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Senior Lecturer in Genetic Conservation

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About

Nigel Maxted is a Senior Lecturer in Plant Genetic Conservation, with specific expertise in *in situ* and *ex situ* conservation techniques.

Qualifications

- PhD (University of Southampton) - A revision of Vicia subgenus Vicia using database techniques.
- MPhil (University of Southampton) - Inter and intra-generic relationships between Psophocarpus spp. (Leguminosae - Phaseoleae) and their allies.
- BSc (The Polytechnic, Wolverhampton) - Biological Sciences
- Ordinary National Diploma (Hadlow College Of Agriculture) - Agriculture.

Biography

Nigel Maxted has led National, European and International crop wild relative and landrace agrobiodiversity conservation projects with funding from international (FAO, GEF, Bioversity International, ICARDA, IUCN), European (EC, EEA, ESF) and British government (Commonwealth Secretariat, Defra, DfiD, DoE) agencies. He also regularly undertaking consultancy work for Bioversity, FAO, GCDT, GEF, ICARDA, UNDP, UNEP, World Bank and overseas governments.

He is Co-Chair IUCN SSC CWR Specialist Group; Chair of European Cooperative Programme for PGR *In Situ* and On-farm Network, Chair of ECPGR *In Situ* Working Group; Chair of the UK PGR Committee; Senior Scientific Advisor for the GEF / World Bank on PGR Conservation and is an Honorary Research Fellow at Royal Botanic Gardens Kew. He has published >230 scientific papers and 17 books on various aspects of PGR conservation.

He has recently published a policy paper on English crop wild relative conservation and is currently developing a 'Agrobiodiversity Conservation Toolkit' for specific application in developing countries for the Food and Agriculture Organisation of the UN, as well as annually engaging in field-based conservation in the Middle East. He has supervised over 150 Masters and 25 PhD studentships

Teaching

Undergraduate and postgraduate teaching of biodiversity, conservation biology, ecology, taxonomy and plant genetic resources management courses, both at the University of Birmingham and occasionally running short courses in these subjects abroad.

Supervision of under-graduate and post-graduate research projects. Direction of various postgraduate and vocational biodiversity conservation training courses in and outside of the UK, as well as temperate and tropical botanical and conservation field courses.

Postgraduate supervision

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

Doctoral research

PhD title A revision of *Vicia* subgenus *Vicia* using database techniques

Research

Research Theme within School of Biosciences: Organisms and Environment

Profile

- 2011 – Chair of the UK PGR Committee
- 2010 – Honorary Research Fellow at Royal Botanic Gardens Kew
- 2008 – Deputy Chair of the UK PGR Committee
- 2003 – IUCN SSC Crop Wild Relative Specialist Group, Chair
- 2000 – ECPGR In Situ and On Farm Network, Chair
- 2000 – ECPGR *In Situ* Working Group, Chair

- 1998 – present Senior Lecturer, Plant Genetic Conservation
- 1996 – Senior Scientific Advisor for the GEF / World Bank on PGR Conservation
- 1991 – Lecturer, Plant Genetic Conservation
- 1990 – PhD University of Southampton, Taxonomy, Conservation & Data Management
- 1984 – MPhil University of Southampton, Taxonomy
- 1981 – BSc The polytechnic, Wolverhampton, Biological Sciences
- 1975 – OND Hadlow College, Agriculture

Research interests

My research is focused on the conservation of genetic diversity in plants, largely on species of socio-economic value, working primarily in Northern Asia, Middle East, Africa and Europe, as well as the UK. The assessment of genetic variation at the molecular level provides a better understanding of patterns of diversity and facilitating its sustainable conservation.

The research has often involved the development of novel approaches to conservation, particularly in the management of *in situ* crop wild relative (CWR) and landrace (LR) diversity. Recent activities have focused on research methodologies for the production of inventories and conservation of CWR and LR in Europe and the UK. Several projects are jointly managed with Dr Brian Ford-Lloyd also from the School of Biosciences.

