

Professor Brian Ford-Lloyd

Emeritus Professor

[School of Biosciences \(/schools/biosciences/index.aspx\)](/schools/biosciences/index.aspx)

Contact details

Telephone [+44 \(0\)121 41 45565 \(tel:+44 121 41 45565\)](tel:+44%20121%2041%2045565)

Fax +44 (0)121 41 42597

Email [b.ford-lloyd@bham.ac.uk \(mailto:b.ford-lloyd@bham.ac.uk\)](mailto:b.ford-lloyd@bham.ac.uk)

School of Biosciences
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK



About

His chosen research area includes the study of the natural genetic variation in plant populations and agricultural plant genetic resources and their conservation.

Qualifications

BSc University of Birmingham, PhD University of Birmingham

Postgraduate supervision

For a list of possible PhD projects offered by Dr Ford-Lloyd www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Ford-Lloyd
(<http://www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Ford-Lloyd>)

Research

Research Theme within School of Biosciences: [Molecular and Cell Biology \(/research/activity/cellbiology/index.aspx\)](/research/activity/cellbiology/index.aspx)

Full research description

Patterns of natural variation in crop plants and their wild relatives are being studied using a range of molecular marker technologies including DNA sequence polymorphism and transcriptomics. Much can be achieved through comparative genomic approaches, that are currently being applied to the following crops and their wild relatives: rice, brassicas, *Prunus*, *Trifolium* and a range of vegetables. In my lab we are studying how specific genes and alleles vary naturally, and how variation in their expression can give rise to different phenotypes and altered adaptive capacity in an ecological and environmental sense. Most recently we have been examining whole genome expression patterns (transcriptomics) in rice in relation to brown planthopper resistance and salt stress.

Recent and current projects

- 2002-2006 European Plant Genetic Resources (EU FP6)
- 2003-2006 Molecular basis of zinc tolerance in Arabidopsis (NERC)
- 2006-2009 Agro-fortification (DIVERSEEDS) (EU FP6)
- 2007-2009 A European in situ conservation work plan (EU AGRIGENRES 057)
- 2007-2011 Genetic diversity in heritage vegetables (Garden Organic)
- 2008-2009 UK landraces of vegetable crops (DEFRA)
- 2010-2013 China/UK sustainable agriculture innovation SAIN (DEFRA)

Current members of the lab:

- Mohamed Ab Gaffar (Doctoral Researcher)
- Mohammad Rashed Hossein (Doctoral Researcher)
- Fay Hughes (Technician)
- Shelagh Kell (Project Manager)
- Jennifer Preston (Doctoral Researcher)
- Garima Sharma (Doctoral Researcher)
- Claire Teeling (Doctoral Researcher)

Publications

Books

Ford-Lloyd, B.V. and Jackson, M.T. 1986. Plant Genetic Resources - an introduction to their conservation and use. Edward Arnold, London.

Jackson, M.T., **Ford-Lloyd**, B.V. and Parry, M.L. (eds). 1990. Climatic Change and Plant Genetic Resources, Belhaven Press, London.

Maxted, N., **Ford-Lloyd**, B.V. and Hawkes, J.G. (eds). 1997. Plant Genetic Conservation: The In-Situ Approach. Chapman and Hall.

Callow, J.A., **Ford-Lloyd**, B.V., and Newbury, H.J. (eds). 1997. Biotechnology and Plant Genetic Resources. Biotechnology in Agriculture Series, no. 19. CAB International, Oxford.

Hawkes, J.G., Maxted, N. and **Ford-Lloyd**, B.V. 2000. The Ex Situ Conservation of Plant Genetic Resources. Kluwer, Dordrecht.

Stolton, S., Maxted, N., **Ford-Lloyd**, B., Kell, S. and Dudley, N. 2006. Food Stores: Using protected areas to secure crop genetic diversity. A research report by WWF, Equilibrium and the University of Birmingham, UK. ISBN: 2-88085-272-2.

Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) 2008. Crop Wild Relative Conservation and Use. Pp682. CABI Publishing, Wallingford.

Chapters in books (last 5 years)

Kell, S.P., Knüpffer, H., Jury, S.L., **Ford-Lloyd**, B.V. and Maxted, N., (2008). Crops and wild relatives of the Euro-Mediterranean region: making and using a conservation catalogue. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 69-109. CABI Publishing, Wallingford.

Maxted, N., Kell, S.P. and **Ford-Lloyd**, B.V. (2008). Crop wild relative conservation and use: establishing the context. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 3-30. CABI Publishing, Wallingford.

Ford-Lloyd, B.V., Kell, S.P. and Maxted, N. (2008). Establishing conservation priorities for crop wild relatives. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 110-119. CABI Publishing, Wallingford.

