘Father of the Scottish Branch.’ The first five IFM Fellows were appointed, not elected, in 1976, the Secretary Percy Bulleid passed away at the Exeter conference in 1977 and the Diploma Training Course was started in 1978.

Financial worries

In 1979 trade stands appeared at the annual conference in Nottingham for the first time and the conference proceedings were published also for the first time. The Midlands Branch organising committee included Robin Templeton, Valerie Holt and Keith Easton, a dynamic trio who were responsible for a large number of IFM initiatives over the next decade. Also that year Blackwells took over the publication of ‘Fisheries Management’ for financial and logistic reasons, and Peter Liddell sadly passed away, giving rise to the President’s Cup in his memory, awarded to winning training students.

The Blackwells acquisition of the journal masked a fierce internal debate over those who preferred an academic type of publication and those who wanted a more pragmatic magazine with articles for bailiffs and news of Institute members. This led to the appearance of the IFM Newsletter two years later, championed by John Gregory.

Meanwhile a crisis was brewing. The IFM’s finances were in a poor state with little in the



2003-04 Finance Committee

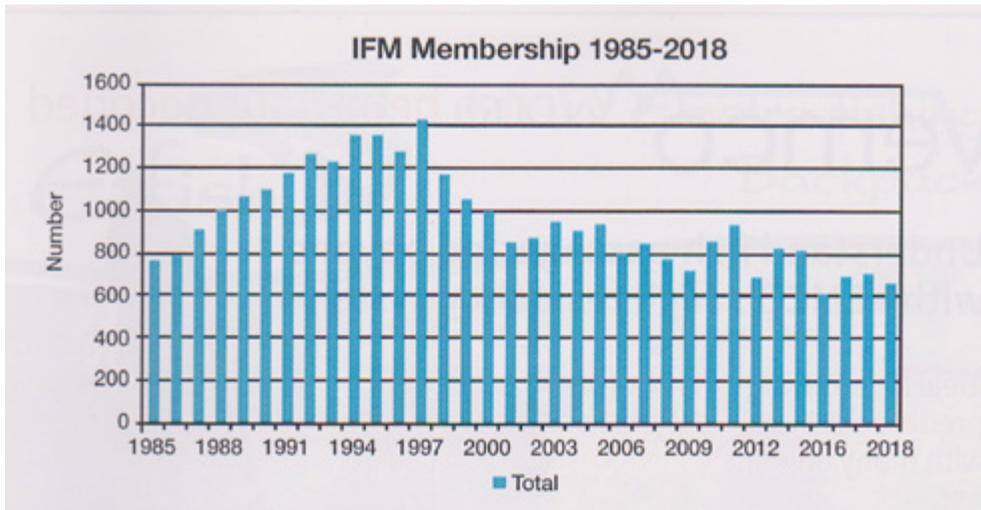
bank when the then Treasurer absconded with the remaining funds. In the subsequent furore a Finance Committee was formed and, crucially, Robin Templeton was made Treasurer. It was touch and go for a while, for example, the newly arrived IFM Newsletter nearly had to be jettisoned. Gradually Robin brought things back on an even keel with the sensible aim of securing a year’s worth of income as a buffer. Membership at this time was around 600. A longer-term goal was to accrue sufficient resources to employ a full time member of staff.

Despite all the fiscal problems, another Midlands Branch initiative was to organise a very successful European fish farm trip to Germany and Austria. The highlight for the 27 participants was to see their rather unpleasant coach driver had up for speeding by the German police!



Further initiatives included setting up the Publicity and Promotions Committee which in turn spawned the five Specialist Section groups, each with their own Chairman and sub-committee, with a common set of operating rules. The Institute also took a more entrepreneurial approach to producing advisory booklets, conference proceedings, training manuals, and even clothing and piscicultural pottery. Other proposals which didn’t come to fruition were to do more in Europe, expand on the marine sector and branch out into education.

A second European trip to Holland and Denmark took place in 1984 and the journal, under Blackwells’ control, morphed into ‘Aquaculture and Fisheries Management.’ The IFM Newsletter turned into FISH magazine in 1986 with



John Gregory as Editor and the Institute acquired its first computer! The Good Management Award was launched the following year and discussions began on the forthcoming privatisation of the water industry.

Binnie Buckley took over from John as Editor in 1988 and, with a settled editorial team, the magazine went from strength to strength, with its familiar scale pattern on the cover. There was a third European trip, this time to France, organised by Jerry Domaniewski; Jim Deeker was appointed Exhibitions and Commercial Officer to cope with the increased production of commercial goods; and Ron Millichamp became Press Officer. In terms of profile, Jim Deeker now took the IFM display stand and goods to a number of regular events around the country every year, such as game fairs, county shows and conferences.



Robin Templeton

Water privatisation

In 1989, in a fit of Thatcherite zeal, the water industry in England and Wales was privatised. Despite being a monopolistic utility, the Government went ahead to launch the 10 new water and sewerage utility companies, several water-only private companies, and three regulatory bodies – OFWAT (The Office of Water Services), the Drinking Water Inspectorate, and the National Rivers Authority. Fisheries staff transferred smoothly to the National Rivers

Authority but the Recreation and Amenity functions remained with the utility companies.

1990 saw the 21st anniversary of the Institute and a special document was published, edited by Lindsay Laird. Apart from being a useful historical account, the booklet also lists the impressive number of consultations that the IFM responded to, not least the 1989 Water Bill.



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A toast to SocEnv

Another 21st anniversary celebration was the annual conference that year – entitled futuristically ‘Fisheries in the Year 2000’. Held at Royal Holloway College and organised by the London Branch, it remains the largest ever IFM conference – 187 delegates, 37 speakers and lasting a full five days. It was followed by the mythical ‘Ring of Fire’ whereby John and Rosie Solbe took a selection of overseas speakers on a tour of the UK visiting each regional branch in turn. The official Ring of Fire album reappeared at the 50th anniversary conference this year to universal acclaim!

In the early 90s membership had reached 1,200 and, with over 40 overseas members, the Institute saw fit to appoint Hugh Wareham as the Overseas Liaison Officer. Tragically, in 1992, Robin Templeton died at the young age of 52, after a long illness, and the following year Mike Buleid passed away, also well before his prime.

An important financial decision was taken in 1994 to invest some of our funds with Rothschilds thus opening up a long-term relationship with St. James’ Place. Concerns about the decline in angling led to the ‘Take a Friend Fishing’ campaign.

In another significant event for the water industry and fisheries, the Environment Agency was formed by merging the National Rivers Authority, Her Majesty’s Inspectorate of Pollution (HMIP), and local Waste Authorities.

In 1997 our fractious relationship with Blackwells finally ended. With fewer and fewer IFM



Sir Hugh Fish

members subscribing to the now entitled ‘Fisheries Management and Ecology’ journal, even at a discount, and despite having Institute luminaries on the Editorial Board, the publishers pulled the plug.

The Warren Committee was set up that year and, outside the fisheries bubble, new Labour came into power. At Cambridge in 1998 a Council Workshop was held – ‘Turning Strategy into Action’ – and these workshops became a regular feature of subsequent conferences. Eric Staite stood down after 18 years as Honorary Secretary and Sir Hugh Fish also retired after several years as President.

Into the new millennium

In 1999 there was a Salmon and Freshwater Fisheries (SFF) policy review for the Government and several distinguished

IFM members were recruited to the Moran Committee. Sadly Sir Hugh passed away after a short illness. Jim Deeker

stood down after 10 years as Exhibitions and Commercial Officer. The following year the SFF review was published and the Water Framework Directive was launched. At Greenwich in 2001 the Jock Menzies Memorial Lecture was replaced by one in honour of Sir Hugh Fish, recognising not only his contribution to the Institute but



also the dominant role he played in the water industry. The 9/11 event also took place during the conference and visiting American Fisheries Society guest Fred Harris bravely continued his presentation whilst news of the attack on the Twin Towers was filtering through.

The Society for the Environment (SocEnv) was formed in 2002 and John Gregory and Robin Welcomme represented the IFM. Following the BRITE (Better Regulation in the Environment) initiative in the Environment Agency, IFM President Peter Bottomley wrote to Barbara Young to complain about the deleterious effect on fisheries staff, but to no avail. In 2004 the SocEnv received its royal charter and we began to offer the Chartered Environmentalist qualification and started a Continuing Professional Development programme.

Ken Whelan became President of NASCO. The following year we established a reciprocal link with the American Fisheries Society. In 2006 Phil Hickley was elected European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC) Chairman and in Scotland an Aquaculture and Fisheries Bill was published. In 2007 the Environment Agency began an alliance with the Association of Rivers Trusts, the first indication of the prominent role the third sector would play.

There was a contested election for Chairman in 2008, the first time this had happened; Ian Dolben narrowly defeated Ash Girdler. Scott West was appointed as Development Officer, thus fulfilling Robin Templeton's vision of a full time employee. The two branches in Ireland combined to form a new united Irish Branch. David Bunt took over from Ash as Training Chairman and ushered in a five year vision for training. FISH had a new look with Jim Gregory at the helm as Editor.

Our 40th anniversary was celebrated at the Stratford conference in 2008 along with the publication of the 40th Anniversary booklet, edited by Jim Gregory. The angling world got its act together after many years with the formation of the Angling Trust. We held a very successful eel conference that begat the Sustainable Eel Group the following year. The Marine and

Coastal Access Bill was published along with the first set of River Basin Management Plans.

We produced an important Hydropower Position Statement in 2010 and FISH was relaunched. Unfortunately, the Environment Agency's Advisory Committees were abolished by the new coalition Government's 'bonfire of the Quangos', thus depriving the Agency of any accountability to its stakeholders. In an example of bad timing, the Institute saw Val Holt (Treasurer), Chris Randall (Membership) and Robin Welcomme (Technical) all stand down at the same time, although Val (now MBE!) was to reappear in due course.

In 2011, the IFM joined the England Fisheries Group, an important new partnership; the Environment Minister Richard Benyon held an angling and fisheries summit meeting; the rise of the third sector was cemented by the Catchment Based Approach (CaBA) and the Inshore Fisheries Conservation Authorities (IFCAs) were created. Both Benyon and Environment Agency Chairman, Lord Chris Smith, attended the opening of the Oxford annual conference.



More recent times

Lawrence Talks took over the editorship of FISH in 2012, stamping his distinctive style on the Institute's organ. Paul Coulson became the Development Officer when Scott West left; there was a consultation on Marine Conservation Zones; and the World Fisheries Congress was held in Edinburgh. Ron Millichamp's passing marked the end of an era.

Natural Resources Wales (NRW) was set up in 2013; and the Environmental Policy Forum, an offshoot of SocEnv, was formed, greatly to IFM's benefit. Our investment with St James' Place reached £0.5m. Fisheries staff were cut by the Environment Agency and Peter Spillett's letter to David Jordan made little difference. Scotland instigated the 'Wild Fisheries Review' with the promise of much needed radical reform. An article in FISH bemoaned the dearth of fisheries scientists.

2015 saw a general election, with the environment hardly featuring in any of the major parties' manifestos. The IFM 'repurposed' with a

more business-like approach to its activities, and also new job titles. Development Officer Paul Coulson thus became Director of Operations overnight! Our financial situation allowed us to appoint a new Development Officer, Iain Turner as assistant to Paul. The plight of the Atlantic salmon resulted in a summit meeting and the formation of an Environment Agency 5 point plan. Phil Hickley died unexpectedly.

In memory of Phil, the Environment Agency sponsored a Phil Hickley Award at the 2016 conference in Norwich. Events were overshadowed by the sad loss of John Gregory, for so long a leading light of the Institute, and in fisheries generally. We were invited to begin a new training course for Environment Agency staff. The dreadful EU referendum took place.

