

CURRICULUM VITAE

Personal details:

Name: Dr Barbara Bowen

Address: School of Biological sciences and Biotechnology
Murdoch University
Murdoch 6150

Date of Birth: 8th March, 1961, Perth, Western Australia

Present position: Lecturer, Murdoch University

Qualifications: BSc (Hons 1) (1982) The University of Western Australia
PhD (1991) The University of Western Australia

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Scholarships and Grants Received:

- ◆ Commonwealth Postgraduate Research Award (1987-1991)
- ◆ Murdoch University Special Research Grant (1997)
- ◆ Australian Research Council (ARC) Linkage Grant, Joint CI. Total funding over three years (2003 to 2005) = \$343 000
- ◆ Murdoch University (REGS) Early Career Research Grant (2005) =\$16,500.

Fields of Academic Interest:

Effects of disturbance on ecosystem health and biodiversity
Establishment and regeneration strategies by plants
Plant biotechnology and physiology
Environmental management and conservation
Plant evolution and systematics

Research Experience:

2005 to present: Awarded a Murdoch University (REGS) Early Career Research Grant. (\$16,500). The importance of mycorrhizal associations for growth and survival of Tuarts (*Eucalyptus gomphocephala*).

2002 to present: Awarded an ARC Linkage Project Grant (Joint Chief Investigator along with Dr Giles Hardy and Dr Mike Calver at Murdoch University). Project

Title: *Eucalyptus gomphocephala* (Tuart) decline in Western Australia. Total funding over three years is \$343 000. Supervisor of an APAI student looking at the role of fire and competition on the health and vitality of tuart.

Joined the research group investigating the *Effects of Plant Disease on Ecosystem Health and Biodiversity in Southern Australia*. Co-supervised two honours students looking at the effect of *Phytophthora cinnamomi* on small mammal distribution in response to habitat change.

1997: Awarded a Murdoch University Special Research Grant (SRG) to investigate the influence of different fire regimes on flowering in the resprouter *Stirlingia latifolia*. Findings from this work presented at two conferences and as a journal publication.

1994 to present: Collaborative research with Dr Philip Ladd, Environmental Science, Murdoch University. (1) Documentation and collation of wetland plant species of the Swan Coastal Plain and the South West of Western Australia. This database has since been used as the basis for research work carried out by a postgraduate student from the School of Environmental Science at Murdoch University. (2) Taxonomic trends based on reproductive structures from the family Proteaceae. Findings from this work have been presented at local workshops and national and international conferences. There is a paper in preparation on this work.

1993: Research Officer, Department of Botany, UWA. Investigating taxonomic groupings in the order Leguminales.

1991-1992: Graduate Research Assistant for Professor J.S. Pate, UWA. Investigating taxonomic groupings in the order Restionaceae. This work contributed to the production of a book covering the family Restionaceae, its distribution, taxonomy and adaptations.

1987 to 1991: Research for my PhD thesis investigating the strategies employed by plants within the family Proteaceae to regenerate after fire. The specific aims of this study were:

- (1) to investigate the patterns of growth, biomass allocation, and deployment and storage of nutrients in congeneric pairs of juvenile resprouter and seeder species from the family Proteaceae, in order to construct simple models epitomising the non-reproductive features of each recovery mode and relate this to species response to fire;
- (2) to compare the level and distribution of starch storage in root tissue and the potential storage capacity of roots of a wide range of juvenile resprouter and seeder species from the family Proteaceae;
- (3) to determine the possible significance of root starch stores in terms of the recovery of shoot biomass after fire in mature individuals of a typical resprouter, *Stirlingia latifolia*; and

(4) to investigate the effect of the occurrence of fire at different times of the year on shoot recovery and flowering in a typical resprouter *Stirlingia latifolia*, in order to determine if a change of this aspect of the fire regime can affect the capacity of a species to recover from fire.

The study involved consultation with the Department of Conservation and Land Management, the Western Australian Herbarium and the Department of Electron Microscopy at UWA. Several papers (refereed and conference proceedings) have resulted from this work.

1984 to 1987: Graduate Research Assistant for Professor E. H. Morgan in the Department of Physiology, UWA. Research on the mechanisms of iron uptake in red blood cells and placental cells. This research was presented at the Australian Physiological and Pharmacological Society Conference in 1985 and three papers have been published from this work.

1983: Voluntary work for the Department of Fisheries and Wildlife (carrying out a literature review for a survey of the Nullarbor Plain, Australia) and voluntary work at the Perth Zoological Gardens (screening a range of animals for parasites and gaining additional experience in care and animal handling).

1982: Research for Honours. Department of Zoology, UWA. The aim of my major study was to determine if kidney function in Quokkas and Tammars changed in response to seasonal and manipulated changes in water and protein levels in their diet. A paper on this work, *Kidney function in arid zone macropods*, was presented at ANZAAS, Western Australia, May 1983.

Teaching Experience:

1994 to present: Lecturer (level B, 0.65 time). Since my appointment I have been involved in the teaching and coordination of six units as well as supervision of student research projects. My current duties at Murdoch University are mainly concerned with teaching plant sciences, biology and ecology (BIO103 Environmental Biology, BIO157 Animal & Plant Recognition, BIO253 Plant Biotechnology, ENV268 Ecology). I have successfully supervised undergraduate research projects (ISC), industry practicums, honours students and am currently supervising a PhD student (see below).