Current active research project

January 2012 to date: Project partner in an EU ERA funded project entitled **Reinforcing cooperation between the Royal Botanic Garden of Jordan and European Research** Area. This project involves transfer of skills from ERA and collaborative research between the Royal Botanic Gardens, Kew, Royal Botanic Garden of Jordan and the University of Birmingham in the area of plants and seed conservation, genetic resource diversity and biotechnology, and utilisation and access benefit sharing.

March 2011 to date: Project partner in a Norwegian Government grant of US$ 50M for **Adapting Agriculture to Climate Change: Collecting, Protecting, and Preparing Crop Wild Relatives**. This project involves research into the conservation and exploitation of global crop wild relative diversity, the UoB element of the project is focused on (i) preparation of database of 91 crop global priority gene pools, (ii) collation and analysis of ecogeographic data for priority gene pools, (iii) production of user friendly field guide for field identification, and (iv) production of global crop wild relative diversity conservation strategies to enhance global food security in the face of climate change.

March 2011 to date: Principle investigator for a EC FP7 Research **Novel characterization of crop wild relatives and landraces resources as a basis for improved crop breeding (PGR Secure)**. This project involves research into novel characterization techniques and conservation strategies for European crop wild relative and landrace diversity, as an aid to enhance crop improvement by breeders, with the long term goal of underpinning European food security in the face of climate change.

Nov. 2009 to date: Principle investigator for a Defra (SAIN) **Conservation for enhanced utilization of crop wild relative diversity for sustainable development and climate change mitigation (CWR China)**. This project involves the inventory, prioritization, threat assessment and conservation of Chinese CWR diversity, further build a database of useful genetic diversity, identified by novel transcriptomic technology, will facilitate use by plant breeders.

June. 2009 to date: Principle investigator for an IUCN funded project concerned with **IUCN red listing of European crop wild relative diversity**. This project involves the selection, species prioritisation, collation of ecogeographic data sets and IUCN Red Listing of approx. 1,000 crop wild relatives that are native to Europe, as an aid to the formulation of a systematic global conservation strategy.

Feb. 2003 to date: Co-Chair of the **IUCN Species Survival Commission Crop Wild Relative Specialist Group**. The group aims to produce a Red List of Threatened Species for socio-economically important plant species. The CWR/SG also provides technical and scientific advice to governments, international environmental treaties and conservation organisations. The group now intends to undertake an intense period of Red List Assessment for European CWR taxa funded by the EC via IUCN.

January 2003 to date: Principle investigator for a DEFRA funded project concerned with **Inventory and conservation of the UK's Agrobiodiversity**. This project is a multi-institute project (also involving Warwick HRI, Wellesbourne, Science and Advice for Scottish Agriculture, Edinburgh and IGER, Aberystwyth) coordinated from Birmingham, with the aim of producing a systematic inventory of UK agrobiodiversity, crop wild relatives and traditional crop landraces, and then use the inventory to generate a systematic strategy for their genetic conservation.

Dec. 1985 to date: **Ecogeographic surveys of forage legumes** linked to the targeted conservation activities in West and Central Asia, and Africa. The projects have involved using detailed ecogeographic data to pinpoint interesting taxon locations, establishing *ex situ* and *in situ* conservation priorities and then undertaking finely targeted conservation missions, as well as writing conservation action plans for priority groups, such as temperate *Vicia* and *Lathyrus*, and tropical *Vigna*. This has involved leading conservationists from the Vavilov Institute, St. Petersburg, Russia; ICARDA, Syria; GRU, Menemen, Turkey; DSIR, New Zealand; CLIMA, Australia; and National Genetic Resources Lab., USA.