From 2017 onwards Brexit-related consultations have dominated our proceedings. Partnerships with the Environmental Policy Forum and the Wildlife and Countryside Link have enabled us to respond to a much wider range of environmental issues. The first and very successful international eel symposium was held in London and the Government produced a 25 Year Environment Plan. The Sir Hugh Fish Memorial Lecture was replaced by one in memory of John Gregory.

In 2018 the watered down Scottish Wild Fisheries reforms were somewhat disappointing. Simon McKelvey who'd invested much effort in those reforms sadly passed away at a relatively young age. The Environment Agency published an angling survey showing that there had been a 20% decline in the sport in the 10 years following 2005. A draft Environment Bill was endlessly discussed. 2019 saw the continuation of uncertainty over Brexit and the production of a very unambitious Marine Strategy for consultation.

Conclusions

Looking at our membership numbers, we peaked with over 1,400 in around 1998, suffered a decline thereafter and have levelled out at around 700 in recent years. Clearly the initiatives put in place in the eighties to raise the Institute's profile and provide good value for the membership paid dividends but it is also clear

that external factors have affected the fisheries management profession.

Gone are the days of the Regional Water Authorities with their Regional Fisheries Officers holding sway and the National Rivers Authority with its outward facing fisheries teams. The Environment Agency saw fit to dismantle fisheries as a separate discrete function and in doing so wrecked the career structure for dedicated fisheries personnel to follow. We no longer have Board members with responsibilities for fisheries or Regional Fisheries Advisory Committees. Fewer people, especially younger ones, are taking up angling, and angling club officials no longer feature in branch membership lists. There are very few colleges left teaching fisheries courses.

It is not all gloom however. Although our latest surveys indicate an overall decline in the number of fisheries professionals operating in the UK, our membership numbers do represent a reasonable percentage of those that are active. We continue to improve the service offered to members. The changes over the last few years have shown that potential recruits now exist in the River Trusts, the catchment partnerships, the Inshore Fisheries and Conservation Authorities' committees and amongst consultancy firms. We also need to do more in Ireland and Scotland.

Our history shows that we are pretty resilient when faced with new challenges. We have adopted successful strategies – for example, income from specialist courses and conferences more than compensates for the drop in subscription income. We have widened our partnership base and improved our communications via social media. We seem to be able to recruit or develop individuals who have good ideas, show initiative and provide leadership, it is just a shame we lose so many before their prime.

We continue to provide a range of high quality training courses and I believe that that core competence coupled with our dependence on sound science and professionalism will enable us to overcome the undoubted challenges ahead.





The Evolving World of UK Coarse Angling

John Ellis, IFM member and National Fisheries and Angling Manager for the Canal and River Trust describes 50 years of change.

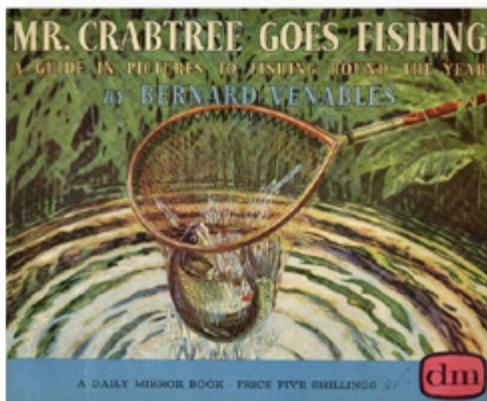
I have fished for 52 years; in hindsight I have been fortunate to grow up in the 1960s. Changes there have been many, but on balance fishing was better back then. Younger readers will scoff and wonder what this old veteran is carping on about. For starters, angling was popular back then. No need for national angling strategies, coaching initiatives or the latest mobile phone apps. Only the occasional bedraggled tramp spent a week in a tent by the waterside.

Read all about it

We didn't crave social media or websites and tablets were strictly for headaches. Growing up, I owned two fishing bibles. Mr Crabtree sold two million copies and young Peter had the luxury of idyllic fish-filled pegs on his doorstep. The other book was Benny Ashurst on match fishing. Crabtree was fictional, for he referred to venues and fish species we could only dream of. The fishing and methods described in Benny's book were much closer to our reality, and lessons learnt then still hold true today. We awaited expectantly for Thursday and the weekly angling papers to arrive at the newsagents, so we could find out the match results and other fishing news from the previous week. Had the great Ivan Marks won another 500-peg match or was it Billy Lane's turn?

World championships

Every year we hoped the England team would win the world championships. It helped when they started hand-picking the team; before that each of the top six national teams nominated one angler. Alas, it would be the likes of Fougeat, van den Eynde or Tesse who took the honours, with Harris and Heaps doing us proud individually on a couple of occasions. English team dominance eventually happened when Dick Clegg took over in the mid-1980s, beginning a golden era of international success. Yet now most anglers



don't much care if the team has triumphed on European soil or not. People cared about the EU though, Mr Heath took us in, Mr Wilson sat on the fence about taking us out again, so some things never really change.

Species and venues

I was fortunate, the Llangollen canal was on my doorstep and full of gudgeon, a species in decline 50 years later. Someone caught a burbot in the Fens, it was the last one to be seen in the wild. Roach and perch were recovering after both suffered disease outbreaks. I could walk or cycle to farmers' ponds that contained nothing but stunted crucian carp. A two-ouncer was a specimen. Common carp were uncommon beasts then in our neck of the woods. Nobody I knew had ever seen or caught one. They were the stuff of Walker or Crabtree. It never crossed our minds that someone would soon invent high biomass fisheries with daily feeding regimes and aerators running 24/7 to keep the fish alive. We never imagined matches being won with a quarter of a tonne of fish in five hours, with the fish being held in half a dozen keepnets.



Numbers of people fishing

There were five fishing clubs in our town. There is just one today, with a handful of members. At the start of the fishing season on the glorious 16th, at least 300 people, all male with a healthy contingent of juniors, would take part in a match on a Sunday morning on club lakes or the canal. Four or five anglers and their tackle fitted into one car. We needed much less equipment. They were early starts, 6am draws, fishing 7 to 11 to beat the boat traffic. At the weigh in, you took your catch to the scales-man.



Then a dash to the pub. Not all pubs opened on a Sunday over the border in Wales back then. In the early weeks, if you were late arriving for the match there would be no pegs left. Hard luck. Weights were low, but we didn't complain. Canal matches would be won with maybe 2lb, with catches on the lakes not much higher, usually fewer but bigger fish. I preferred the canal, for I wanted the float to go under often. Waiting patiently on our club lake for tench that never seemed to take my bait was purgatory. I was 14 before I finally landed that first tinca. It weighed 2lbs 1oz, almost a specimen for that era. Mid-season saw a coach outing or two to the Severn or its streamy tributaries. Older anglers talked of crowds of urban anglers alighting at Grindley Brook Halt or at Fenns Bank on the Great Western line for their weekly escape from the industrial grime.

Tackle and bait

Four shops sold fishing tackle of variable quality, plus Woolworths of course; today best I know, there's no fishing tackle outlet in Whitchurch. There was no carbon fibre; glass and split cane rods were the norm. In the south we read that

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Calum Gordon, director of Splash Gordon Ltd realised there was a real need for such a tool to clear ponds and lochans of emergent weed and detritus. The rake is used at Shell Oil's St Fergus gas terminal to keep their 1-acre fire pond clear of weed, it is also used at Dumfries House plus many other large estates. It takes just 10 minutes to set up the system, bolt the rake together, lay out gather rope to far shore, attach the winch to a suitable tree or ground anchor.

The rake is sat on the float and the float is pulled to any area of any sized water body, it is easily deployed by pulling on both gather rope and winch rope, the rake slides off the float and lands on the lake floor. The winch is then used to haul the rake across the lake floor.

The off-set tines of the rake force weed to zig zag up through the rake and jam, weeds are up rooted and cropped at their base, the rake also gathers detritus and sludge. The winch hauls the loaded rake right up onto dry land, two men then simply tip it forwards to dump the weed then set it back on the float for the next haul. Mobile pond life has to opportunity to return to the pond un harmed.



Kye Jerome's car load of kit

people used poles. We all thought that was strange, especially a chap called Ray Mumford, but he won plenty and should perhaps have fished for England. Poles would never take off elsewhere, it was said. Boilies, pellets, sweetcorn and continental groundbait didn't exist. We used worms, bread and an assemblage of different maggots and hunted out wasps' nests for the grubs and cake for trips to the Severn. Lots of adults bred their own maggots called gozzers. They were soft and got you extra bites. I took up maggot breeding aged 12, much to mum's chagrin. No good will come of this fishing lark, she reminded me frequently. Stick to your studies, my son 'Education, education, education' was her mantra. Maybe a young Tony Blair overheard her one day. It's too early to conclude whether she was right or not but it's dangerous to argue with your mum. Weights were made of lead, we sat on creaky wicker baskets, used only one rod and reel and used white or brown crumb. They didn't sell squatts in Whitchurch. Some weeks I would cycle the 26-mile round trip to Nantwich to procure my supply. Would teenage kids do that today? Alas, getting hold of the 'yellow feed', still the best loose-feed on canals, has got no easier. We pretended to be tough but almost froze in the cold months, for winter fishing clothing was in its infancy. The keen ones like me happily persevered in the Angling Times Shropshire Winter league hoping to avoid a dry net.

National matches

We never heard of big money matches, fishing was a social activity. Winnings were spent on next week's bait, but trophies were valued and the annual dinner and dance a proper occasion. People volunteered for committee work; there were even elections to secure your place. The big match of the year was the All England. A man from our town, Charlie Caufield, fished the match in 1946 on the Witham, sleeping all night on the bus, for in those austerity years money was too tight for frittering away on hotels. He represented Shropshire, what an honour that would be. Alas it eluded me, for, truthfully, I wasn't close to being good enough. And not good enough for Wyche Angler, for they were a renowned team. Billy Jones and Harry Moulton were like gods to us kids. Nationals went from strength to strength from one division up to six, but 20 years later back to just two. The 1974 National Federation of Anglers junior national attracted just over 700 kids, the same event in 2019 a mere 48. Will Let's Fish help reverse this sorry trend? Let's hope so.



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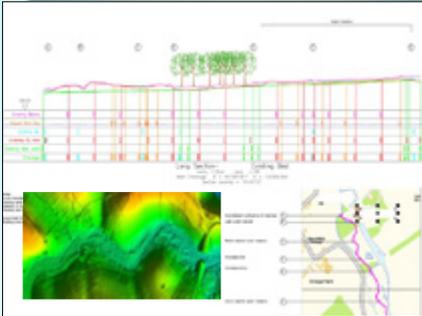
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Fish Need Water

Jason Olive, Assistant Chief of Fisheries Management, Arkansas Game and Fish Commission describes how convoluted water policies in North America threaten aquatic conservation.

Fish need water. That is probably not the most profound statement you have read this week, but it is a concept that can be taken for granted by fisheries biologists who are deep into their population models and telemetry studies. In North America, particularly the United States (U.S.), fisheries professionals often have a frustrating relationship with water management because neither they nor the agencies by whom they are employed have much, if any, control over most aspects of water management. So it is most often left to engineers and even elected politicians to devise and enact water management policies. And this system threatens the well-being of many fish communities in both inland and estuarine environments across the U.S., particularly in a time with increased drought duration and intensity due to global climate change.

Background

In the U.S., water is considered a public trust resource that is largely under the jurisdiction of each state, held in the public trust by the state government. There are exceptions to this relative to the Clean Water Act, passed by Congress and signed by President Nixon in the early 1970s; as well as other legislation that designated navigable interstate waters (e.g. Mississippi River or the Great Lakes), which have additional oversight by the federal government. However, for the most part, issues of water allocation are determined by the states.

