

CV : Rupert Gordon Perkins, PI: Quantifying intertidal biostabilisation: is this ecosystem function of practical importance in coastal management?

Personal details

Date of birth:	14 th May 1966	Nationality:	British.
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Academic Employment History

Cardiff University Sept 2004 – Current. Senior Lecturer in Marine Biosciences.

My research encompasses marine and freshwater micro and macro algal productivity (NERC UKOARP project) and photophysiology and the role of microorganisms in key ecosystem functions, including polymer production and sediment biostabilisation. My work on marine photophysiology primarily focuses on benthic microalgal biofilms including recent work on ice algae (Yallop et al. 2012 ISME) and I also work on seagrasses and macroalgae. I am Director of the Marine Geography Degree Scheme, currently teach on 8 undergraduate (module leader on 6).

University of St. Andrews, June 2001 – July 2004. Senior Research Fellow (NERC funded)

This project used state of the art in-line laser holography and high-resolution video to monitor sediment erosion processes and the nature of the eroded floc material. Results showed that benthic algal mediation of erosion processes included increased sediment stability through algal polymer production and increased size of eroded floc and greater deposition rates.

University of Essex, January 1999 – January 2001. Senior PDRA (NERC funded)

Application of chlorophyll fluorescence to measurements of benthic algal primary production in intact biofilms. The use of various fluorimeters, including a high-resolution fluorescence imager, enabled careful examination of methodology with respect to vertical migration of algal cells within a biofilm and associated difficulties with data interpretation (unknown and variable light field, variation in distance between probe and microalgal cells. Results have greatly improved the interpretation of fluorescence data. In addition novel patterns in primary production were determined, demonstrating diel, as opposed to the accepted tidal rhythms.

Education

Ph.D. Phosphorus limitation in Alton Water Reservoir, Suffolk, UK: University of Essex, October 1994 – October 1997. Three publications resulting from the project. CASE funded by Anglian Water.

BSc. (Hons) 1st Class, Environmental Biology: University of Essex, October 1991 – July 1994

Professional Affiliations and Wider Mission Activities

British Phycological Society: Council Member for 4 years, now permanent member as Meetings Secretary. Awards and Training Committee member for 4 years

Institute of Marine Engineering Science and Technology: Executive Committee member for the South Wales branch for 2 years (stepped down April 2009).

Editorial Board Member – international journals: Marine Policy, 2008-current; European Journal of Phycology, 2012-current.

External Research Funding since 2010

1. National Environment Research Council March 2010 – **77.4K GBP** approx. PI supervising a NERC Ocean Acidification Directed PhD studentship in collaboration with Bristol University and Natural History Museum, London.
2. FP7 – International Research FP7-PEOPLE-2010-IRSES: BIOVADIA (269294) – **185K EURO** Co-I, work package leader regarding cell photophysiology.
3. CEFAS January 2010 – **29.3K GBP**. PI supervising research on Corallina temperature response.
4. CEFAS July 2010 – **10.7K GBP**. PI researching ecotoxicological effects of chlorine on Corallina macroalgae.

Research Supervision

One completed PDRA, 4 completed PhD studentships, all passed with minor corrections. Currently have 6 PhD studentships: Mr Sebastien Meis, submitted; Miss Naomi Ginnever, submitted; Miss Monica Demitriou, Year 2pt, Mr Chris Williamson, Year 2; Ms Sarah Lee, Year 2; Mr Matt Dray, Year 3.