Current members of our group

Research Manager / Postdoc:

- S.P. Kell - Conservation methodologies for European and Chinese crop wild relative diversity
- J. Magos Brehm – Generation of tools for agrobiodiversity conservation

PhD students:

- N. Castaneda - Enhancing *ex situ* CWR Conservation through GIS gap analysis
- S. Dias - Ecogeographic, GIS and genetic diversity analysis of *Medicago* species
- H. Fielder - Developing genetic conservation methodologies for UK CWR diversity
- I. Thormann – Use of agro-biodiversity to increase food security / climatic resilience
- H. Vincent - Developing methodologies for *in situ* CWR conservation
- L. Rhodes - Methodologies for threat assessment of CWR and LR
- W. Zair - Regional CWR conservation action strategy for West Asia
- J. Phillips - National CWR conservation action strategy for Norway
- A. Contreras Toledo - National CWR conservation action strategy for Mexico

Consultancy

I regularly undertake consultancy service in relation to plant genetic conservation for major international agencies. I recently prepared a Global Strategy for Crop Wild

Relative Conservation Strategy for the Food and Agriculture Organization of the United Nations, provided advice on Medicinal Plant Conservation in Jordan for the Global Environment Facility and formed part of a World Bank team assessing the implementation of plant genetic conservation in Egypt.

Other activities

My home is a small farm set within a Natural England nature reserve (SSSI), so I enjoy looking after our animals (pigs and cattle) and managing our part of the nature reserve

Publications

Selected Journal Publications (since 2000)

Vincent, H., Wiersema, J., Kell, S.P., Dobbie, S., Fielder, H., Castañeda Alvarez, N.P., Guarino, L., Eastwood, R., León, B. & Maxted, N., (2013). A prioritised crop wild relative inventory as a first step to help underpin global food security. Biological Conservation, 167: 265-275.

Shehadeh, A., Amri, A. & Maxted, N., (2013). Ecogeographic survey and gap analysis of Lathyrus L. species. Genetic Resources and Crop Evolution, 60(7): 2101-2113

Khoury, C.K., Greene, S., Wiersema, J., Maxted, N., Jarvis, A. & Struik, P.C. (2013). An Inventory of Crop Wild Relatives of the United States. Crop Science, doi: 10.2135/cropsci2012.10.0585

Maxted, N., Kell, S.P., Ford-Lloyd, B.V., Dulloo, M.E. & Toledo, A., (2012). Toward the systematic conservation of global crop wild relative diversity. Crop Sciences, 52(2): 774-785.

Maxted, N., Hargreaves, S., Kell, S.P., Amri, A., Street, K., Shehadeh, A., Piggin, J. & Konopka, J., (2012). Temperate forage and pulse legume genetic gap analysis. Bocconea, 24: 5-36

Smýkal, P., Kenicer, G., Flavell, A.J., Corander, J., Kosterin, O., Redden, R.J., Ford, R., Coyne, C.J., Maxted, N., Ambrose, M.J. and Ellis, N.T.H., (2011). Phylogeny, phylogeography and genetic diversity of the *Pisum* genus. *Plant Genetic Resources: Characterization and Utilization*, 9(1): 4–18.

Maxted, N., Kell, S.P., Toledo, A., Dulloo, M.E., Heywood, V., Hodgkin, T., Hunter, D., Guarino, L., Jarvis, A. and Ford-Lloyd, B.V., (2010). A global approach to crop wild relative conservation: securing the gene pool for food and agriculture. *Kew Bulletin*, 65: 561–576.

Magos Brehm, J., Maxted,N., Martins-Loução, M.A. and Ford-Lloyd B.V., (2010). New approaches for establishing conservation priorities for socio-economic important plant species. *Biodiversity and Conservation*, 19(9): 2715-2740.

Hargreaves, S.; Maxted, N.; Hirano, R.; Abberton, M.; Skøt, L.; Ford-Lloyd, B. V., (2010). Islands as refugia of *Trifolium repens* genetic diversity. *Conservation Genetics*, 11(4): 1317-1326.

Magos Brehm, J., Maxted,N., Martins-Loução, M.A. and Ford-Lloyd B.V., (2010). New approaches for establishing conservation priorities for socio-economic important plant species. *Biodiversity and Conservation*, 19(9): 2715-2740.