There are two basic “doctrines” that are the basis of each state’s water rights laws, the “riparian doctrine” and the “prior appropriation doctrine.” The former is used in states east of the 100th Meridian, which average >50 cm of rain annually. Under this system, riparian landowners are entitled to “reasonable use” of water from any stream or lake flowing through or adjacent to their property. “Reasonable use” is generally not well defined, and as long as negative effects are not experienced by downstream riparian landowners, it typically means “unlimited.” The “prior appropriation doctrine” is used in states in the Western U.S., where the climate is generally arid, and water is a far more limited resource. To put it simply, this doctrine is based on who used the water first. Older rights have priority over newer rights. Those holding such rights may withdraw a

specified volume of water from the stream or lake each year. Many streams and rivers in western states are “over-appropriated,” meaning that more water could be legally withdrawn from the stream than actually exists in the stream; and, as mentioned earlier, this is becoming a larger problem due to climate change.

A convoluted political system

While each state government has a slightly different organisational structure, they are all more alike than different. I will use my home state of Arkansas as an example. Arkansas is a small, sparsely-populated (population 3 million) state east of the 100th Meridian that could be considered “water rich.” Annual precipitation in all regions of the state averages >100 cm, and the Mississippi River makes up the entire eastern border. In spite of this fortuitous geographic location, sufficient amounts of clean water for aquatic organisms across the state are not a given. Issues such as drought, industrial pollution, and poor agricultural practices are



Arkansas River near Salida, Colorado

among the threats that are prevalent across the state. Unfortunately, two of the three aforementioned threats are regulated by different government agencies with different agendas, and different political appointees as directors, and none of which is the agency responsible for conservation of fish and wildlife. The Arkansas Natural Resources Commission has jurisdiction over water withdrawals, and thus in-stream flow. They also manage non-point source pollution issues, but have no enforcement capacity. The Arkansas Department of Environmental Quality



Arkansas River rapids

has jurisdiction over point-source discharge permitting, and is responsible for establishing water quality standards for the state. The Arkansas Department of Health has jurisdiction over drinking water quality for public water systems, a swimming beach water quality inspection program, and fish consumption advisories due to contamination. None of the three state agencies mentioned thus far employ fisheries biologists or have a specific mandate to conserve fish, aquatic invertebrates, or their habitats. That mission belongs to the Arkansas Game and Fish Commission, the agency for which I, and most fisheries professionals in my state work. And although our agency has a general mandate in the legislation that created it stating that the mission is to conserve and protect fish, wildlife, and their habitats, we have no specific jurisdiction over any aspect of water management or policy. Those responsibilities lie with the other three state agencies, as well as two federal agencies - the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE).

Is there anything a fisheries biologist, employed by an agency with no statutory authority over water issues can do? Actually there are many ways to work with the engineers and other professionals and policy makers in the other agencies, and there is an organisation that exists to help fisheries biologists be more effective in working with others to ensure that fish get a seat at the proverbial table. That organisation is called the Instream Flow Council (IFC). The IFC is made up of members from fish and wildlife conservation agencies from each state. The mission of the IFC is to improve the effectiveness of state, provincial, and territorial instream flow programs and activities in conserving (protecting, maintaining, and restoring) aquatic ecosystems. The IFC website: <https://www.instreamflowcouncil.org/> contains a wealth of information, both technical and policy related, on maintaining and restoring natural instream hydrology to aquatic systems. The IFC has hosted four workshops on flow related topics, and all of the presentations from these are available on the website. The IFC has also published three books, which are considered



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Arkansas River

the definitive resources on this topic in the U.S., even being referenced in official EPA and U.S. Geological Survey technical documents. Another organisation that provides an avenue for influence by fisheries biologists is the Association of Fish and Wildlife Agencies (AFWA), which represents all state and provincial fish and wildlife agencies in the U.S. and Canada on policy issues. AFWA employs lobbyists who work with federal agencies and members of Congress or Parliament on policy issues that affect fish and wildlife, and this includes water issues. A subcommittee on water specifically addresses water-related issues and helps outline priorities for the lobbyists to address each year.

The U.S. has a long history of conflict between states, and, in more recent times, between states and the federal government over water allocations. The demand for water will continue to increase as the human population increases, while droughts will likely become more severe and more long-lasting due to global climate change. In spite of the poor organisational structure of governments at multiple levels



Arkansas

in the U.S., solutions to the supply-demand problems will have to be developed by someone. Advocating for adequate amounts of clean water for aquatic organisms in these policy discussions will be a generational battle for fisheries biologists, and organisations like IFC and AFWA will be key in pursuing a conservation agenda.



Low water



ZSL Oysters Project

Rewilding Oysters in Essex

Matt Uttley, Blue Marine Foundation and Essex Native Oyster Restoration Initiative (ENORI) Coordinator discusses native oyster restoration.

Background

Native oyster, *Ostrea edulis*, populations have declined by more than 95% since the mid-1800s. In Belgium, Netherlands and Germany, native oysters are considered extinct and no native oyster fishing industry remains. In 1861, 496 million native oysters were supplied to London Market, in 2014 only 0.5 million oysters were landed in the whole of the UK. Due to overfishing, pollution and disease, native oyster beds are the most threatened marine habitat in Europe.

Oysters provide significant environmental, social and economic benefits. They can filter an extraordinary 200 litres of water a day, improving water clarity and reducing nitrogen loading through denitrification. The three-dimensional reefs that native oysters form are hugely productive, increasing biodiversity and species abundance and enhancing commercial and recreational fisheries. Native oysters are a valuable harvest species and have an enormous value to Britain's coastal heritage.

Essex Native Oyster Restoration Initiative and the Marine Conservation Zone

Essex has a rich heritage of oyster cultivation dating back to the Roman era. One of the last strongholds of the native oyster in the UK is the Blackwater Estuary. The hard work and determination of local oyster cultivators to nurture natives on their private grounds has given opportunity for some wild stocks of native oysters to remain.

The Essex Native Oyster Restoration Initiative (ENORI) was formed in 2011 in order to restore the limited oyster population in Essex to its former glory. ENORI is a collaboration comprising oystermen, environmental conservation groups, academia and government regulators. The shared ENORI vision is for the Essex estuaries to have self-sustaining populations of native oysters that provide ecosystem services, sustainable fisheries and increased biodiversity, whilst recognising their cultural importance.

ENORI members, notably the oystermen, were at the forefront of the designation of the Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone in 2013, the only Marine Conservation Zone (MCZ) in the UK that is designated to protect native oyster beds (the habitat) and native oysters (the species).

Current ENORI members include: the Zoological Society of London (ZSL), Blue Marine Foundation, Essex Wildlife Trust, Kent and Essex Inshore Fisheries and Conservation Authority (IFCA), Natural England, University of Essex, the Tollesbury and Mersea Native Oyster Fishery Company Limited, the Colchester Oyster Fishery, The Nature Conservancy, Centre for Environment, Fisheries and Aquaculture Science (Cefas), Environment Agency and others.

Restoration activities

ENORI has tailored approaches to delivering the conservation objectives specifically to address the main issues facing native oysters in the MCZ. In order to reproduce, oysters release planktonic larvae. These larvae remain in the water column for up to two weeks searching for suitable hard substrate on which to settle and become 'spat',

juvenile oysters. The historic loss of the oyster beds and reefs has led to a decrease in mature breeding oysters and a loss of the hard substrate required for settlement. This has created the two main issues facing oyster restoration in Essex: 1. Substrate limitation - a lack of suitable settlement material, and, 2. Recruitment limitation - low reproductive success due to a lack of mature oysters.

ENORI has established a voluntary no-take zone called the Blackwater Restoration Box. In this 2,000m² area, ENORI is piloting restoration techniques focusing on the two main issues.

In May 2019, ENORI began addressing the substrate limitation through the addition of over 400 tonnes of 'cultch', hard substrates such as stone and old shell. This allowed trials of various cultch types including: stone aggregate and oyster, cockle, and scallop shell in order to pilot settlement success.

Cultch was laid in tracks, with some tracks due to have subsequent treatments, in order to establish which cultch conditions are most

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Native oysters



Cultch deployment May 2019

conductive to larval settlement and how best to lay and treat cultch in the future. This is pioneering for UK oyster restoration and is vital to inform best practice. We are planning on laying a further 10,000m³ over the next four years.

The second approach that ENORI is undertaking is the creation of a 'Mother Oyster' sanctuary. This addresses the other issue facing oysters within the MCZ: recruitment limitation. ENORI to date has translocated over 33,000 mature oysters into the Restoration Box, which, when spawning, will increase the number of larvae attempting to settle on the improved seabed substrate.

The cultch and mature oysters will be scientifically monitored to ensure that the growth and survival rates of both the mature and new oysters are as expected and in order to deduce which cultch ratios and treatment methods are most effective within the Blackwater.

In the remaining 282km² of the MCZ, ENORI are using adaptive management measures to, in the future, allow for a sustainable wild oyster fishery protected under byelaw to be re-opened. This will be developed in dialogue with industry, scientists and nature conservation authorities. The methods used within the Blackwater Restoration Box could, if successful, be scaled up to further increase the scale of the restoration across the MCZ.

What does success look like?

When the oyster population has recovered to 'favourable conservation status' in the wider MCZ and shows 'resilience', the IFCA is able to open a sustainable fishery under an allowed 'temporary depletion' of condition. The management behind this is detailed in the Kent and Essex IFCA Shellfish Beds Byelaw and the new Native Oyster Permit Byelaw.

Success will be substantial wild populations of native oysters that are self-sustaining and providing environmental, social and economic benefits to the Essex Marine Conservation Zone and surrounding areas. The lessons learned through this restoration process will influence restoration on a national and global scale.

Wider influence - Native Oyster Network, UK and Ireland

ENORI is a member of the Native Oyster Network. Set up by ZSL and the University of Portsmouth in 2018, the Network seeks to facilitate an ecologically coherent and collaborative approach to native oyster restoration in the UK and Ireland. Collaboration and knowledge sharing between industry, academia, conservation interests, and between restoration projects, is facilitated by the Network; this is vital to the overall success of restoration efforts now and in the future.



Local oysterman, Allan Bird





Local fishers with traditional woven prawn trap

Providing Passage for Migratory Prawns in Liberia, Africa

Adam Fryer and the team at Fishtek Consulting investigate a potential novel solution for passing migratory prawns at a large dam in Liberia, Africa.

Non fish species have been largely overlooked

It's well known that dams, particularly large ones, present significant issues for fish, with migratory fish populations being significantly impacted by their construction. Historically, fish passage scientists and engineers have focused their research on North American and European

ivers, with migratory salmonids being top of the agenda. As dam construction slows and even reverses in these regions, the tropics have seen a surge of interest in the construction of large hydroelectric dams in response to increasing energy demands, presenting fisheries scientists and engineers with many new challenges. Tropical rivers are typically more species-rich than

their temperate counterparts and many cross borders, making it difficult to gain an in-depth understanding of the potential environmental impacts of a given development and to establish appropriate mitigations that meet the requirements of a diverse set of stakeholders, especially when both time and budget are limited. This has led to a preference for fish passage solutions that attempt to target a wide variety of fish species with varying life-histories and swimming abilities, without the need to collect data on all species. However, other aquatic species have been largely overlooked.

It is becoming increasingly apparent that some non-fish species play important ecosystem roles and existing mitigation options are largely not suitable to ensure their survival. One such species is the African river prawn *Macrobrachium vollohovenii*.