Scholten, M., Maxted, N., Kell, S.P. and **Ford-Lloyd**, B.V. (2008). Creation of a national crop wild relative strategy: a case study for the United Kingdom. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 120-142. CABI Publishing, Wallingford.

Magos Brehm, J., Mitchell, M., Maxted, N., **Ford-Lloyd**, B.V. and Martins-Loucao. (2008). IUCN red listing of crop wild relatives: is a national approach as difficult as some think? In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 69-109. CABI Publishing, Wallingford.

Bettencourt, E., **Ford-Lloyd**, B.V. and Dias, S.Â (2008). Genetic erosion and genetic pollution of crop wild relatives: the PGR Forum perspective and achievements. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 277-286. CABI Publishing, Wallingford.

Kell, S.P., Moore, J.D., Iriondo, J.M., Scholten, M.A., **Ford-Lloyd**, B.V. and Maxted, N.Â (2008). CWRIS: an information management system to aid crop wild relative conservation and sustainable use. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 471-491. CABI Publishing, Wallingford.

Sousa-Correia, C.M., Abreu, J.M., Ferreira-Dias, S., Rodrigues, J.C., Alves, A., Maxted, N. and **Ford-Lloyd**, B.V. (2008). Linking conservation with sustainable use: *Quercus ilex* subsp. *rotundifolia* (Lam)). Schwarz in traditional agro-sylvo-pastoral systems in southern Portugal. In: Maxted, N., **Ford-Lloyd**, B.V., Kell, S.P., Iriondo, J., Dulloo, E. and Turok, J. (eds.) Crop Wild Relative Conservation and Use. Pp. 638-650. CABI Publishing, Wallingford.

Iriondo, J.M., **Ford-Lloyd**, B.V., De Hond, L., Kell, S.P., Lefevre, F., Korpelainen, H. and Lane, A. 2008. Plant population monitoring methodologies for the in situ genetic conservation of CWR. In Iriondo, J.M., Maxted, N. and Dulloo, M.E. Eds. Conserving Plant Genetic Diversity in Protected Areas, CABI, Wallingford.

Scholten, M., Green, N., Campbell, G., Maxted, N., **Ford-Lloyd**, B., Ambrose, M., Spoor, B. 2009. Landrace inventory of the UK. In European landraces: on-farm conservation, management and use. Bioversity Technical Bulletin No. 15, Bioversity International, Rome.

Papers in refereed journals (last 5 years)

Kiambi, D.K., **Ford-Lloyd**, B.V., Jackson, M.T., Guarino, L., Maxted, N. and Newbury, H.J. 2005. Collection of wild rice (*Oryza* L.) in east and southern Africa in response to genetic erosion. Plant Genetic Resources Newsletter 142:10-20.

Camacho Villa, T.C., Maxted, N., Scholten, M. and **Ford-Lloyd**, B. 2005. Defining and identifying crop landraces. Plant Genetic Resources 3 (3): 373-384.

Watson-Jones, S.J., Maxted, N. and **Ford-Lloyd**, B.V. 2006. Population baseline data for monitoring genetic diversity loss for 2010: a case study for *Brassica* species in the UK. Biological Conservation 132 (4): 490-499.

Filatov, V., Dowdle, J., Smirnov, N., **Ford-Lloyd**, B.V., Newbury, H.J. and Macnair, M.R. 2006. Comparison of gene expression in segregating families identifies genes and genomic regions involved in a novel adaptation, zinc hyperaccumulation. Molecular Ecology 15 (10): 3045-3059.

Maxted, N., **Ford-Lloyd**

, B.V., Jury, S., Kell, S. and Scholten, M. 2006. Towards a definition of a crop wild relative. Biodiversity and Conservation 15: 2673-2685.

Cureton, A.N., Newbury, H.J., Raybould, A.F. and

Ford-Lloyd, B.V. 2006. Genetic structure and gene flow in wild beet populations: the potential influence of habitat on transgene spread and risk assessment. Journal of Applied Ecology, 43: 1203-1212.

Filatov, V., Dowdle, J., Smirnov, N., **Ford-Lloyd**, B., Newbury, H.J.Â Macnair, M.R. 2007. A QTL analysis of zinc hyperaccumulation in *Arabidopsis halleri*. New Phytologist 174 (3): 580-590.

Heywood, V., Casas, A., **Ford-Lloyd**, B., Kell, S. and Maxted, N. 2007. Conservation and sustainable use of crop wild relatives. Agriculture Ecosystems and Environment 121 (3): 245-255.

Kell, S.P., Jury, S.L., Knüpffer, H., **Ford-Lloyd**, B.V. and Maxted, N. 2007. PGR Forum: serving the crop wild relative user community. Bocconea 21, 413-421.