Kell, S.P. & Maxted, N., (2009). A wild relative in the garden. *The Organic Way*, 198: 20-21.

Moore, J.D., Kell, S.P., Iriondo, J.M., Ford-Lloyd, B.V. & Maxted,N., (2008). CWRML: representing crop wild relative conservation and use data in XML. *BMC Bioinformatics*, 9: 116.

Stolton, S., Maxted, N., Kell, S.P., Ford-Lloyd, B. & Dudley, N., (2008). Protected areas and plant agrobiodiversity. In: Secretariat of the Convention on Biological Diversity, *Protected areas in today's world: their values and benefits for the welfare of the planet*. Montreal, CBD Technical Series no. 36, 42-49.

Maxted, N., White, K., Valkoun, J. Konopka, J. & Hargreaves, S., (2008). Towards a conservation strategy for *Aegilops* species. *Plant Genetic Resource: Characterization and Utilization*, 6(2): 126-141.

Stolton, S., Boucher, T., Dudley, N., Hoekstra, J., Maxted, N. & Kell, S.P., (2008). Ecoregions with crop wild relatives are less well protected. *Biodiversity Journal of Life on Earth*, 9(1&2): 52-55.

Kiambi, D.K., Newbury, H.J., Maxted, N. & 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(10): 1446-1460.

Keisa, A., Maxted, N. & Ford-Lloyd, B.V., (2008). The assessment of biodiversity loss over time: wild legumes in Syria. *Genetic Resources and Crop Evolution* 55: 603-612.

Magos Brehm, J., Maxted,N., B.V. Ford-Lloyd B.V. & Martins-Loução, M.A., (2008). National Inventories of Crop Wild Relatives and Wild Harvested Plants: Case-Study for Portugal. *Genetic Resources and Crop Evolution* 55: 779-796.

Maxted, N., Dulloo, E., Ford-Lloyd, B.V., Iriondo, J. & Jarvis, A., (2008). Genetic gap analysis: a tool for more effective genetic conservation assessment. *Diversity and Distributions*, 14: 1018-1030.

Rico Arce, M. de L., Gale S.L. and Maxted N., (2008). A taxonomic study of *Albizia* (Leguminosae: Mimosoideae: Ingeae) in Mexico and Central America. Anales del Jardín Botánico de Madrid, 65(2): 255-305.

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

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

Maxted, N., Scholten, M.A., Codd, R. and Ford-Lloyd, B.V., (2007). Creation and Use of a National Inventory of Crop Wild Relatives. Biological Conservation, 140: 142-159.

Davies, A.M.R., Maxted, N. & van der Maesen, L.J.G., (2007). A natural infrageneric classification for Cicer (Leguminosae, Cicereae). Blumea, 52: 379-400.

Magos Brehm, J., Maxted, N., B. V. Ford-Lloyd B.V. & Martins-LouÃ§Ã£o, M.A., (2007). National Inventories of Crop Wild Relatives and Wild Harvested Plants: Case-Study for Portugal. Genetic Resources and Crop Evolution (accepted).

Mumtaz, A.S., Shehadeh, A., Ellis, T.H.N., Ambrose, M.J. & Maxted N., (2006). The collection and ecogeography of non-cultivated peas (Pisum L.) from Syria. Plant Genetic Resources Newsletter, 146:3-8.

Maxted, N., Ford-Lloyd, B.V., Jury, S.L., Kell, S.P. & Scholten, M.A., (2006). Towards a definition of a crop wild relative. Biodiversity and Conservation, 15(8): 2673-2685.

Watson-Jones, S.J., Maxted, N. & Ford-Lloyd, B., (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.

Bennett, S.J., Broughton, D.A. & Maxted, N., (2006). Ecogeographical analysis of the perennial Medicago. CRC Salinity Bulletin, 1: 1-62. ISSN 1833-4237.