African river prawns and bilharzia

Macrobrachium sp. is a large commercially important prawn common throughout central and west Africa. It has a catadromous life cycle that includes a downstream spawning migration by mature females (with eggs being released in estuarine waters) and a subsequent upstream migration of juveniles. The species is threatened by dams that block their natural behaviour and reproductive cycle.

Macrobrachium prawns are an important source of protein for local communities that live close to many Africa rivers and they are typically more valuable to the local economy than finfish per unit weight. They have also been found to play an important ecosystem role by indirectly managing human infection rates by *Schistosoma* blood fluke. These parasites are responsible for a severe group of infections in humans termed schistosomiasis, more commonly known as bilharzia, which results in the death of approximately 10% of those who are chronically infected.

Adult *Macrobrachium* prawns prey on species of aquatic snail that act as intermediate hosts for the *Schistosoma* parasite and there is evidence of an increased risk of infection in communities living close to dam sites throughout Africa. A recent study estimated that 400 million people

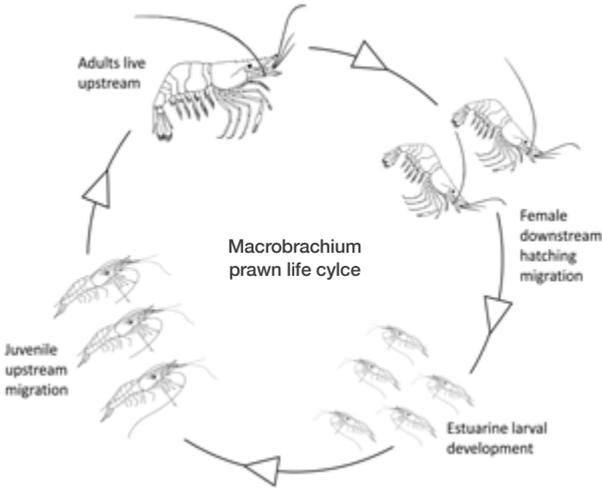
are at greater risk of infection in Africa due to dam construction blocking the reproductive behaviour of migratory prawn. Well-known case studies include the Dama dam in Senegal and the Aswan dam in Egypt. The only effective measure currently employed to reduce this impact is the use of frequent mass drug treatment programmes, which is not a favourable long-term management strategy and does not protect prawn populations.

The River Saint Paul, Liberia

Mount Coffee hydropower dam on the Saint Paul River is one of only three power stations in Liberia and is by far the largest. The dam was first built in the 1960s and was extensively damaged during the civil war in the early 1990s. In recent decades very few Liberians have had access to electricity, with diesel generation being the only option for those who could afford it. Increasing political stability after successive civil wars has led to a drive for improved basic infrastructure, including access to affordable electricity. This has resulted in the large-scale refurbishment of Mount Coffee dam in 2016 and connection of the dam to the West African Power Pool, a regional energy transfer agreement.



Upon review of the scheme design and collection of baseline data, Fishtek identified several potential impacts of the dam on aquatic fauna, including the potential for significant impacts on *Macrobrachium* prawn. The dam is located close to the tidal limit and will block prawn migration and specifically juvenile access to upstream freshwater habitat.



Finding alternative solutions

Fishtek set out to investigate the feasibility of maintaining upstream prawn migration at the Mount Coffee dam as a more ecologically and economically sustainable solution compared to a long-term drug treatment programme, should prawn populations in the area decline significantly in the future. The aim was to generate data that could be used to design a prawn pass for construction at Mount Coffee dam, with a maximum capex cost of \$800,000. A team of fisheries biologists and engineers travelled to Liberia with the aim of answering a number of questions.

Can prawns climb?

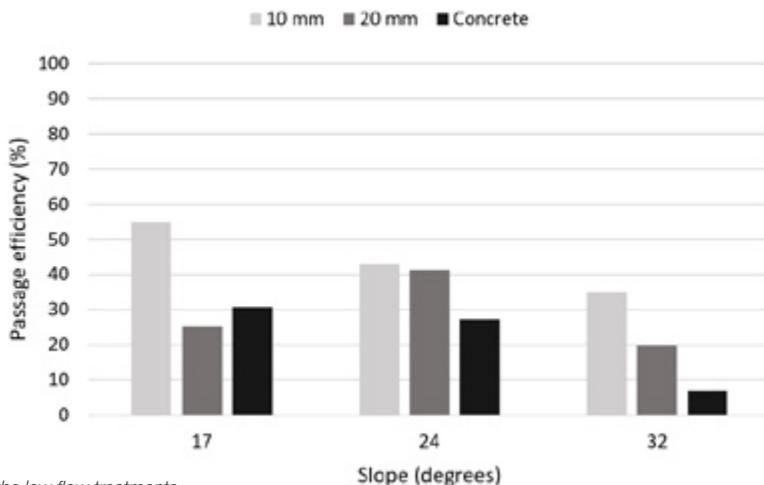
An experimental set up comprising a 4m long aluminium channel, scaffold frame, header and footer tanks, petrol pumps and a selection of substrates (pea gravel, coarse gravel and concrete board) was sent to Liberia to undertake a series of prawn passage trials on the bank of the Saint Paul River. A fully factored experiment of the three substrates at three gradients (shallow - 17°, moderate - 24° and steep - 32°) and for three flow inputs (trickle - 0.3l/s, low - 1.3l/s and high - 4.6l/s) was carried out over the course of three weeks. The experimental design was loosely based on a single ex-situ study on an Asian species of prawn and general anecdotal evidence of prawns' ability to climb.

We worked with a team of local fishers to catch prawns for the trials using traditional woven traps. After a 24-hour period of recovery, prawns were introduced into the facility in groups of 15 for each half hour trial. The outcome of the trials was binomial, with prawns being either successful (ascenders) or non-successful (non-ascenders).

What we found

We found that *Macrobrachium* prawn were able to ascend the test ramp under most of the treatments, with varying success. The highest passage efficiency (55%) was observed for the 10mm pea gravel, on a shallow gradient and with a low flow rate. It is believed that this combination offered manageable velocities on a suitably rough substrate, while still allowing for partial submersion of prawn. For the trickle flow treatments concrete board showed the highest passage efficiency, which was less effective in higher flow treatments, most likely owing to the fact that velocity over the concrete board was high compared to the other substrates. It should be noted that due to the number of treatments and replicates required, trials were short (30 minutes) and passage efficiency over a longer period would likely be higher.

Zero passage efficiency was observed for the high flow treatments and despite prawns attempting to ascend the ramp at high flows,



Results from the low flow treatments

they covered little distance before being washed back into the footer tank.

Many species of prawn have been observed to migrate in large groups and at night, with many hundreds of prawns being observed to climb natural barriers each hour. We observed a similar group effect during the trials, with prawns typically ascending en masse. However, whilst prawns seemed more willing to climb at night, no statistically significant difference was found between day and night run trials.

A statistical effect was found between carapace length of ascenders vs non-ascenders, with larger prawns being more likely to ascend the ramp. The difference between the mean carapace length of these two groups was relatively small (3.6 mm) and thus it is not known if this would have any implications on the passage timing of juveniles.

Going forward

The Saint Paul River prawn trials form the most comprehensive study to date that has investigated the potential for a prawn passage solution at a man-made barrier. It is also the only existing scientific data known to the authors that demonstrates that *Macrobrachium* prawn can climb textured ramps. The immediate application of the data gained from the study has been the creation of a set of design criteria for a specific

prawn pass at the Mount Coffee dam and Fishtek are currently undertaking the detailed design. It is planned that the design will be tendered to Liberian contractors in early 2020 to be built the same year.

The wider application of the study is the potential to mitigate barriers to prawn migration at new and existing dams throughout Africa. The Upstream Alliance, a group of scientists and citizens aiming to reduce schistosomiasis in Africa, is currently developing culture techniques that may prove vital at sites where prawn no longer exist. A combination of re-stocking and retrofitting prawn passes to existing barriers may aid the recovery of prawns in catchments where they have become locally extinct. Current research suggest that such efforts have the potential to reduce rates of schistosomiasis infection and aid food security.

Similar problems have been observed in other species of migratory prawn throughout the tropics. Given the similar life-histories and morphologies of these species it is reasonable to assume there may be application for prawn passes beyond Africa. Post-construction monitoring at Mount Coffee will help inform the feasibility of mitigating existing barriers to prawn migration world-wide and could arm dam developers, fisheries scientists and engineers with a useful tool when assessing new proposals.





Ron Campbell

Salmon on the River Tweed - Informing the Present from the Past

Ronald Campbell, Senior Biologist with the Tweed Foundation, highlights the importance of the long-term view in fisheries management; for it can change the interpretation of the present, and therefore the actions that are taken. Four examples are presented here.

The decline of spring salmon

This was the big issue in the 1970s and 80s and if the numbers caught are looked at from the start of centralised catch recording in Scotland in 1952, the decline is severe:

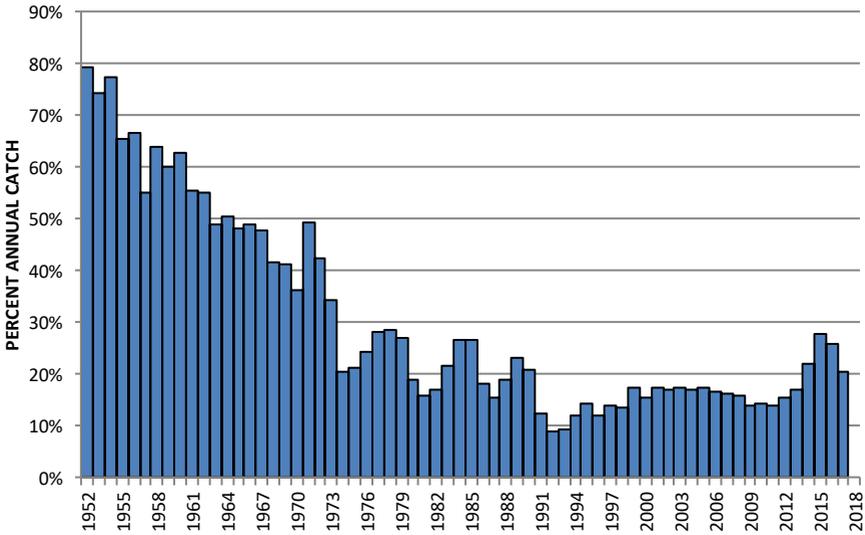


Fig 1: The numbers of salmon caught before the 1st of June at a middle Tweed rod fishery, 1952-2018 (smoothed x 3)

However, with longer-term data, the decline is still the same, but its interpretation has to change completely, because before the decline there was a significant increase in spring salmon. The “decline” was therefore a change back to a previous situation, not something new and disastrous.

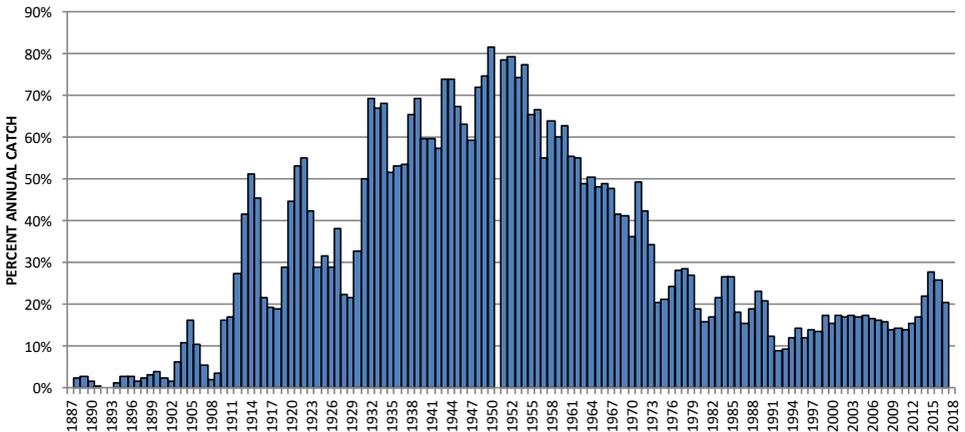


Fig 2: The numbers of salmon caught before the 1st of June at a middle Tweed rod fishery, 1887-2018 (smoothed x 3)

Salmon smolt age

Salmon smolt age on the Tweed decreased dramatically from the 1960s to the 1990s, with three and four year old smolts dropping from 60% to just 8%. This could be interpreted as showing the effect of climate warming causing smolt ages to decline from a baseline of older ages.