Sousa-Correia, C., Alves, A., Rodrigues, J.C., Ferreira-Dias, S., Abreu, J.M., Maxted, N., **Ford-Lloyd**, B. and Schwanninger, M. 2007. Oil content estimation of individual kernels of *Quercus ilex* subsp. *rotundifolia* [(Lam) O. Schwarz] acorns by Fourier transform near infrared spectroscopy and partial least squares regression. J. Near Infrared Spectroscopy. 15: 247-260.

Maxted, N., ([http://apps.isiknowledge.com/DaisyOneClickSearch.do?](http://apps.isiknowledge.com/DaisyOneClickSearch.do?product=WOS&search_mode=DaisyOneClickSearch&doc=3&db_id=&SID=U2pChcOn7bA31NPL1g1&name=Maxted%20N&ut=000250903000015&pos=1)

[product=WOS&search_mode=DaisyOneClickSearch&doc=3&db_id=&SID=U2pChcOn7bA31NPL1g1&name=Maxted%20N&ut=000250903000015&pos=1](http://apps.isiknowledge.com/DaisyOneClickSearch.do?product=WOS&search_mode=DaisyOneClickSearch&doc=3&db_id=&SID=U2pChcOn7bA31NPL1g1&name=Maxted%20N&ut=000250903000015&pos=1)) **Scholten, M**

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Couldridge, C., Newbury, H.J., **Ford-Lloyd**, B., Bale, J., Pritchard, J. 2007. Exploring plant responses to aphid feeding using a full Arabidopsis microarray reveals a small number of genes with significantly altered expression. *Bull. Ent. Res.* 97: 523-532.

Kiambi, D.K., Newbury, H.J., Maxted, N. and **Ford-Lloyd**, B.V. 2008. Molecular genetic variation in the African wild rice *Oryza longistaminata* A. Chev. et Roehr. and its association with environmental variables. *African Journal of Biotechnology* 7: 1446-1460.

Keisa, A., Maxted, N. and **Ford-Lloyd**, B. 2008. The assessment of biodiversity loss over time: wild legumes in Syria. *Genet. Resour. Crop Evol.* 55: 603-612.

Magos Brehm, J., Maxted, N., **Ford-Lloyd**, B.V. and Martins-Loucao, M.E. 2008. National inventories of crop wild relatives and wild harvested plants: case-study for Portugal. *Genet. Resour. Crop Evol.* 55:779-796.

Maxted, N., Dulloo, E., **Ford-Lloyd**, B.V., Iriondo, J.M. and Jarvis, A. 2008. Gap analysis: a tool for complementary genetic conservation assessment. *Diversity and Distributions* 14: 1018-1030.

Scholten, M., Maxted, N., **Ford-Lloyd**, B.V. and Green, N. 2008. Hebridean and Shetland oat (*Avena strigosa* Schreb.) and Shetland cabbage (*Brassica oleracea* L.) landraces: occurrence and conservation issues. *Plant Genetic Resources Newsletter* 154: 1-5.

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Ford-Lloyd, B.V., Brar, D., Khush, G.S., Jackson, M.T., Virk, P.S. 2008. Genetic erosion over time of rice landrace agrobiodiversity. *Plant Genetic Resources* 7(2): 163-168.

Hargreaves, S., Maxted, N., Hirano, R., Abberton, M., Scot, L., and **Ford-Lloyd**, B.V. 2010. Islands as refugia of *Trifolium repens* genetic diversity. *Conservation Genetic* 11: 1317-1326.

XiongZ., ZhangS., WangY., Ford-LloydB.V., TuM., JinX., WuY., YanH., YangX., LiuP., LuB-R. 2010. Differentiation and distribution of *indica* and *japonica* rice varieties along the altitude gradients in Yunnan Province of China as revealed by InDel molecular markers. *Genetic Resources and Crop Evolution* 57: 891-902.

Magos Brehm, J., Maxted, N., Martins-Loução, M.A. and **Ford-Lloyd**, B.V. 2010. New approaches for establishing conservation priorities for socio-economically important plant species. *Biodiversity and Conservation* 9: 2715-2740.

Xiong, Z.Y., S. J. Zhang, S.J., Ford-Lloyd, B.V., Jin, X., Wu, Y., Yan, H.X., Liu, P., Yang, X., and Lu, B.-R. Latitudinal Distribution and Differentiation of Rice Germplasm: Its Implications in Breeding. *Crop Science* (in press).

Ford-Lloyd, B.V., Schmidt, M., Armstrong, S.J., Barazani, O., Engels, J., Ge, S., Hadas, R., Hammer, K., Kell, S.P., Kang, D., Khoshbakht, K., Li, Y., Long, C., Lu, B.-R., Ma, K., Nguyen, V.T., Qiu, L., Wei, W., Zhang, Z., Maxted, N. 2011. Crop wild relatives – Undervalued, Underutilized and Under Threat? *BioScience*, in press.

