

Report on the Autumn 2016 meeting of Scottish Freshwater Group

The 97th meeting of the Scottish Freshwater Group took place on 27th October 2016 at the University of Stirling. The day's proceedings were chaired by Colin Bull (University of Stirling) and a mouth-watering suite of presentations were given. There was also a special announcement at the end of the day...please read on to find out more!

Anna Moss (University of Dundee) opened the morning session with an interesting overview of [ClimateXChange](#) adaptation indicators in the origin and policy context for Scotland's freshwaters. This work pulled together analysis of WFD data, site condition monitoring information and climate sensitive species distribution, provided by SEPA, SNH and CEH respectively. Anna concluded with a statement that a fit for purpose monitoring network is needed to deal with future environmental challenges.

Next up, Emma Wiik (University of Regina, Canada) brought an international element to the day with an intriguing presentation illustrating carbon dioxide fluxes in North America's hardwater prairie lakes. She found strong chemical connections between CO₂ and pH, and that primary production accounted for differences in seasonal patterns and between lakes. The biggest surprise came when Emma drilled down to diel lake data (e.g. Buffalo Pond) wherein CO₂ remained mostly below atmospheric level, even at night, with no evidence of day-night fluctuations.

Colin Bull (University of Stirling) gave a fascinating talk about the development of sampling approaches for assessing larval sea lamprey populations, using the River Teith Special Area of Conservation, the only Scottish SAC with 3 lamprey species, as a case study. Colin explained that different methods were trialled because sea lamprey are notoriously slippery little characters and renowned for being tricky to find as they tend to be more abundant in deeper waters (> 1m), less accessible for e-fishing and can yield patchy results when performed in shallower reaches. Airlift sampling was found to be a useful qualitative method for sea lamprey spatial distribution. Whilst nocturnal drift net sampling, a passive sampling method, both upstream and downstream of spawning pit locations was a more effective quantitative method, when intensively sampled at hourly intervals (with typical peak abundances recorded at midnight). Colin pointed out that together these two methods provided good samples of 0+ larvae but touched on the practicalities of confidently, and non-destructively, identifying small sea lamprey in the field, which can be particularly challenging with specimens <30mm. Future research will focus on morphology, DNA and pigment analysis to help differentiate these small individuals from other lamprey species: Figure 1.

Jenny McLeish (Edinburgh Napier University) covered her PhD research on invasive bullhead (*Cottus*) in Scotland. She discovered strong molecular similarities of the fish occurring at various riverine sites in the Lothian North Esk to English populations and also gave a comprehensive overview of parasite links with native fauna.

We then stopped for a bite to eat, informative chats around the lunchtime poster presentations and a fun freshwater themed quiz organised by Iain Sime (SNH).

The afternoon session resumed with a double act presentation, smoothly delivered by Kate Commins and Jo Girvan (Forth Fisheries Trust), who gave a synopsis of the River Life project in the Almond and Avon catchments to improve migratory fish passage and assess the effectiveness of

restoration work. The project will involve extensive partnership working, a suite of monitoring approaches (e.g. hydro-morphology, e-fishing, fixed point photography, river fly surveys), training opportunities and engaging with the local community. They are both extremely keen to return to the SFG in 2020 to report on project delivery.

Then IBIS student Martin Hughes (SCENE, University of Glasgow) took to the floor with a captivating whistle-stop tour of his PhD thesis on the ecology of ferox trout: Figure 2. Martin described a common garden experiment conducted in a controlled environment where ferox trout were raised with brown trout, thus any differences should be due to inherited traits. During the early developmental stages there was little difference to report between the two fish populations. However as inherently bigger fish, the ferox trout produced bigger eggs, containing bigger yolk sacs, a recognised survival advantage. Furthermore, Martin revealed that lipid maturation was delayed and differences in head shape became apparent. Fish behaviours were also extremely important and video footage of 24 hr tank experiments showed evidence of significant colour change and dominance by ferox trout, consistently in the 28 trials conducted. This work helped us to understand how ferox populations maintain genetic isolation in lakes where they coexist with brown trout.

A welcome newcomer to the SFG, Jeff Gibbons (Marine Scotland) went onto discuss wild fisheries reform in Scotland. The strategy aims to protect, develop and enhance social and economic benefit from Scotland's freshwater fish and fisheries; and to promote access to fishing opportunities and participation.

It was soon time to spring back to Rowardennan and reflect on the special SFG gathering held at SCENE earlier in the year. It was my turn to present the outcomes of the Bioblitz (including visits to Loch Lomond, Dubh Lochan and two nearby riverine sites) and I did this in a Harry Potteresque style, which admittedly is probably one of the most creative and fun talks I've ever given! The work contributed to local LLTNP freshwater biodiversity recording and it is envisaged a collaborative paper will be produced with all 34 participating SFG members' named as co-authors.

