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Sarah Lynch

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About

Title of PhD: Establishing the Environmental Risk of Contaminated Sediments

Supervisors: Dr Lesley Batty (/staff/profiles/gees/batty-lesley.aspx) and Dr Rebecca Bartlett (/staff/profiles/gees/bartlett-rebecca.aspx)

Sarah is undertaking a NERC funded PhD to establish the environmental risk of metal contaminated river sediments. As a result of climate change researchers predict longer dryer periods followed by more frequent and longer flood events. These wetting and drying cycles are likely to change redox and pH conditions in metal contaminated river sediments resulting in biogeochemical changes. Sarah's research will determine the response of metal contaminants in the sediments to changing hydrodynamics. She will determine whether metal species changes and how this alters bioavailability of metals and therefore the environmental risk these metals pose. She will also determine how responses change for various sediment types. Sarah's research will be laboratory based and involve various techniques such as Sequential Extraction (SEQ) and Diffusive Gradients in Thin Films Technique (DGT).

Qualifications

BSc. Biological Sciences (Microbiology) (1st Class Honours)

MSc. Pollution and Environmental Control (Distinction)

Biography

Sarah has a 1st class BSc Hons Biological Sciences (Microbiology) from Middlesex University. Her final year dissertation was based at Barn Elms Wildfowl and Wetland Trust, London, to study the perch, Perca Fluviatilis, population with the aim of understanding their dynamics and how they were linked to ecological processes in the main shallow lake over a six year period (using additional preserved specimens and old records kept by my lecturer). This led to Sarah's interest in Freshwater. Her tutor went on to offer her the position of Publicity Officer at the London Freshwater Group.

Having enjoyed the ecological/environmental side of her degree she embarked on a NERC funded MSc (Pollution and Environmental Control) at the University of Manchester. This was a multi-disciplinary course which included several environmental assessments, to determine levels of metal contamination and their effects on the environment. A research methods course involved learning theory for analytical techniques such as; HPLC-Mass spectrometry and ICP-mass spectrometry and ICP-AES.

Sarah's dissertation compared the effects of acid mine drainage (AMD) along the Southern Afon Goch, Anglesey before and since the Parys Mountain mine dewatering in 2003. This included determination of metal concentrations downstream from the mine and the effects on the benthic macroinvertebrate community structure during a dry period and after a period of heavy rain. It was found that an area of natural wetland was now the main sink for metals. Downstream from the wetland area metal concentrations within the water column had fallen markedly compared to prior to dewatering and are now within EQS standards. However, a study of the behaviour of metals within the sediments during wet and dry periods was not within the scope of the project. This dissertation, combined with other modules during her MSc such as Geomicrobiology, peaked Sarah's interest in metal pollution brought about through mining, biogeochemical processes occurring within the sediment and bioavailability of metals, hence her choice to study this within her PhD.

Research

Research interests

Metal contaminated river sediments. Biogeochemical processes occurring in the sediments as a result of changing hydrodynamics.

Other activities

- Publicity officer for the London Freshwater Group. www.londonfreshwatergroup.co.uk (http://www.londonfreshwatergroup.co.uk/)
- Meeting coordinator for the North West England and West Midlands Freshwater Group

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