the cbec news stream

Issue 3, Autumn/Winter 2013

Happy Christmas from all of us at cbec! Welcome to the third issue of our newsletter: It includes a small sample of the work we have been up to this autumn, as well as a diary of upcoming events. Our newest employee, Tommy McDermott, has also shared his thoughts on the role of eco-morphology in river restoration. We are always eager to hear your views or comments: email us at news@cbecoeng.co.uk or visit our website http://www.cbecoeng.co.uk/news-newsletter.php.

You can now also follow us on Twitter, Facebook and LinkedIn to receive our year round 'News Stream' of interesting water-related news. Finally, please feel free to forward to anyone who may be interested!

Recent and Upcoming Events in 2014

cbec had a busy conference schedule this year, and next year is filling up fast. We look forward to seeing you in 2014!

11th - 13th September 2013

5th European River Restoration Conference: 'Celebrating successes and Addressing Challenges', ECRR, Vienna, Austria. Our MD, Dr Hamish Moir, gave a very well-received presentation discussing an application of the Process Restoration Philosophy on a Scottish upland river. Our week in Vienna was inspiring – so much excellent work being done across Europe to improve our rivers.

22nd - 24th October 2013

Annual Conference, Institute of Fisheries Management: 'What can fisheries do for us?, Cardiff. Our new Senior Project Manager, Tommy McDermott, gave a fascinating talk on 'Letting the river build habitat: the sustainable ecological benefits of applying the process restoration philosophy in river restoration'.

22nd November 2013

Catchment Based Approach (CaBA) Conference, Fountains Abbey, North Yorkshire. Our Business Development Manager, Elizabeth Taeed, ran our trade stand and met a range of river scientists, discussing the practicalities of implementing CaBA on a day-to-day basis.

9th – 13th December

American Geophysical Union (AGU) Fall Meeting, San Francisco. Our Managing Director Dr Hamish Moir co-convened a session on 'Biophysical Linkages In Rivers' at the world's largest earth science conference (with over 23,000 delegates this year!). There were many other very interesting sessions relating to river processes, river restoration and instream ecology, with hydrodynamic modelling apparently becoming an almost essential tool in these areas.

20th March 2014

RAFTS & ASFB Annual Conference, location TBC. We will be attending this year's Rivers and Fisheries Trusts of Scotland and Association of Salmon Fishery Boards annual conference, though details are still be announced. You can keep up to date on the event HERE.

7th – 8th May 2014

River Restoration Centre Annual Conference 2014: 'River Restoration: Delivering Multiple Benefits', RRC, Sheffield Hallam University. We will have our trade stand, and Hamish Moir will be presenting on our latest work in catchment-scale restoration in Scotland. The programme has been released, and this event promises to be the best yet! More information available HERE.

Visit our website for the latest calendar: www.cbecoeng.co.uk/news.php.

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Case Study - Cringletie and Lake Wood

Between July 2011 and September 2013 we worked with the Tweed Forum to research and develop the restoration design on the Cringletie, as selected in an earlier cbec study on restoring the Eddleston Water. At Cringletie, we conducted extensive topographic surveying and 2D hydrodynamic modelling to determine the optimal design for the realigned reach. We then produced a series of AutoAD (Civil 3D) engineering design drawings and supervised the construction of the work which was successfully completed in September 2013.

As well as delivering the work on the Cringletie, we implemented restoration designs on a second reach, at Lake Wood, also selected in the earlier Eddleston Water study. We conducted detailed surveys of the study reach and modelled it to determine flood risk and suitable channel geometry. We then produced a series of engineering designs in AutoCAD (Civil 3D) to guide the construction. cbec also prepared a method statement to meet SEPA's licensing requirements, staked out the site, supervised construction in October 2013, and are regularly surveying the channel post-implementation.

Check out the Before, During and After photos at Cringletie. The river is now running across the meadow, rather than in the straightened channel to the side:

New Faces at cbec

We are very pleased to welcome Tommy McDermott to cbec, who is joining us as our Senior Project Manager. Tommy started in September and has been a wonderful addition, improving our organisation of projects and greatly increasing our capacity. Prior to joining cbec, Tommy spent three years at APEM Ltd where he worked on morphological assessment methodologies, leading the development of APEM's morphology walkover and conducting numerous river habitat studies on UK rivers. He has undertaken a number of restoration appraisals across the UK and is an avid proponent of a more naturalistic restoration method based on facilitating the return of natural catchment processes.