Finally, Nigel Willby (University of Stirling) delivered both a heart-felt and very entertaining presentation, on Laurence Carvalho's behalf (who was incapacitated at the time), as he handed over SFG leadership to me: Figure 3. I then said a few words about our future – my vision is to sustain the longevity and vitality of the Scottish Freshwater Group, enrich the cultural benefits and invaluable connections which we all receive from being part of this wonderful community: Figure 4. This also means the position of SFG Publicity Officer is now vacant, an exciting opportunity for someone! I'm keen to hear from a dynamic person(s) with a passion for communication and other roles will be considered in due course. If you'd like to be involved in moving the SFG forward, please get in touch.

Afterwards, we visited the local pub to continue our celebrations.

The next SFG meeting will take place on Thursday 20th April at the University of Stirling with the theme of "*Connecting people with the freshwater environment*". If you would like to receive further details please email SFG Coordinator Pauline Lang (pauline.lang@sepa.org.uk) or visit the SFG homepage (<http://www.ceh.ac.uk/scottish-freshwater-group>). It is now also possible to receive SFG notifications via Facebook ([Scottish Freshwater Group](#)) or follow us on Twitter [@Scottish_FwGrp](#).

Pauline Lang, SFG Coordinator

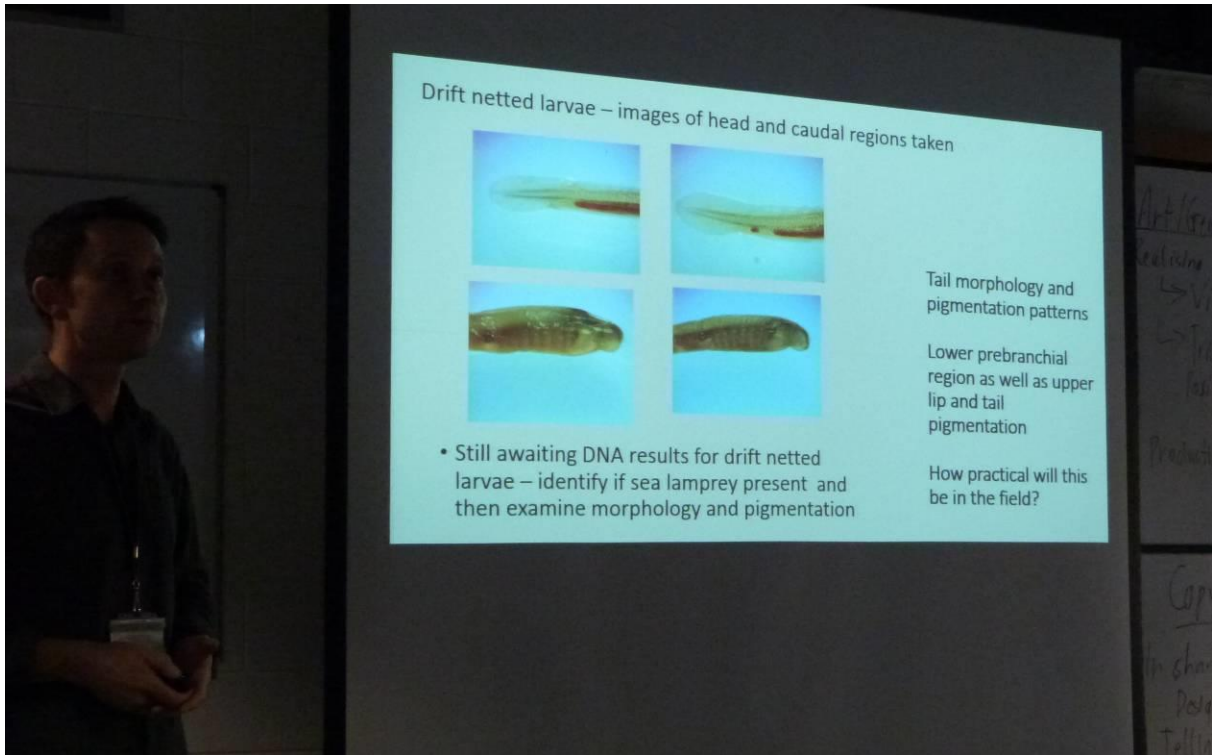


Figure 1. Colin Bull outlines new approaches for assessing larval sea lamprey populations in UK SACs [photo credit – Pauline Lang]



Figure 2. Martin Hughes enthusiastically delves into the ecology of ferox trout, *Salmo ferox* [photo credit – Pauline Lang]



Figure 3. SFG leadership handover slide kindly prepared by Laurence Carvalho (CEH) and entertainingly presented by Prof Nigel Willby [photo credit – Colin Bull]



Figure 4. Throwing myself into a new role as SFG Coordinator – what the SFG means and envisioning our future direction [photo credit – Colin Bull]