	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>S4</u>
1960s	0.0%	39.9%	56.3%	3.8%
1990s	22.2%	70.1%	7.5%	0.2%

Table 1: Smolt ages of Tweed salmon in the 1960s (Department of Agriculture and Fisheries for Scotland (DAFS) data) and 1990s

However, the first systematic scale readings made on the Tweed were in 1929 and 1930 and these change the picture if added to the table.

	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>S4</u>
1929	5.1%	92.4%	2.5%	0.0%
1930	6.4%	90.9%	2.7%	0.0%
1960s	0.0%	39.9%	56.3%	3.8%
1990s	22.2%	70.1%	7.5%	0.2%

Table 2: Smolt ages of Tweed salmon in 1929 (MacFarlane) / 1930 and in the 1960s (DAFS data) and 1990s

Before the big decline in smolt age from the 1960s, there was a big increase from the 1930s, when S3 and S4 smolts were only a couple of percent, even less than in the 1990s. The 1940s, 1950s and 1960s were notable for their long cold winters and this restriction of the growing season would have led to the increase in smolt age seen. The longer-term data indicates that smolt ages are not fixed and that the recent increase in younger ages is not therefore a decline from a previously stable pattern of older ages.

Fall in salmon catches and numbers

There has been a recent fall in salmon catches and numbers. This is not random, but is specifically a decline in the number of one-sea-winter (1SW) grilse, as shown by the Environment Agency catch figures for England and Wales.

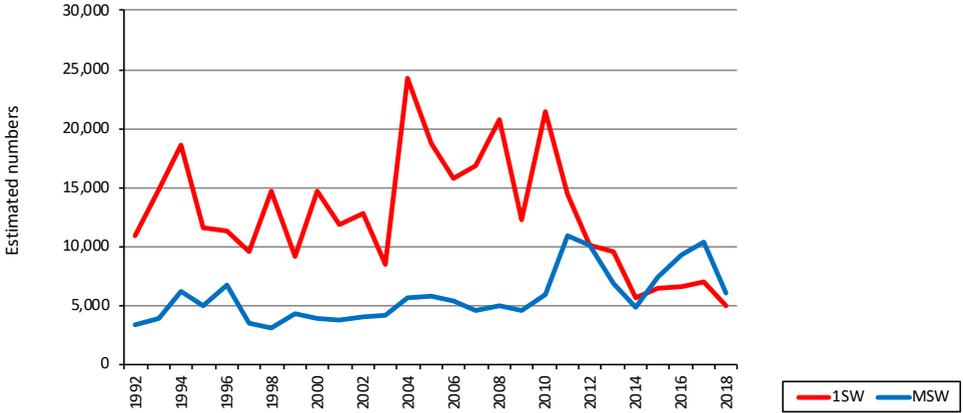


Fig 3: The angling catches of grilse and multi-sea-winter (MSW) salmon in England and Wales, 1992-2018 (from Anon, 2018)

This graph is only for 1992-2018, but if looked at with older results from Tweed netting records, it can be seen that this sort of grilse decline has happened before.

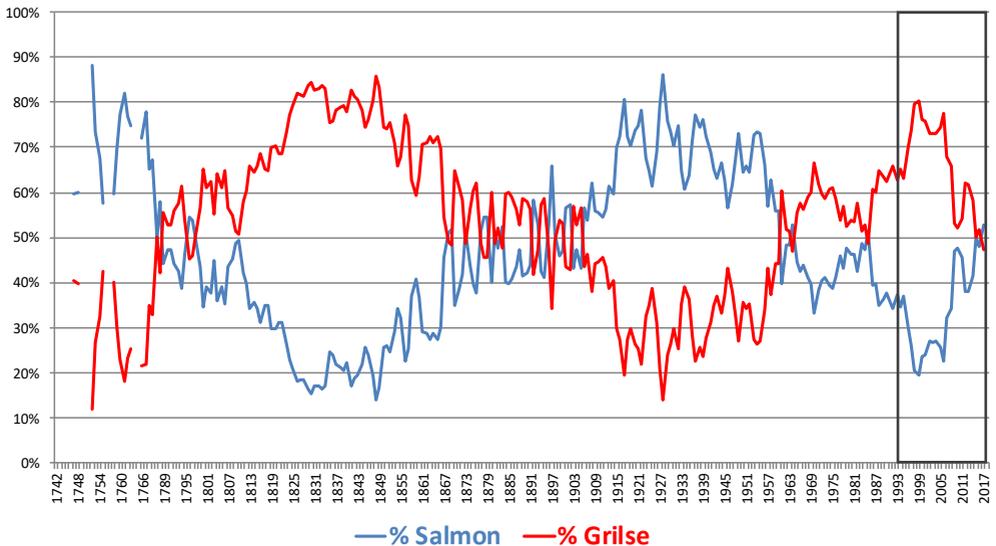


Fig 4: The proportions of 1SW grilse and MSW salmon in Tweed netting catches 1742-2017. The black box shows the period covered by Fig 3.

These peaks and troughs of grilse and MSW salmon can be correlated with the Atlantic Multi-decadal Oscillation (AMO): periods when sea temperatures are less than average match grilse dominated periods and warmer than average with MSW salmon (see <http://la.climatologie.free.fr/amo/amo.htm>). These large scale climate changes also affect freshwaters – see Elliot & Elliot (2010) for how emergence times of trout fry vary with the North Atlantic Oscillation. At present, the Atlantic Multi-decadal Oscillation is heading into a warmer period, so a grilse decline should be expected at present, whatever else is going on. The last grilse decline was reaching its nadir in the 1910s -1920s and it is interesting to see what sorts of things were said about this at the time:

A key point is that it is grilse that make for big catches, as shown in netting records from the Tweed. The times of high catches are times when grilse are a high proportion of the returning fish.

How much of the present decline in salmon numbers is due to the sort of grilse decline that has been seen before and how much is due to new factors such as freshwater from the melting Greenland ice-cap is, as yet, undetermined. The effects and impacts of these precedented and unprecedented factors need to be disentangled if the present situation is to be understood properly.

1908: “DECLINE OF GRILSE: ITS SIGNIFICANCE. *these rather reliable signs of decline are occurring in districts where the success of the fishing depends principally on the supply of grilse rather than upon the supply of adult salmon.*” (Calderwood, 1909)

1914: *“Cannot resist the conclusion that grilse are very much scarcer than they used to be. The question is whether they are going to disappear entirely from the Wye.”* (Hutton, 1914)

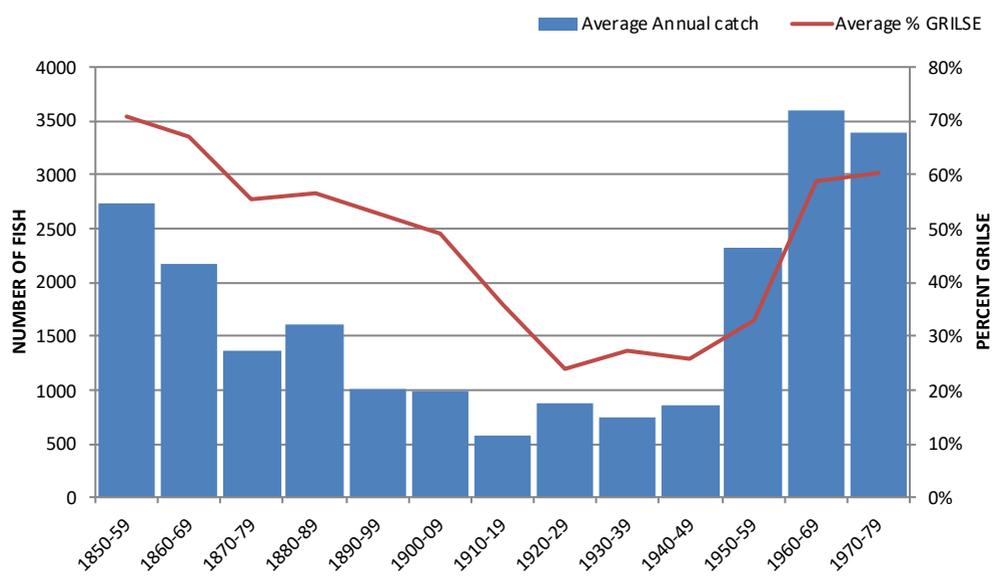


Fig 5: Catches at the Sandstell netting station on the Tweed estuary in relation to the proportion of grilse.

There are no baselines with salmon

The final example is a general one showing that there are no baselines with salmon: everything changes, run-timing, size, numbers, sea and river age. This is apparent in a sequence of graphs giving the weight frequency and run-timings every 20 years from the 1890s onwards for a lower Tweed angling fishery.

