CURRICULUM VITAE



DR MICHAEL C. BELL BSc PhD

SPECIALISMS

26 years of experience as research scientist, 20 years in fisheries. Wide experience of research into assessment, monitoring and management of sustainable fisheries (particularly shellfish), and ecological consequences of marine fisheries and renewable energy developments.

EDUCATION AND PROFESSIONAL AFFILIATIONS

1992	PhD. "The ecology of the gravel beach amphipod *Pectenogammarus planicrurus* Reid" University College of Wales, Aberystwyth, UK. (Supervisor Dr JD Fish).
1985	BSc (1st Class Hons), Applied Biology (Ecology specialization), University of Bradford, UK.

POSITIONS HELD / CAREER HISTORY

2008 – to date	Research Associate, International Centre for Island Technology, Heriot-Watt University, Orkney, UK. Science in support of sustainable fishery management. Research into ecological consequences of marine renewable energy developments. Consultancy on sustainable fisheries and environmental effects of wave and tidal energy developments.
2005 – 2008	Fisheries Research Consultant, self-employed, Lowestoft and Orkney, UK. Consultancy relating to sustainable exploitation, particularly of shellfish stocks, and interactions between fisheries and bird populations.
1996 – 2005	Senior Shellfish Biologist, Centre for Environment, Fisheries & Aquaculture Science, Lowestoft, UK. Research on population and fisheries biology of shellfish, provision of fishery management advice to UK government and at international level.
1989-1996	Senior Wetlands Ecologist, The Wildfowl & Wetlands Trust, Slimbridge, UK. Research on waterfowl population dynamics and wetlands ecology, statistical support to research department.

PROFESSIONAL EXPERIENCE

Project management and research for R&D projects in shellfish biology, fisheries and management. Chairman of the ICES Working Group on *Nephrops* Stocks, 2002-2004. Outside expert reviewer for stock assessments and science in support of fishery management in USA (scallops, surf clams, ocean quahogs, blue crab, Alaska crabs, short-finned squid, Caribbean reef fish, New England groundfish) and Ireland (cockle, crab, shrimp). Involved in contracts with Cefas, An Bord Iascaigh Mhara, Center for Independent Experts (USA), Aquatera, Natural England, CCW, RSPB and NWNWSFC. Participant and consultant on EU and other international studies of decapod crustaceans. Provider of workshops on generalized linear modelling techniques, age-based stock assessments and mark-recapture modelling techniques. Marine Stewardship Council assessment (P1 specialist) of North Sea *Nephrops* fisheries, pre-assessment of Orkney creel fishery, re-assessment for Tristan da Cunha rock lobster. Chair of ICES Study Group on Environmental Impacts of Wave and Tidal Energy (2011-2013) and ICES Workshop on Wave and Tidal Energy Test Sites (2012). Scientific advisor for Orkney Sustainable Fisheries.

RESEARCH INTERESTS

Sustainable management of inshore fisheries, stock assessment of shellfish and fish stocks and monitoring. Impacts of marine renewable energy developments on fisheries and the marine environment. Interactions between fisheries and birds in inshore areas. Crustacean catchability and mark-recapture modelling. Spatial modelling and assessment of exploited stocks and their management. Currently involved in EPSRC funded EcoWatt 2050 project on large scale interactive coupled 3D modelling for wave and tidal energy resources and environmental impacts, NERC funded QBEX project on spillover benefits for fisheries around marine renewable energy developments. Working with local fisheries organizations on sustainable fishery management and interactions with wave and tidal energy developments. Supervisor for PhD studies on marine ecological monitoring, shellfisheries monitoring and assessment and interactions with marine renewable energy developments.

ARTICLES

HAIG, J A, BAKKE, S, BELL, M C, BLOOR, I, COHEN, M, COLEMAN, M, DIGNAN, S, KAISER, M J, PANTIN, J R, ROACH, M, SALOMONSEN, H & TULLY, O, (2016). Reproductive traits and factors affecting the size at maturity of *Cancer pagurus* across northern Europe. ICES Journal of Marine Science, in press.

GORMLEY, K S G, HULL, A D, PORTER, J S, BELL, M C & SANDERSON, W G, (2015). Adaptive management, international co-operation and planning for marine conservation hotspots in a changing climate. Marine Policy, 53, 54-66.

BELL M C, JOHNSON K R, RYDZKOWSKI K, COLEMAN M, CRICHTON S, MATHESON F, (2015). Science in support of industry-led initiatives in inshore fishery management in Orkney. ICES CM 2015/L:02

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BELL, M C, SIDE, J C & WALKER, K-J H, (2014). Management of sustainable fisheries alongside marine renewables: modelling the spatial interactions. Proceedings of the 2nd International Conference on Environmental Interactions of Marine Renewable Energy Technologies (EIMR2014), 28 April – 2 May 2014, Stornoway, Isle of Lewis, Outer Hebrides, Scotland.

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BELL, M C, TUCK, I & DOBBY H, (2013). *Nephrops* species. pp.357-413 in: Phillips, B F (ed.).Lobsters: Biology, Management, Aquaculture & Fisheries, 2nd Edition. Wiley-Blackwell, Oxford.

MACKENZIE, C, BELL, MC, BIRCHENOUGH, SN, CULLOTY, SC, SANDERSON, WG, WHITELY, NM & MALHAM, SK, (2013). Future socio-economic and environmental sustainability of the Irish Sea requires a multi-disciplinary approach with industry and research collaboration, and cross-border partnership. Ocean & Coastal Management, 85A, 1-6.

