University of Birmingham

Dr Ian Boomer

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About

Ian is a micropalaeontologist who studies calcareous benthic microfossils, particularly ostracods (microscopic Crustacea), but also foraminifera, to reconstruct past environments. His work spans much of the last 200 million years of earth history, with projects as diverse as the late-glacial history of lakes in Scotland and the vast inland seas of the Ponto-Caspian region, to sea-level change studies in the salt-marshes of the UK.

Much of his work has focussed on the history of the early Jurassic seas of NW Europe, but his work has also led him to investigate the deep ocean sediment cores from the Indo Pacific. The same skills are also put to good use helping unravel the environments associated with geoarchaeological projects in the UK, Qatar and Kenya.

He is the Course Director for the **MSc in Applied & Petroleum Micropalaeontology (http://www.birmingham.ac.uk/postgraduate/courses/taught/gees/micropalaeontology.aspx)** and manager of the School's **stable-isotope facility, SILLA (http://www.birmingham.ac.uk/facilities/silla/index.aspx)** .

Qualifications

- 1989 - PhD in Early Jurassic ostracods form North-west Europe - University College London
- 1985 - MSc in Micropalaeontology - University College London
- 1984 - BSc - University of Leicester

Biography

- 1984 BSc, University of Leicester
- 1985 MSc in Micropalaeontology, University College London
- 1989 PhD in Early Jurassic ostracods form north-west Europe, University College London
- 1989 to 1992 Leverhulme-funded post-doc at UEA, Norwich
- 1992 to 1994 NERC-funded ODP post-doc University of Wales, Aberystwyth
- 1994 to 1997 NERC-funded post-doc at UEA, Norwich
- 1998 to 2004 University of Newcastle, Teaching and Research position
- 2005 to present University of Birmingham, GEES

Teaching

I am currently the Module leader for ESC M213 Environmental and Evolutionary Palaeobiology . I also teach on the 3rd/4th year Micropalaeontology undergraduate module. I lead a second year field trip to the Wessex Basin (Dorset Coast) and co-teach sedimentary environments during the 3rd year fieldtrip to Spain.

I teach ESC M500 Ostracoda and co-ordinate ESC M507, the Micropalaeontology Project on the **MSc in Applied & Petroleum Micropalaeontology (http://www.birmingham.ac.uk/postgraduate/courses/taught/gees/micropalaeontology.aspx)** and am administrative leader on a further 2 modules.

Postgraduate supervision

I am currently the first supervisor for Azmin Azri on her PhD studying the micropalaeontology of early Jurassic palaeoenvironments from Northern Ireland.

I am also co-supervising Nursufiah Sulaiman (2nd yr) and Frederike Wittkopp (1st yr) with Tom Dunkley Jones and James Bendle respectively.

Doctoral research

PhD title My PhD was entitled "The temporal and spatial distribution of Early Jurassic Ostracoda from North West Europe"

Research

Research group

- Geosystems

Research interests

- High-resolution studies of climate change using Ostracoda
- Late Quaternary history of the Ponto-Caspian and Aral Sea regions
- Late Triassic to early Jurassic environments of NW Europe
- Geoarchaeology (landscape and environmental change)
- Stable-isotope records of past environmental change

Current / recent research

Much of Ian Boomer's research focuses on a group of calcareous microfossils, the Ostracoda (or ostracods). An ostracod can be thought of as a microscopic shrimp-like organism (usually less than 1mm long) living inside a bi-valved carbonate shell or carapace. These little bugs have been around for the last 500 million years and live today in just about every aquatic environment. Their fossils can be used to date rocks, record major changes in the world's oceans, trace climatic changes such as sea-level rise amongst other uses and even track pollution. They are still alive today (with thousands of living species known) and can be found swimming or crawling, often in great numbers, everywhere from garden ponds to coastal rock pools, rivers, lakes and oceans. One group has even learnt to survive out of water.

Ian Boomer has a particular interest in the geological record of ostracods around the period of the latest Triassic and Early Jurassic (about 200-174 million years ago during one of the 'Big-Five' Phanerozoic extinction events). Another part of his research focuses on using these fascinating little bugs to find out more about the rapid, global climatic changes that occurred between about 15,000 and 10,000 years ago. His studies concentrate on a region of the world that encompasses the great inland seas of SW Eurasia, the Aral, Caspian and Black seas.

He has also studied ostracods form the deep sea of the Pacific ocean investigating the evolution of those faunas that lived on the tops of underwater mountains (often extinct undersea volcanoes) and how those faunas evolved in isolation from the even deeper water environments of the surrounding sea floor.

Geoarchaeology

Ian is also involved with a number of archaeological projects in the north east of the UK (**Bamburgh Research Project (http://www.bamburghresearchproject.co.uk/)** , **Howick Project (http://www.ncl.ac.uk/howick)** , **Low Hauxley, "Rescued from the Sea") (http://www.archaeologicalresearchservices.com/projects/low-hauxley)** where he is involved in various aspects of geoarchaeology, landscape and sea-level change, sedimentary coring and description and analysis of biological remains.

Water quality and isotope studies

Ian Boomer is currently employed as a Research Fellow in GEES, University of Birmingham, as the Laboratory Manager for the **Stable-Isotope Laboratory (SILLA) (/facilities/silla/index.aspx)** which he helped establish and was commissioned in December 2005.

The laboratory focuses on the stable-isotope analysis of hydrological, biological and geological samples from a wide range of projects, including cave systems, rivers, lakes, coastal sea-water and deep ocean settings.