Ford-Lloyd, B., Kell, S.P. & Maxted, N., (2006). Crop wild relatives: a vital resource for securing our future. Seed News, 46: 7-9.

Gauchan, D., Smale, M., Maxted, N., Cole, M., Sthapit, B.R., Jarvis, D. & Upadhyay M., (2005). Socioeconomic and Agroecological Determinants of Conserving Diversity On-farm: The Case of Rice Genetic Resources. Nepal Agriculture Research Journal, 6: 89-98.

Kiambi, D.K., Ford-Lloyd, B.V., Jackson, M.T., Guarino, L., Maxted, N. & 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.A. & Ford-Lloyd, B.V., (2005). Defining & identifying crop landraces. Plant Genetic Resource: Characterization and Utilization, 3(3): 373-384.

Smith, S.D., Cowan, R.S., Gregg, K.B., Chase, M.W., Maxted, N. & Fay, M.F., (2004). Genetic discontinuities among populations of Cleistes (Orchidaceae, Vanilloideae) in North America. Botanical Journal of the Linnean Society, 145: 87-95.

Wouw, M. van de, Maxted, N. & Ford-Lloyd, B.V., (2003). Agro-morphological characterisation of common Vetch and its close relatives. Euphytica 130: 281-292.

Wouw, M. van de, Maxted, N. & Ford-Lloyd, B.V., (2003). A multivariate and cladistic study of Vicia L. ser. Vicia (Fabaceae) based on analysis of morphological characters. Plant Systematics and Evolution 237: 19-39.

Maxted, N., (2003). Conserving the genetic resources of crop wild relatives in European protected areas. Biological Conservation 113(3): 411-417.

Maxted, N. & Ford-Lloyd, B.F., (2003). Genetic diversity in wild lentils. In: Measuring biodiversity for conservation (Eds. Crane, P, et al.). Pp. 30-32. Royal Society Policy Document 11/03. The Royal Society, London.

Tomooka, N., Maxted, N., Thavarasook, C. & Jayasuriya, A.H.M., (2002). Two new species, sectional designations and new combinations in Vigna subgenus Ceratotropis (Piper) Verdc. (Leguminosae, Phaseoleae). Kew Bulletin 57 (3): 613-624.

Tateishi, Y. & Maxted, N., (2002). New species and combinations in Vigna subgenus Ceratotropis (Piper) Verdc. (Leguminosae, Phaseoleae). Kew Bulletin 57 (3): 625-633.

Rosales, J., Maxted, N., Rico-Arce, L. & Petts. G., (2002). Ecohydrological approach and ecohydrographical methodology for the assessment of riparian vegetation conservation values in riparian networks: an example from the Caura River. In: A Biological Assessment of the Caura River Basin, Bolivar State, Venezuela (Eds. Chernoff, B., Machado-Allison, A., Riseng, K.J. & Montambault, J.R.). Bulletin of Biological Assessment 20. Washington, D.C.: Conservation International.

Maxted, N., Guarino, L., Myer, L. & Chiwona, E.A., (2002). Towards a methodology for on-farm conservation of plant genetic resources. Genetic Resources and Crop Evolution 49: 31-46.

Wouw, M. van de, Maxted, N., Chabane, K. & Ford-Lloyd, B.V., (2001). Molecular taxonomy of Vicia ser. Vicia based on Amplified Fragment Length Polymorphisms. Plant Systematics and Evolution 229: 95-105.

Sawkins, M.C., Maass, B.L., Pengelly, B.C., Newbury, H.J., Ford-Lloyd, B.V., Maxted, N. & Smith, R., (2001). Geographic patterns of genetic variation in two species of Stylosanthes Sw. using amplified fragment length polymorphism. Molecular Ecology 10(8): 1947-1958.

Shackle, H.S., Bennett, S.J., Snowball, R., Samaras, S., Francis, C. & Maxted, N., (2001). The Ecogeography and collection of forage legumes in the east Aegean Islands, Greece. Plant Genetic Resources Newsletter, 128: 55-63.