Detailed biographies of our new staff can be found on our website at:
www.cbecoeng.co.uk/news-newstaff.php

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Feature: Thoughts on Eco-Morphology and River Restoration
by Tommy McDermott

The integration of aquatic ecology with fluvial geomorphological theory is a relatively new area of science and is often encapsulated within the catch-all term "eco-morphology". Although collaborations have been common, the increasing effort to understand the role played by physical catchment (geomorphological) processes in spatial and temporal patterns of ecological quantity/ quality of freshwater environments has led to the formalisation of the field through attempting to establish the pathways and drivers that link these two constituent components.

Recently, the underlying principles of eco-morphology have gained traction as improvements in water quality have not led to the expected ecological benefit. Consequently, efforts have turned to investigating the distribution, quality and abundance of key habitats and how they are affected by human changes to the underlying physical mechanisms that allow a river to create these habitats. However, unlike the potentially instantaneous impact from the gross degradation of water quality, direct changes to morphological structure do not always immediately influence ecological communities and the linkage between geomorphology and ecology is often quite subtle. Of key importance is the requirement to study these interactions at mutually appropriate and meaningful spatial and temporal scales; this has proved to be a real challenge since both ecological and physical processes operate over a nested hierarchy of scales, confounding simple 'cause and effect' relationships.

As a case in point, the rate of evolution and change of instream habitats is often as important as the absolute abundance of habitats. Newly formed habitats are potentially more productive than older habitat areas (e.g. salmonids may preferentially select 'new' gravel beds to spawn, with increased embryo survival rates in recently deposited gravels) and, by altering the controlling physical processes, human activities can lead to a slow decline in diversity and productivity.

We firmly believe that understanding natural catchment processes is a key component of any river restoration strategy. This understanding must also be supported by recognition that physical processes are intrinsically linked to sustainable river communities, and the two are connected by complex, multi-scale interactions. Through application of eco-morphological theory to all aspects of river management, our work is grounded in the most current scientific principles and tailored to encourage sustainable ecological benefit over short-, medium- and long-term timescales.

What is your opinion on eco-morphology and river restoration? Comment by email newsletter@cbecoeng.co.uk or our Facebook: www.facebook.com/cbececoengineeringUK

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A Reminder of cbec...

We focus on innovative and sustainable solutions for the water resources industry. Our research and experience enable us to combine the demands of flood-risk reduction with ecosystem enhancement and other considerations such as agricultural and urban development.

We couple this with cbec's extensive experience in a broad range of past projects: from total management of large, multi-disciplinary, multi-stakeholder water resources projects within one of our specialised Focus Areas; to providing specific modelling, surveying or data analysis within an individual Technical Service.

Focus Areas

Our services can be tailored to each project's requirements and can be used separately or in conjunction with our other offerings.

Flood Risk Management

We combine the needs of flood risk management, ecosystem enhancement, urban development and agriculture to develop multi-objective, holistic, and sustainable solutions to floodplain and channel management issues.

River Restoration

We use advanced hydrological, hydrographical and topographical survey techniques. These combine with the latest hydrodynamic and ecological modelling methods to enhance floodplains without impacting related factors.

Diffuse Pollution Control

As pioneers in the field of hydromodification planning and design, we are influencing the way water sensitive design is incorporated into new and infill development. We cover urban and rural diffuse pollution analyses, planning and design.

Fisheries Management

Our fisheries services include habitat surveys, barrier assessment, fish pass and screening evaluation, design, placement of hydraulic structures and experimental fieldwork - for various species including salmonid and coarse fish.

Hydropower Support

We perform a variety of desk-based and field services to support the development of hydropower projects, licensing and applications, post-commissioning monitoring, surveys, assessments and installations.

Technical Services

We provide a range of technical services, available both individually or in combinations applied to a 'Focus Area'.

Field Surveying

Our services include bespoke fluvial audits, discharge gauging, water quality monitoring, long-term meterological monitoring, topographic and bathymetric surveying, sediment characterisation and transport monitoring and many more.

Hydrology

For years, our staff have applyied hydrological theory and practice, pioneering new methodologies and techniques. We conductt hydrologic modelling assessments investigating drainage, runoff, flood risk, water budgets and so forth.

Hydraulics

Applied analyses range in complexity from simple spreadsheet models to complex 3D computational fluid dynamics simulations. These include bridge scour, fish swimming and passage, tidal and fluvial sediment transport and water quality.

Geomorphology

We conduct geomorphic reconnaissance and detailed analyses. We use our own Moir Fluvial Audit methodology and offer geomorphic interpretation and assessment, historical channel analysis, stream power assessment, habitat and GPS mapping.

Design

Our services cover streams, rivers, estuaries and tidal zones, including channel realignment, wetland design, river restoration and catchment plans. We also offer SUDS, SuDS, and modelling-based habitat design.

Feel free to contact us for more information, past experience, for quotes or just to discuss your preliminary ideas.

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