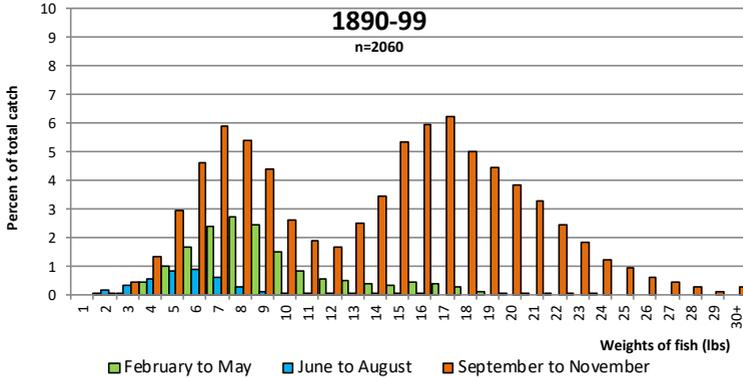


Fig 6a: Angling catches in the 1890s

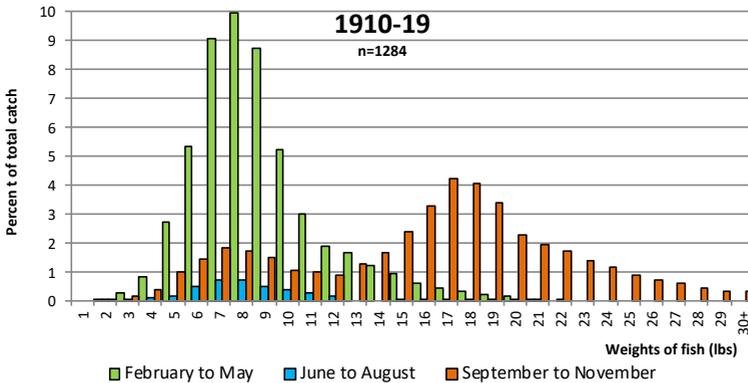


Fig 6b: Catches in the 1910s

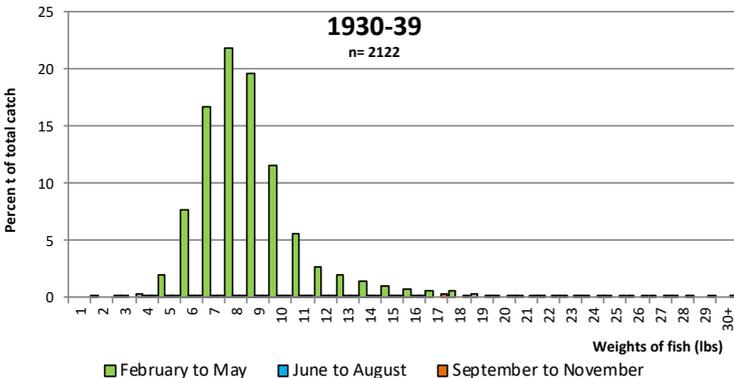


Fig 6c: Catches in the 1930s

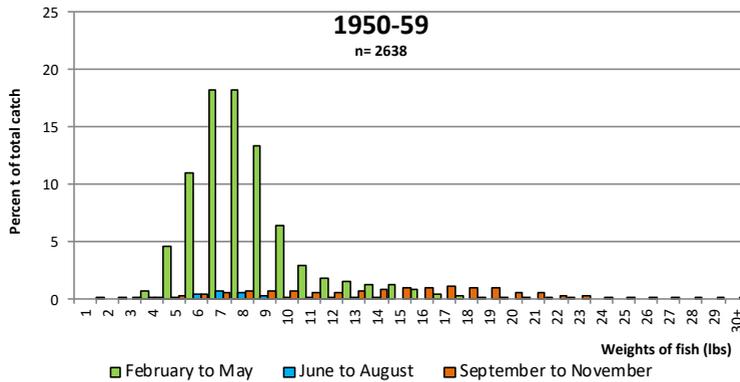


Fig 6d: Catches in the 1950s

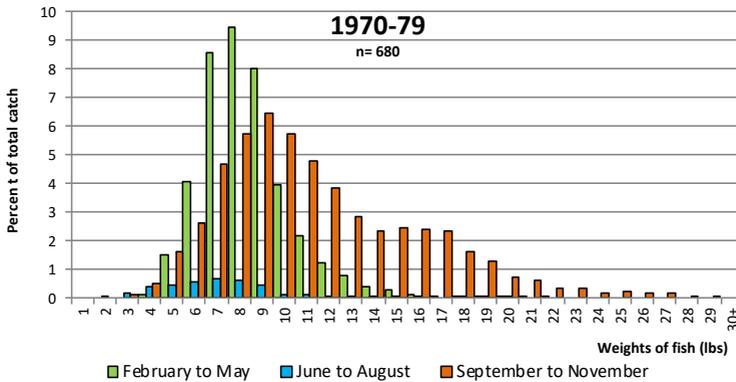


Fig 6e: Catches in the 1970s

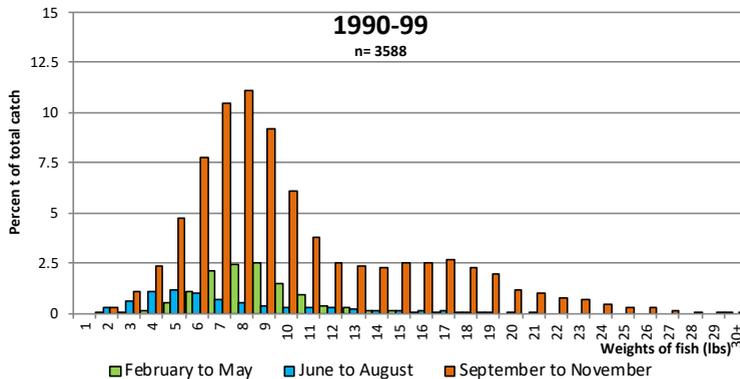


Fig 6f: Catches in the 1990s

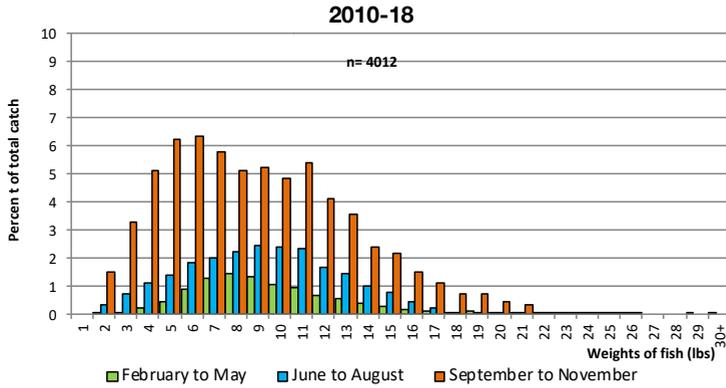


Fig 6g: Catches 2010-2018:

The increase in summer fish in the last graph (Fig 6g) could be entirely due to the reduction in netting - but could there be other factors behind this rise? Could this actually be something new, related to new conditions out at sea?

These sorts of changes can also be seen in the catches of a single month (Fig 7). In the 1990s, the fish caught in August were mainly small grilse, in low numbers. In the 2000s, greater numbers of small summer salmon started to be caught and in the 2010s these came to dominate the catch.

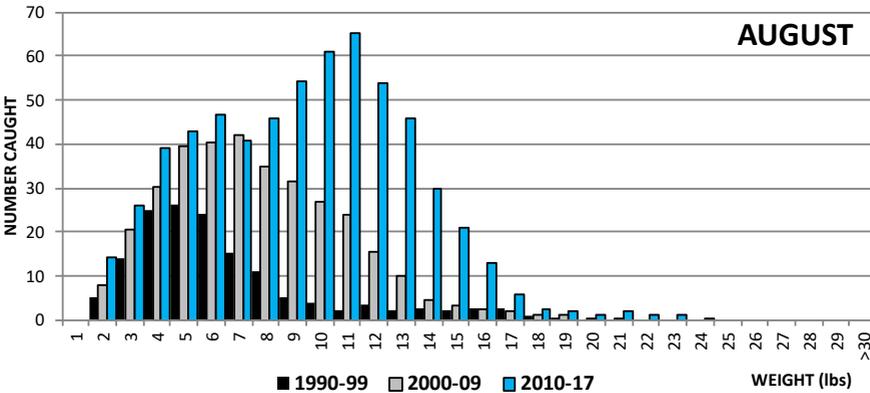


Fig 7: The changes in the sizes and ages of the fish caught in August at a lower Tweed rod fishery (smoothed x 3)

Without fixed baselines therefore, the concept of “decline” for salmon has to be treated very carefully and not confused with “change” though this is often done, possibly inevitably, as these changes take effect over longer periods than the usual length of career of fishery biologists!

“In August was the Jackal born;
The Rains fell in September;
Now such a fearful flood as this;
Says he, 'I can't remember!'”

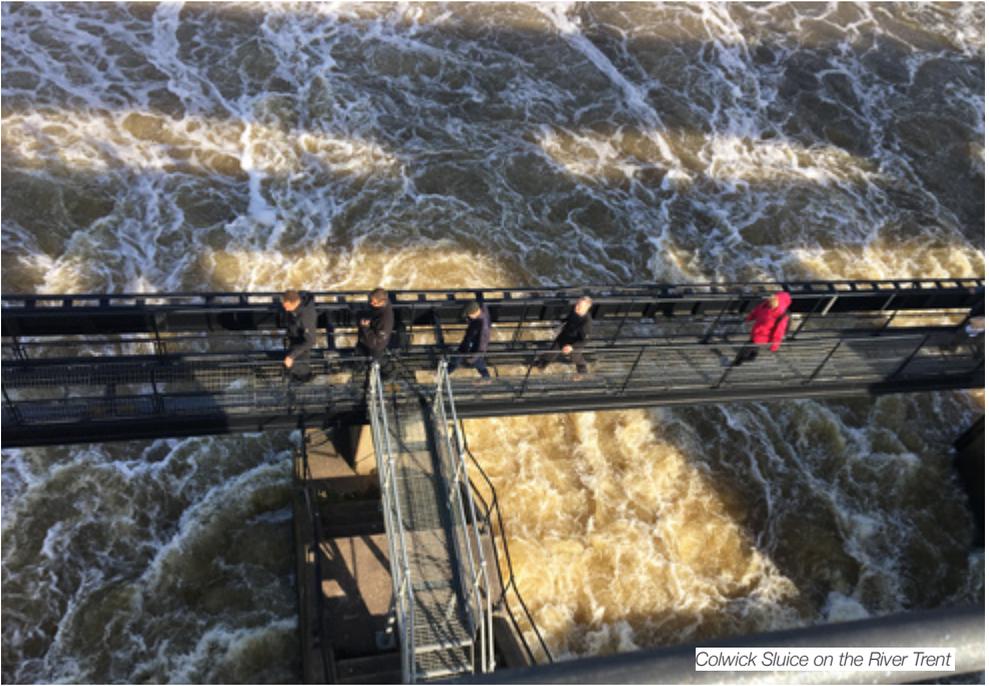
Rudyard Kipling,
 the Second Jungle Book



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Iain Turner

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Colwick Sluice on the River Trent

Annual Conference 2019 site visits

The site visits are often a highlight of the Annual Conference as they provide a great opportunity to see fisheries and conservation management in action. For this 50th anniversary edition, Valerie Holt guides us through the three site visits that were arranged during the Annual Conference on the Wednesday afternoon. With the weather good, all was set for a perfect afternoon.

Attenborough Nature Reserve and River Erewash

This was just a twenty minute ride from the conference centre and twenty delegates were first given a brief resume of the issues relating to the River Erewash. Mike Spencer and Tim Sexton of Nottinghamshire Wildlife Trust then gave a short history of the reserve at the Attenborough Nature Centre. The reserve is named after the village of Attenborough, which is close by. When it was opened, you can guess who cut the ribbon. The reserve is dominated by lakes that were formed

by gravel extraction over a period of more than 50 years, originally starting in Beeston in the River Trent floodplain. In order to transport the aggregate, from the now extended pits to the west, to the washing area and works, a barge channel was constructed through the gravel pits. This necessitated breaching the River Erewash's banks in the centre of the site, which then caused it to flow into one of the pits. The River Erewash was a heavily polluted watercourse in the 70s and 80s and this has affected the flora and fauna of the lake. The gravel company have now completed extraction and as part of the restoration plan they have to put the river back into a course away from the pit. The barge channel will then be closed off with bunds incorporating a pen-stock to assist with water level control in the future.

Delegates walked from the centre to a large concrete outfall structure, through which the majority of the River Erewash's flow currently



passes into the River Trent. A fish pass had been incorporated but this has never worked satisfactorily and plans are in development, by a consultant employed by Cemex, to improve the outfall, which includes putting in bunds and reinforcing the banks of the river a little further upstream.

On the return journey we all climbed the high hide to look at the varied array of birds, for which the reserve is designated as a Site of Special Scientific Interest (SSSI). We then had coffee in the eco-built visitors centre.

Environment Agency Calverton Fish Farm

Twenty two delegates got the opportunity for a guided tour of the state of the art facilities at Calverton Fish Farm, and an opportunity to learn how the Environment Agency produce the hundreds of thousands of fish that they stock into England's rivers and stillwaters each year. This was a really well organised and interesting trip around the whole site and gave the delegates a fantastic insight into the huge amounts of work and research that has gone into the development of the farm. A huge thanks to all the staff for making us all so welcome.

The Trent Gateway

About thirty people went on the Trent Gateway trip. The group were taken to the Environment Agency's Colwick Sluice site. On arrival they were given an overview of the Trent Gateway project by the trip host Bryan Hemmings.