Ferguson M.E., Maxted, N., van Slageren, M. & L. D. Robertson, (2000). A re-assessment of the taxonomy of Lens Mill. (Leguminosae, Papilionoideae, Vicieae). Botanical Journal of the Linnean Society. 133: 41-59.

Key texts

Maxted, N., Dulloo, M.E., Ford-Lloyd, B.V., Frese, L., Iriondo, J.M. and Pinheiro de Carvalho, M.A.A., (eds.) (2011). *Agrobiodiversity Conservation: Securing the Diversity of Crop Wild Relatives and Landraces*. CAB International, Wallingford

Hopkins, J. & **Maxted, N.**, (2010). Crop Wild Relatives : Plant genetic conservation for food security. Natural England, Peterborough.

Vetelainen, M., Negri, V. & Maxted, N., (2009). *European Landraces: On-farm conservation, Management and Use.* Bioversity Technical Bulletin 15. Pp. 1-359. Bioversity International, Rome, Italy.

Maxted, N. and Kell, S.P., (2009).

Establishment of a global network for the in situ *conservation of crop wild relatives: status and needs*. FAO Consultancy Report, pp. 1-265. FAO, Rome.

Iriondo, J.M., Maxted, N. And Dulloo, E. (Eds.) (2008). Conserving Plant Genetic Diversity in Protected Areas: Population Management of Crop Wild Relatives. CABI Publishing, Wallingford. ISBN: 97-818-459328-24

AL-Atawneh, N., Shehadeh, A., Amri, A. & Maxted, N., (2008). Conservation Field Guide to Medics of the Mediterranean Basin. ICARDA, Syria.

Maxted, N., Ford-Lloyd, B.V., Kell, S.P., Iriondo, J., Dulloo, E. And Turok, J., (2007). Crop wild relative conservation and use. CAB International, Wallingford. ISBN: 97-818-459309-98.

Stolton, S., Maxted, N., Ford-Lloyd, B., Kell, S.P. & Dudley, N., (2006). Food Stores: Using Protected Areas to Secure Crop Genetic Diversity. WWF Arguments for protection series. Gland, Switzerland. Pp. 1-133. ISBN: 2-88085-272-2.

Maxted, N., Mabuza-Dlamini, P., Moss, H., Padulosi, S., Jarvis, A. & Guarino, L., (2004). An Ecogeographic Survey: African Vigna. Systematic and Ecogeographic Studies of Crop Genepools 10. pp. 1-468. IPGRI, Rome. ISBN: 92-9043-637-9.

Tomooka, N., Vaughan, D., Moss, H. & Maxted, N., (2003). The Asian Vigna: Vigna subgenus Ceratotropis genetic resources. Pp. 1-270. Kluwer, Dordrecht. ISBN: 1-4020-0836-8

Maxted, N. & Bennett, S., (eds.), (2001). Plant Genetic Resources of Legumes in the Mediterranean. Pp. 1-386. Kluwer, Dordrecht. ISBN 0-7923-6707-3.

Hawkes, J.G., Maxted, N. & Ford-Lloyd, B.V., (2000). The ex situ conservation of plant genetic resources. Pp. 1-250. Kluwer, Dordrecht. ISBN 0-7923-6442-2.

Laliberte, B., Maggioni, L., Maxted, N. & Negri, V., (Eds.). 2000. ECP/GR In situ and On-farm Conservation Network. Report of a joint meeting of a Task Force on Wild Species Conservation in Genetic Reserves and a Task Force on On-farm Conservation and Management, 18-20 May 2000, Isola Polvese, Italy. International Plant Genetic Resources Institute, Rome, Italy. ISBN 92-9043-457-0.

Maxted, N., Ford-Lloyd, B.V. & Hawkes, J.G., (1997). Plant genetic conservation: the in situ approach. Chapman & Hall, London. Pp. 451. ISBN 0-412-63400-7.

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