Publications

Selected recent publication from the last 4 years

1. Harun, S., Baker, A., Bradley, C., Boomer, I. & Hamilton, R. 2014. Characterisation of dissolved organic matter in the Lower Kinabatangan River, Sabah, Malaysia. *Hydrological Processes*. Accepted.
2. Williams, M., Wilkinson, I.P, Taylor, J., Whitbread, I., Stamp, R., Boomer, I., Yates, E. & Stocker, C. 2014. Microfossil-determined provenance of clay building materials at Burrough Hill Iron Age hill fort, Leicestershire, England. *Journal of Archaeological Science*. Accepted.
3. Mischke, S., Almogi-Labin, A., Al-Saqarat, B., Rosenfeld, A., Elyashiv, H., Boomer, I., Stein, M., Lev, L. & Ito, E. 2014. An enlarged ostracod-based conductivity transfer function for climate reconstruction in the Levant. *Quaternary Science Review*. Accepted.
4. Tudryn, A., Giannesini P.J, Guichard F., Badaut-Trauth, D., Tucholka, P. & Boomer, I. 2014. The role of iron minerals in laminae formation in Late Pleistocene sediments of the Caspian Sea. *Quaternary International*. **http://dx.doi.org/10.1016/j.quaint.2013.04.024 (http://dx.doi.org/10.1016/j.quaint.2013.04.024)** .
5. O'Callaghan, M.J., Hannah, D.M., Boomer, I., Williams, M., Sadler, J.P. 2013. Responses to river inundation pressures control prey selection of riparian beetles. *PLoS ONE* **8** (4): e61866. doi:10.1371/journal.pone.0061866.
6. Lord, A.R., Boomer, I., Whittaker, J.E. & Brouwers. E.M. 2012. Ostracods as indicators of Quaternary environmental change. *In*: Horne *et al.,* (Eds) Ostracoda as proxies for Quaternary climate change. *Developments in Quaternary Sciences*. Elsevier. pp.37-45.
7. Boomer, I.2012. Ostracods as indicators of climatic and human-influenced changes in the Late Quaternary of the Ponto-Caspian region (Aral, Caspian and Black seas). *In*: Horne *et al*., (Eds) Ostracoda as proxies for Quaternary climate change. *Developments in Quaternary Sciences, 17*. Elsevier. pp.205-214.
8. Marshall, C., Thomas, A.T., Boomer, I.&Ray, D.C.2012. High resolution d^{13}C stratigraphy of the Homerian (Wenlock) of the English Midlands and Wenlock Edge. *Bulletin of Geosciences,* **87**, 669–679.
9. Cramer, B.D., Condon, D.J., Söderlund, U., Marshall, C., Worton, G.J., Thomas, A.T., Calner, M., Ray, D.C., Perrier, V., Boomer, I., Patchett, P.J. & Jepsson, L. 2012. U–Pb (zircon) age constraints on the timing and duration of the Wenlock (Silurian) palaeocommunity collapse and recovery during the 'Big Crisis'. *Geological Society of America Bulletin*2012; 124, (11-12);1841-1857. doi: 10.1130/B30642.1.
10. Cabral, M.C., Lord, A.R., Boomer, I.D., Loureiro, I.M, & Malz, H. 2012. The new ostracod (Crustacea) genus *Tanycythere*: first results from the Portuguese Jurassic. *Kölner Forum für Geologie und Paläontologie*, **21**: 6-7.
11. Wheeley, J., Smith, M.P. & Boomer, I.2012. Oxygen isotope variability in conodonts: implications for reconstructing Palaeozoic palaeoclimates and palaeoceanography. *Journal of the Geological Society of London*. **169:** 239-250.
12. Boomer, I., von Grafenstein, U. & Moss, A.G. 2012. Late Glacial-Holocene environments of the Assynt region: a preliminary insight from deep-lake coring. *Proceedings Geologists Association.* 123 (1): 109-116. **doi:10.1016/j.pgeola.2011.07.006 (http://dx.doi.org/10.1016/j.pgeola.2011.07.006)** .
13. Robertson, S., Hubbard, B., Coulson. H.R. & Boomer, I. 2011. Physical properties and formation of flutes at a polythermal valley glacier: Midre Lovenbreen, Svalbard. *Geografiska Annaler, Series A. Physical Geography*, **93A**: (2) 71-88.
14. Maurer, G., Portugal, S.J., Boomer, I. & Cassey, P. 2011. Avian embryonic development does not change the stable isotope composition of the calcite eggshell. *Reproduction, Fertility and Development*. **23**: 339-345. doi:10.1071/RD10138.
15. Crossman, J., Bradley, C., Milner, A. & Boomer, I.2011.Water flow dynamics of groundwater-fed streams and their ecological significance in a glacierized catchment. *Arctic & Alpine Research*. **43** (3): 364-379.
16. Brown, T., Bradley, C., Grapes, T. & Boomer, I.2011. Hydrological Assessment of Star Carr and the Hertford Catchment, Yorkshire, UK. *Journal of Wetland Archaeology* **11**, 36–55.

17. Boomer, I., Guichard, F. & Lericolais, G. 2010. Late Pleistocene to Recent ostracod assemblages from the western Black Sea. *Journal of Micropalaeontology*. **29**: 119-133.

18. Gearey, B.R., Fletcher, A., Fletcher, W.G., Campbell, S., Boomer, I., Keen, D., Reed, J. & Tetlow, E. 2011. From Site to Landscape: Assessing the value of geoarchaeological data in understanding the archaeological record of Domuztepe, eastern Mediterranean, Turkey. *American Journal of Archaeology,* 115 (3): 465-482.