He explained that for many years a number of interested parties have wanted to work together to re-connect people to the River Trent and to develop the river in a number of different ways. The Environment Agency has taken the lead in this and has temporarily committed a project manager to the cause, with the remit to create a governance framework within which the interested parties can work collaboratively and move their projects forward in the context of an agreed vision. The project manager also has the task of delivering the Environment Agency's priorities in this, which is, with partners, to deliver fish passes at all the barriers on the river. The Colwick Sluice site, where the site visit was held, is where the Environment Agency is planning to build England's largest and most sophisticated fish pass.

James Freeborough and Simon Ward along with the design team were on hand to provide more detail on the planned fish passes and, in particular, more detail on the design for the Colwick fish pass. The visitors were able to ask questions, all of which were answered in detail, proving to those gathered that a considerable amount of thought, modelling and hard work has gone into designing a fish pass that will cater for the whole spectrum of fish species, from bullhead and minnow to salmon, and will result in the opening up of over 30km of the Trent. Amongst other things, this will move forward the real potential for salmon to once again spawn in the tributaries and upper reaches of the Trent.

After the session on the fish pass, the visitors were treated to a walk over the sluice structure (the largest such structure in the UK). This was very kindly hosted by Neil Clayton, the operations manager responsible for the asset. Those with a head for heights were even able to climb to the top gantry, which afforded some special views and a real appreciation of the power of the river and the importance of the structure, as well as the difficulties of fitting a fish pass around the structure.

The weather was kind and after a short stroll round the park, the visitors were returned to Nottingham to get ready for the annual dinner. Special thanks go to James Freeborough, Simon Ward, Aaron Kudhail and Paul Herickx for accommodating the visit, which was enjoyed by all.

Postcards from the 2019 Annual Conference





The Paul Coulson BLOG



Paul and Andy Don launch their book EELS

50th celebrations and a book launch

What a great few days we had in Nottingham for the 50th Conference, even the serious chest infections that both Karen and I had picked up couldn't stop us from enjoying ourselves, though we do owe a great deal of thanks to Covonia and Strepisils.

We had a great venue, great speakers, great field trips, great social events, great delegates and an amazing cake. A big thankyou to everyone that attended and made it such a brilliant few days. I would also like to say a special thankyou to all of the sponsors and trade stands that continue to attend and support the Institute; without this support we wouldn't be able to put on such memorable events.

The highlight for me was the boat trip on the Trent and seeing just how competitive everyone is when there is a fishy quiz to be won. Jim Lyons did a great job in pulling the questions together and Pete Turner was an excellent quiz master on the top deck, even though he didn't have a microphone. Well done to Steve Axford, Ash Girdler, Lawrence Talks and the rest of their team for taking home the gold medals, who would have guessed that they would know the names of all the Kardashian sisters!

The conference also saw the official launch of EELS. Andy and I hadn't seen the finished, printed book until they were delivered to the conference, so it was also a momentous occasion for us. Even though I may be a little bit biased, I have to say the book looks amazing and the feedback on it has been really positive.

I keep checking the best sellers lists to see when we make it to the top 10, but, alas, nothing yet. It makes a wonderful present for any occasion from christenings to Christmas, so why not treat yourself or a loved one.

The book was also launched over in Berlin at the European Aquaculture Conference and we were pleased that a number of contributors were in attendance to collect their copies.

Onwards to 51

There is no rest for the wicked and plans are well advanced for our 51st Annual Conference, which will take place at the National Oceanography Centre in Southampton on October 6th – 8th. Get the dates in your diary now. Also, if there are any local members who would like to get involved, then please get in touch with me or Iain, as we would love to have you onboard.

Rumour has it that the local branch may have booked a brewery for the annual dinner as well, and if that doesn't sell it to you, nothing will.

Iain and I tied in a tour of venues in Southampton with attendance at the SAMARCH (SAlmonid MAnagement Round the CHannel) conference. This was a really interesting couple of days, with some exciting research highlighted and future ideas discussed. The amount of detail we can now collect from the various forms of tagging and tracking is just phenomenal and is giving us new insights into the migrations carried out by salmon and sea trout. This in turn should help us to identify areas of significant pressure and to put in suitable measures to mitigate them as much as possible.

International Year of the Salmon

As I'm sure you are aware this past year has been the International Year of the Salmon (IYS) and whilst 2019 was the focal year for action, research and outreach will continue into 2022.

A Date For Your Diary



51st Annual Conference



**National
Oceanography
Centre**

**National Oceanography Centre
Southampton
October 6th - 8th, 2020**

Our 10th Specialist Conference will be a “salmon special” to tie in with IYS, and to help facilitate the conference we have joined with the Atlantic Salmon Trust and the Environment Agency.

The conference will be held in the 12th century, Grade 1 listed St Mary’s Heritage Centre on the banks of the Tyne in Gateshead on May 12th – 13th 2020. Our aim is to make the conference as inclusive as possible and to reach out to groups that have an impact or influence on salmon and that may not usually attend such a focussed event. By the time you read this, you should have received all of the information and the call for papers. We hope to see you there.

Water, water everywhere

I am struggling to remember a day over the past couple of months when we haven’t had rain here in East Yorkshire; it seems to have been almost constant. Obviously, the deluge at the start of November that fell over Yorkshire and Derbyshire was phenomenal and no amount of planning could have foreseen just how much water would have fallen in such a short period of time. I am pleased to say that, since the floods of 2007, we now have several flood alleviation schemes around Hull and these have worked brilliantly over the past couple of weeks.

I was invited by Yorkshire Water to the opening of the new fish pass on the River Hull at Hempholme Weir. The weir is the only major barrier on the river and the fish (and eel) pass should now allow unrestricted access for all species. However, the rain even impacted on this as the river was in flood so the fish pass and weir were both drowned out, which was a real shame. I have had a couple of visits since and on both occasions the levels were just too high to see the pass!

Heatwave success

The summer seems a long time ago as I write this, especially so as the rain is absolutely lashing down and my garden would now make a nice stew pond for a few carp! Way back in the heady days of the summer, and more specifically the heatwave over the August bank holiday, I managed to wangle myself a ticket for the annual Hull and District silverfish match on one of their



Winning catch in the heat

specimen carp waters. As the temperature was 27°C, and there wasn’t a breath of wind, the hoped for bream and large roach bonanza was thwarted before it had begun.

However, I was lucky enough to have a peg with a large weed bed to the left-hand side, and after a fruitless hour or so trying to catch a roach or an eel I decided to have a look in the shallows by the weed. Well, four hours and 192 rudd later I had won the match with a weight of almost 18lbs and narrowly avoided heatstroke. I don’t think I have ever been so tired after a fishing match!

Due to work and family commitments I didn’t get back on the bank until the first round of the pairs winter league on the East Yorkshire Ditch aka the Market Weighton Canal. This was an altogether different affair with plenty of clothing and thermal boots needed. The fishing was also notably harder, with low weights all round. I did manage to pick up a few quid though, as I was second in my section and third overall with a massive





weight of 1lb 8dr with only 1lb 12dr winning my section. If you consider my catch was made up of over 20 fish you can see how small they were, mind you I was only one fish away from second. Mike won his section as well, so we ran out top pair on the day and take an early lead in the league. Unfortunately, the second round was cancelled due to flooding so we will have to wait to see if we can carry on our good start.

Wet Wolf

My old Sparsholt friend Phil and I took on the Winter Wolf for our third time in November. This was another event that fell foul of the weather, as the whole site had turned into a bog, and you were covered in mud before you even got racing. This year was a real challenge, not because of the cold but because every step was treacherous due to the mud and standing water. At several points you have to cross a stream or wade

through a lake, normally this would mostly be at knee depth, however this year it was waist deep and even chest deep in places. Anyone under 5ft 8 was swimming instead of wading at this point. Phil and I still did pretty well and managed to get around in roughly 1hr 25 again, which given the conditions we were very happy with. We also won our wave of runners, which was made up of around 50 other racers, so another result.

Tight lines. 

Paul Coulson - Director of Operations

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Event	Date	Location
IFM and Angling Trust Tench Fishers Workshop	January 14th.	Springwater Golf Club, Calverton
IFM Ireland Branch Conference. Learning from the Past to Inform the Future	January 23rd.	City North Hotel and Conference Centre, Gormanston, Dublin
IFM and EA Fishery Management Workshop	February 1st-2nd,	Warrington
IFM and EA Weed Management Workshop	February 15th	Wicksteed Park, Kettering
IFM and EA Fishery Management Workshops	February 22nd- 23rd	Norfolk and Wessex
Northern Angling Show	February 29th - March 1st.	Manchester
IFM Diploma Field Course Weekend	March 7th - 8th	
IFM Certificate Field Course Weekend	March 21st – 22nd	
IFM and EA Fishery Management Workshop	April 4th -5th	Newcastle
IFM Award Field Course Weekend	April 25th - 26th	
World Fish Migration Day	May 16th.	Various Locations
10th Specialist Conference. Delivering Action for Salmon	May 12th – 14th	St Marys Heritage Centre - Newcastle
51st Annual Conference.	October 6th – 8th	National Oceanography Centre, Southampton

Membership survey

We are undertaking a survey to hear from all those involved in fisheries so that we can best support you.

It will take just 5 minutes of your time to complete.

The link is here (<https://forms.gle/CuMVjTC9znKvsgMVA>)

Thank you.

Changes in IFM Presidency

Dr Peter Spillett has been our auspicious President since 2008. After 11 years of valued service to the Institute, Peter has decided to stand down as IFM President at the end of December 2019.



Peter joined the Institute in 1976 and was Chairman from 1993-1998. As President he has been a guiding light to Council and Executive Committee and by representing IFM at the England Fisheries Group and the Environmental Policy Forum, he has kept abreast of and influenced national policy changes.

We express our deep thanks to Peter for his service and commitment to the Institute and wish him well, resting on the back benches. We will also miss his after-dinner speeches and associated rather risqué jokes! Hopefully as an ex-Chairman and Vice-President he will continue to contribute to Institute affairs.

Succeeding Peter, we are delighted to announce and welcome the appointment of Chris Mills as our new President from January 2020. Chris is another long-standing member of IFM and his experience and skills make him a prime candidate for the role.



Starting in 1980 as a Biologist and Fishery Manager with the Salmon Research Trust of Ireland, Chris has since been: Technical Assistant to the Head of Fisheries and then Area Fisheries Manager with the National Rivers Authority; Area Manager and then Head of Wildlife, Recreation and Marine for the Environment Agency; Director of Environment Agency Wales; and subsequently an Independent Consultant.

Chris has held positions of: Board member of Cynnal Cymru, Member of the Climate Change Commission for Wales, Member of the Wales

Resilience Forum, Member of the House of Lords and Council Member of the British Trust for Ornithology. Currently Chris is on the RSPB Council for a second term, is a Director of the Angling Trust, Council Member of the Institute of Fisheries Management, Chair of Afonydd Cymru and a member of the Atlantic Salmon Trust's Honorary Scientific Panel.

So, Chris comes with a wealth of experience of leading environmental organisations and operating at a level of political influence which are ideal for the role of IFM President. We welcome Chris to the position and look forward to working with him to develop and implement the future direction of the Institute.

American Fisheries Society

Pete Spillett, attended this year's American Fisheries Society (AFS) in Reno, Nevada in the US.

The IFM and AFS have had a long standing relationship, with members from the IFM attending the AFS conference and vice versa. This year Jason Olive from the AFS' Fisheries Administration Section attended the Nottingham Conference and has contributed an article to this edition of FISH.