Publication Record 2007 - 2012

1. Rupert G Perkins, Jean- Luc Mouget, Jacco C Kromkamp, John Stolz, R Pamela Reid. 2012. Modern stromatolite phototrophic communities: a comparative study of procaryote and eucaryote phototrophs using variable chlorophyll fluorescence. *FEMS Microbiology Ecology*. DOI: 10.1111/j.1574-6941.2012.01421.x
2. Marian L Yallop, Alexandre M Anesio, Rupert G Perkins, Joseph Cook, Jon Telling, Daniel Fagan, James MacFarlane, Marek Stibal, Gary Barker, Chris Bellas, Andy Hodson, Martyn Tranter, Jemma Wadham, Nicholas W Roberts. 2012. Photophysiology and albedo-changing potential of the ice algal community on the surface of the Greenland ice sheet. *The ISME Journal*. DOI: 10.1038/ismej.2012.107
3. Spears, B.M., Carvalho, L., Perkins, R.G., Kirika, A. and Paterson, D.M.. 2012. Long-term variation and regulation of internal phosphorus loading in Loch Leven. *Hydrobiologia*. DOI: 10.1007/s10750-011-0921-z
4. S Meis, S., Spears, B.M., Maberly, S.C., O'Malley, M.B. and Perkins, R.G. 2012. Sediment amendment with Phoslock_ in Clatto Reservoir (Dundee, UK): Investigating changes in sediment elemental composition and phosphorus Fractionation. *Journal of Environmental Management* 93: 185 -193.
5. Perkins, RG, Kromkamp, JC, Serôdio, J, Lavaud, J, Jesus, B, Mouget, J-L, Lefebvre, S, Forster, RM. 2010. The application of variable chlorophyll fluorescence to microphytobenthic biofilms. In *Chlorophyll a fluorescence in aquatic sciences: methods and applications*, Edited by Suggett, D., Prasil O., & Borowitzka M. *Developments in Applied Phycology Vol 4: 237-275*. Springer, UK. ISBN 978-90-481-9267-0.
6. Perkins, R.G., Lavaud, J., Serôdio, J., Mouget, J-L.; Cartaxana, P., Rosa, P., Barille, L., Brotas, V., Jesus, B.M. 2010. Vertical cell movement is a primary response of intertidal benthic biofilms to increasing light dose. *Mar. Ecol. Prog. Ser.* 416: 93 – 103.
7. De Raedemaeker, F., Miliou, A., Perkins, R.G. 2010. Fish community structure on littoral rocky shores in the Eastern Aegean Sea: effects of exposure and substratum. *Est. Coast. Shelf Sci.* 90: 35 – 44
8. Spears, B.M., L. Carvalho, R. Perkins, M.B. O'Malley & D.M. Paterson. 2008. An assessment of the contribution of the epipelton to the total sediment microalgal biomass in a eutrophic shallow lake (Loch Leven, Scotland). *Hydrobiologia* 646: 281 - 293.
9. Hennige SJ, Smith DJ, Perkins R, Consalvey M, Paterson DM, Suggett DJ 2008. Photoacclimation, growth and distribution of massive coral species in clear and turbid waters. *Mar Ecol Prog Ser.* 369: 77-88.
10. Bryan M. Spears, Laurence Carvalho, Rupert Perkins, David M. Paterson. 2008. Effects of light on sediment nutrient flux and water column nutrient stoichiometry in a shallow lake. *Water Research* 42: 977 – 986.
11. Jesus, B., Perkins, R. G., Mouget, J.-L. 2008. Detection of diatom xanthophyll cycle using spectral reflectance. *J. Phycology.* 44: 1349-1359.
12. Mouget, J.L., Perkins, R.G. and Lefebvre, S. 2008. Migration or photoacclimation to prevent photoinhibition and UV-B damage in marine microphytobenthic communities? *Aquat. Microb. Ecol.* 52: 223-232.
13. Perkins, R.G., Kromkamp, J., and Reid, R.P. 2007. How do stromatolite photosynthetic communities tolerate natural sand burial events? The roles of light and oxygen in photochemical reactivation. *Mar. Ecol. Prog Ser.* 349: 23-32.
14. Kromkamp, J.C., Perkins, R., Dijkman, N., Consalvey, M., Andres, M. and Reid, R.P. 2007. The effect of burial on stromatolite photosynthetic activity: the role of oxygen. *Aquatic Microbial Ecology* 48: 123-230.
15. Ball, A.S., Nedwell, D.B. and Perkins, R.G. 2007, Oxidation of hydrogen sulphide in sour gas by *Chlorobium limicola*. *Enzyme Microbial Tech.* 41: 702-705.
16. Spears B.M., L. Carvalho, R. Perkins, A. Kirika, and D.M. Paterson. 2007. Sediment P cycling in a large shallow lake: spatio-temporal variation in phosphorus pools and release. *Hydrobiologia* 584:37-48.