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BELL, M C, GRIST, E P M, BASTON, S, ROUSE, S, SPENCER JONES, M, PORTER, J S, WANT, A, HARRIS, R E & SIDE, J C, (2011). Hydrokinetic energy as an ecological factor – how might wave and tidal energy extraction affect the distribution of marine organisms? ICES Annual Science Conference, Gdansk, ICES CM 2011/S:16.

SHIELDS, M A, WOOLF, D K, GRIST, E P M, KERR, S A, JACKSON, A C, HARRIS, R E, BELL, M C, BEHARIE, R, WANT, A, OSALUSI, E, GIBB, S W & SIDE, J, (2011). Marine renewable energy: the ecological implications of altering the hydrodynamics of the marine environment. Ocean and Coastal Management, 54, 2-9.

BELL, M C, SIDE, J C, KERR, S, JOHNSON, K R, BASTON, S & BULLEN, C R, (2010). The emergence of a new marine renewable energy industry – what are the implications for fisheries? ICES CM 2010/O:06.

BELL, M C, ELSON, J M, ADDISON, J T, REVILL, A S & BEVAN, D, (2008). Trawl catch composition in relation to Norway lobster (*Nephrops norvegicus* L.) abundance on the Farn Deeps grounds, NE England. Fisheries Research, 90, 128-137.

BELL, E, BELL, M C, SMITH, M& ADDISON, J T,(2007). SpatMan: a spatial management modelling tool for shellfish stocks. ICES CM 2007/O:08.

O'DONNELL, K P, WAHLE, R A, BELL, M C & DUNNINGTON, M J, (2007). Spatially referenced trap arrays detect sediment disposal impacts on lobsters and crabs in a New England estuary. Marine Ecology Progress Series, 348, 249-260.

BELL, M C, REDANT, F & TUCK, I, (2006). *Nephrops* species. pp.412-461 in: Phillips, B F (ed.). Lobsters biology, management, aquaculture and fisheries. Blackwell Publishing, Oxford.

BELL, M C, ELSON, J M & ADDISON, J T, (2005). The effects of spatial targeting of fishing effort on the distribution of the Norway lobster, *Nephrops norvegicus*, on the Farn Deeps grounds. New Zealand Journal of Marine and Freshwater Research, 39, 1023-1037.

DUNNINGTON, M, WAHLE, R A, BELL, M C & GERALDI, N R, (2005). Evaluating local population dynamics of the American lobster with trap-based mark-recapture methods and seabed mapping. New Zealand Journal of Marine and Freshwater Research, 39, 1253-1276.

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BELL, M C (2003). Setting biological reference points for cockles (*Cerastoderma edule*) in UK estuaries in relation to bird-cockle interactions. p. 49 in: Smith, S J (ed.) Workshop on Biological Reference Points for Invertebrate Fisheries held in Halifax, Nova Scotia, 2-5 December 2002: Abstracts and proceedings. Canadian Technical Report of Fisheries and Aquatic Sciences No. 2448.

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BELL, M C, ADDISON, J T & BANNISTER, R C A, (2001). Estimating trapping areas from trap-catch data for lobsters and crabs. Marine and Freshwater Research, 52, 1233-1242.

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BELL, M C, TAMURA, Y & COLLINSON, K, (2016). Marine Stewardship Council (MSC) Pre-Assessment Report, Miyagi Multi-species Fishery. Report to Miyagi Fishery Cooperative, ME Certification Ltd.

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BELL, M C & MATHESON, F, (2015). Spatial dynamics of scallops in relation to the Orkney dive fishery. Scottish Marine and Freshwater Science, Volume 6 Number 15, Report of Fishing Industry Science Alliance (FISA) Project 03/12.

SIDE, J S, BEHARIE, R & BELL, M C, (2015). Underwater Noise Monitoring of Pelamis Device at Billia Croo. Report to Scottish Natural Heritage. ICIT/Heriot-Watt University.

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BELL, M C & SIDE, J C, (2010). Age-based spatial simulation model of the dynamics and management of an exploited plaice population. ICIT/Heriot-Watt University Report to Cefas.

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BELL, M C, (2008). External peer review of GARM-III "Biological Reference Point" meeting. 28 April-2 May 2008, Woods Hole, Massachusetts, USA. Report to University of Miami, Center for Independent Experts.

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BELL, M C & WALKER, P, (2007). Cockle suction dredging in The Wash & North Norfolk Coast European marine site. Part II – analysis of existing data. Report to Natural England, CEFAS, Lowestoft.

BELL, M C, (2006). Review of Alaska crab overfishing definitions. 24-28 April 2006, Seattle, Washington, USA. Report to University of Miami, Center for Independent Experts.

BELL, M C, (2006). A simple spatial model for the dynamics and management of an exploited plaice population. Software User Manual and Report to CEFAS, Lowestoft, UK.

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TULLY, O, BELL, M C, O'LEARY, A, MCCARTHY, A, DONOVAN, V O & NEE, D, (2006). The lobster (*Homarus gammarus*) fishery: analysis of the resource in 2004/2005. Fisheries Resource Series, Bord Iascaigh Mhara (Irish Sea Fisheries Board), Dun Laoghaire, Ireland, No. 5.

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BELL, M C & WALKER, P, (2005). Desk study to assess the impact of cockle suction dredging on The Wash and North Norfolk Coast European Marine Site. English Nature Research Report, No. 670.

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