The Reno conference was somewhat overwhelming as the AFS had combined with the Wildlife Society of the US to host the event and 4,233 people attended, of which 25% were students. This was a bit of a one off, normally attendance might approach 2,000, and it was billed as the largest gathering of fish and wildlife professionals in history! There were innumerable split sessions, quite often some distance from each other, and so it was quite difficult to select the individual talks you wanted to get to. Delegates were generally based in two hotels (Casinos) over a mile apart, with one of them connected to the cavernous Conference Centre by a 'skybridge'. You can imagine the poster stands (111) and trade stalls (76) in the Exhibition Hall – wow.

I also attended two or three Plenary Sessions where over 300 people sat down in one meeting room. Sessions took place in the Conference Centre and in both hotels; there was a shuttle

bus service linking all the venues. It all worked surprisingly well but you really had to plan ahead!

I attended a very pleasant field trip to Pyramid Lake and a cutthroat trout hatchery, which got us out of the city, this was fascinating. It was also heartening to see so many fisheries professionals, especially students, all gathered together. Although we have our environmental/political problems with Brexit, the Yanks have their own cross to bear with Trump. However, despite the obvious concerns with environmental standards being lowered, the Americans were noticeably good humoured and optimistic.

Tidefest 2019

Iain Turner describes how in September, the IFM again participated in a weekend of events on the Thames, culminating with Tidefest on the Sunday. The weather was kind again and visitors were out in force making for two extremely busy days.

The weekend started with an event run by Thames 21, which took place outside the Tate Modern Gallery, Southwark. 'Firing on the foreshore' is part of the wider Totally Thames events and Steve Colclough has been helping at these events by providing seine netting demonstrations. This year he was assisted by Iain Turner and Paul Coulson who also manned the stand and explained to passers-by about the fish that were caught in the seine net and displayed in tanks. Visitors to the stand never ceased to be astounded at the variety of aquatic life that can be found in the Thames and the IFM team fielded questions all day from hundreds of visitors.



Tidefest 2019

The location changed on the Sunday to the Strand on the Green, Kew for Tidefest and again the weather was beautiful. Paul, Iain and Steve manned the stand and provided netting demonstrations throughout the day, with some of the more interesting captures transferred to the aquariums on the stand. As with the day before, there were hundreds of visitors to the IFM stand, all with lots of questions about the creatures that the team had caught. All agreed that the weekend's events had been a great success and are looking forward to more of the same next year. Tidefest has proved to be so popular that other parts of the country are going to replicate it and there is an event to be held on the Humber in August 2020.

Steve Colclough of the IFM joins Thames Estuary Partnership, Port of London Authority and others to highlight the improvements in the River Thames over the past 60 years.



In 1957 the River Thames through London was declared biologically dead. The retreat of industry from the city lifted the curse and today the river hosts more than 3,000 seals, 156 species of

fish, porpoises, dolphins and the occasional very confused whale. That's just the start. Over the next decade more than £4bn will be spent radically reducing the pollution that enters the river and improving the riverbank habitat. What can we expect to see in the Thames of the future? What impact will sea-level rise and increasing water temperature have on the insects, birds, fish and mammals that make their living along the river now and in the future?

Physicist, Helen Czerski of University College London is co-ordinating a large-scale study of the River Thames. For 'Costing the Earth' she cruises the river, meeting the engineers and naturalists determined to give Londoners a river to be proud of.

You can listen to the show on the BBC website <https://www.bbc.co.uk/programmes/m0009zcg>

IFM featured on BBC Countryfile when they visited Essex Wildlife Trust's Fingringhoe Wick nature reserve in Colchester

The Countryfile crew, including presenter Matt Baker, filmed at the Essex nature reserve during October to learn about and get involved with the important fish surveys that the Trust has been carrying out across Essex in partnership with the Institute of Fisheries Management, represented by the indomitable Steve Colclough. The conservation charity has been celebrating five years since the sea wall was deliberately breached at their Fingringhoe Wick nature reserve and has been eager to identify which species are using the newly created saltmarsh habitat during different times of the year. Wading deep into the chilly Colne Estuary, this was the first time a winter survey had been carried out at the reserve.

As well as getting involved with the fish survey at Essex Wildlife Trust's Fingringhoe Wick nature reserve, Matt Baker met with the Trust's volunteer River Wardens at a river stretch in Chappel to discuss the extensive river catchment work the charity has been carrying out and the innovative research that is now being used to identify the species that use the rivers in Essex, highlighting the importance of citizen science.



IFM Council reward Steve Colclough with a telescope for all his hard work, in particular, in his leadership of the marine specialist section and his input to Brexit and marine strategy consultations.

Training Report

We welcomed two new cohorts of students on to both the IFM Diploma and Award courses in September. We wish them all the best of luck over the next couple of years with their studies.

We were pleased to have all of our award winners in attendance at the 50th Conference. This year's awards went to

IFM Diploma - Dan Martin

IFM Award – Arnie Warsop

IFM Certificate – Tom Sayer



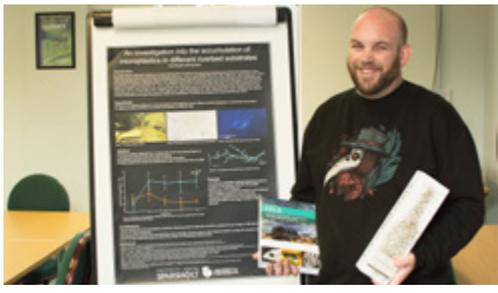
Training award winners with the Course Managers

We were pleased to see that this year's conference poster prize competition was won by a student from Sparsholt college. Tom Routh produced an informative and very well-presented poster on the accumulation of microplastics in different riverbed substrates. The college also had one other poster that was highly commended so it was a successful trip to Nottingham for them.

The Training Team will be out in force over the next few months with weekend workshops, field courses and short courses being delivered. We will also be releasing our newly edited *Stillwater Creation and Management* book as well as a suite of new advisory booklets. Keep an eye out for these hitting the shelves in the New Year.

Winner

Tom Routh from Sparsholt College wins Annual Conference poster competition



Institute of Fisheries Management - Subscription increases 2020.

At the 2019 Annual Meeting, the following subscription rates were agreed:

Category	Fee £
Registered Chartered (inc £50 CEnv fee) Fellow Chartered (inc £50 CEnv fee)	125.00
Registered Chartered over 60 (inc £50 CEnv fee) Fellow Chartered over 60 (inc £50 CEnv fee)	87.50
Registered non-Chartered Fellow non-Chartered	75.00
Registered non-Chartered over 60 Fellow non-Chartered over 60.	37.50
Associate	65.00
Associate over 60	32.50
Affiliate	40.00
Affiliate over 60	20.00
Subscriber	40.00
Subscriber over 60	20.00
Student	15.00
Corporate Small	95.00
Corporate Medium	125.00
Corporate Large	175.00
The following fees are unchanged:	
Joining fee	10.00
Initial application fee for CEnv	25.00
CEnv Professional Review Fee	50.00
First year CEnv fee	70.00

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For advertising in FISH or on our website, contact Iain Turner, advertising@ifm.org.uk

Breaking News...

Whale encounter shines a light on one of the world's most elusive species

A rare species of whale, the True's beaked whale (*Mesoplodon mirus*) was photographed in the Bay of Biscay last July says ORCA, the whale and dolphin charity.

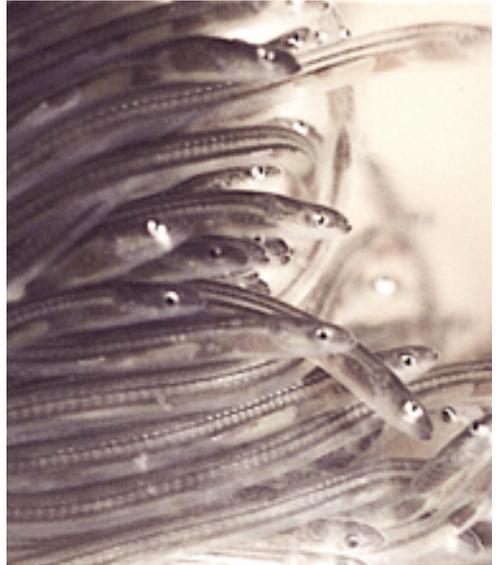


Climate change set to devastate regional fisheries and cause reef tourism revenue losses of over 90%



Adaptive management processes must be fast tracked by world leaders. Unabated climate change could cause coral reef tourism revenue losses of over 90%, while some West African countries are forecast to see fish stocks decline by 85%, according to a first-of-its-kind analysis into country-by-country climate impacts on key ocean sectors, published as part of the U.N. climate change conference (COP25) in Madrid.

New study uncovers 'magnetic' memory of European glass eels



A new study led by researchers at the University of Miami Rosenstiel School of Marine and Atmospheric Science and at the Institute of Marine Research in Norway found that European glass eels use their magnetic sense to "imprint" a memory of the direction of water currents in the estuary where they become juveniles. This is the first direct evidence that a species of fish uses its internal magnetic compass to form a memory of current direction. <https://www.sciencedaily.com/releases/2019/10/191017162216.htm>

Book Review

Eels: Biology, Monitoring, Management, Culture and Exploitation: Proceedings of the First International Eel Science Symposium

By Andy Don and Paul Coulson

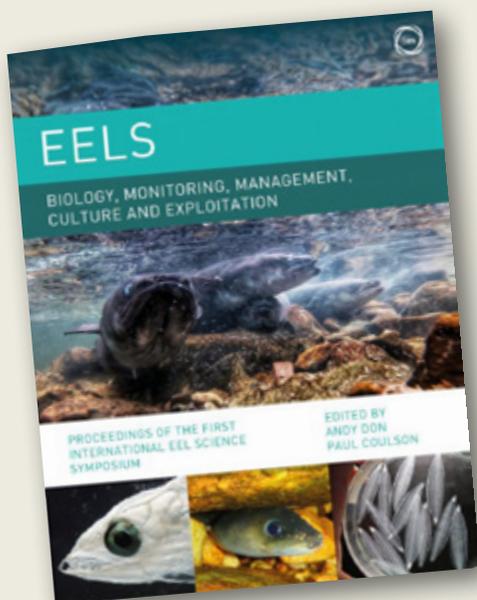
Darryl Clifton-Dey reviews this impressive book on eels.

Eels are funny things: to the uneducated school child they are slippery slimy snakes; to the unwitting angler they are the hooked beast that writhes and destroys their tackle; but once you learn a few things about them, you quickly become enthralled and then drawn in to their mysterious world.

It says something about the lure and fascination of eels that there can be several hundred top eel scientists in the world; that 80 can travel to London to present their work at a conference; and that they can fill a lecture theatre of colleagues eager to learn. You wouldn't get that for many other fish that for 90% of their life just lurk about in the mud all day.

This is a book that covers topics from the local to the global, and across the wide range of anguillid species; considering their history, ecology, biology, exploitation, mortality, health and research; and even providing you with the wherewithal to make a fortune by producing eels of your own, if you have the resources, determination and luck to follow the recipe.

The quality of the book is excellent, but you might expect that with a price tag of £150. This is clearly not cheap, but the money has been put to good use, with over 100 contributors from 20+ countries within its pages, with excellent quality photographs, diagrams and tables; the editors and contributors have clearly worked hard on this and it is to their credit. This book provides some of the cutting-edge science on eel management topics and will be a vital tool



for all those involved with management and restoration of stocks, as well as anyone else with an un-natural fondness for the little wrigglers.

Eels: Biology, Monitoring, Management, Culture and Exploitation: Proceedings of the First International Eel Science Symposium

Authors: Andy Don and Paul Coulson

Publisher: 5m Publishing

ISBN: 9781789180695

Hard back: 464 pages

Price: £150.00

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Members and their FISH



A young Steve Colclough with a carp

**Do you have a picture of
yourself with a fish?**

If so **FISH** would like to hear from you.

Send your images to: fish@ifm.org.uk