Independent Study Contracts (ISC) and Industry Practicum (IP)

Year	(Unit) Study topic
1995	Fire response in a Jarrah/Marri woodland (ISC)
1996	Indigenous Knowledge in Conservation (ISC)
1996	Traditional Ecological Knowledge Project ('Discovery 96' Exped) (ISC)
1996	Frequent Fires and Native Bush Succession (ISC)
1997	Development of a management plan in an urban conservation reserve (ISC)

1997	Experience in the Botanical Surveying Industry (IP)
2002/3	The Potential of Establishing a Conservation Corridor Between Margaret River & Walpole & Associated Issues. (ISC)
2005	The influence of ashbed soils on germination and growth in <i>Eucalyptus gomphocephala</i> . (ISC)

Honours and PhD students

Year	Degree	Study topic
1991	Honours	Contrasting morphology and ecophysiology of co-occurring broad and terete leaves in <i>Hakea trifurcata</i> (Proteaceae).
2002	Honours	Flower visitation by mammals in healthy and diseased Jarrah forest ecosystems.
2003	Honours	The diet of the Southern brown bandicoot or Quenda (<i>Isoodon obesulus</i>), in <i>Banksia</i> woodlands, Western Australia.
2004	Honours	Biodiversity of Ectomycorrhizal Fungi Associated with Tuart (<i>Eucalyptus gomphocephala</i>) in Yalgorup National Park
2005	Honours	The Role of Fire on <i>Phytophthora cinnamomi</i> in the Stirling Range National Park, Western Australia.
current	PhD	The role of fire and competition in the health and vitality of <i>Eucalyptus gomphocephala</i> DC (tuart). (current)

1992-1993: Associate lecturer, Department of Botany, UWA. Laboratory teaching and coordination of 'Plant Form and Function' (taken by Botany 220, Horticulture 210, Natural Resources Management 201 and Agriculture 202 students); 'Plant Adaptations' (Botany 300); 'Land Plant Diversity and Systematics' (Botany 230) and Botany 106.

1991: Associate lecturer, School of Environmental Biology, Curtin University, WA. Responsible for the coordination of Plant Physiology 212 and 302 including all lectures, laboratory classes and assessment (reports, tests and examinations). This position also involved assessment of third year research students, supervision of one Honours student and assessment of four Honours theses covering the general topic of plant ecology and adaptation.

1987 to 1989: Tutor, Department of Agriculture, UWA. This involved teaching post-graduate students from Thailand plant ecology, physiology and anatomy.

1982 and 1987 to 1991: Senior demonstrator (sessional) for the department of Zoology and Botany, UWA.

Recognition of Teaching Expertise:

In 2001 I was invited to join a team of academics to produce an Instructors Resource Manual as a teaching aid for the text-book "Biology" published by McGraw-Hill Book Company, Australia. This is a major text used throughout Australia and is particularly valuable because of its use of relevant Australian

examples. I produced four chapters of this book in the area of plant science. More recently I have been asked to join the author team in a proposal to Cambridge publishing to produce a biology text-book more specifically aimed at first year level students.

In 2003 I was nominated for a Teaching Excellence Award at Murdoch University in recognition of being placed in the top 10% of teaching staff for student surveys.

Refereed publications:

- ◆ Archibald, RD, **Bowen, BJ**, Hardy, GE, Fox, JED & Ward, DJ (2005) Changes to tuart woodland in Yalgorup National Park over four decades. *Proceedings 6th national Conference of the Australian Forest History Society: A Forest Conscienceness*. Millerpress Rotterdam Netherlands.
- ◆ **Bowen, BJ** & Pate, JS (2004) Effect of season of burn on shoot recovery and post-fire flowering performance in the resprouter *Stirlingia latifolia* R. Br. (Proteaceae). *Austral Ecology*.
- ◆ **Bowen, BJ** (2001) Chapter 14 - Reproduction, Growth and Development in Plants. In M.C. Calver (ed) *Instructors Resource Manual to Biology 2nd Edition*, McGraw-Hill Book Company, Australia.
- ◆ **Bowen, BJ** (2001) Chapter 17 - Structure of Plants. In M.C. Calver (ed) *Instructors Resource Manual to Biology 2nd Edition*, McGraw-Hill Book Company, Australia.
- ◆ **Bowen, BJ** (2001) Chapter 18 - Plant Nutrition, Transport and Adaptation to Stress. In M.C. Calver (ed) *Instructors Resource Manual to Biology 2nd Edition*, McGraw-Hill Book Company, Australia.
- ◆ **Bowen, BJ** (2001) Chapter 24 - Plant Hormones and Growth Responses. In M.C. Calver (ed) *Instructors Resource Manual to Biology 2nd Edition*, McGraw-Hill Book Company, Australia.
- ◆ Gleadell, RE, Bamford, M J, **Bowen, BJ** & Davies S (1999) An annotated list of Walmajari and Mangala names for the natural features, plants and animals in the Great Sandy Desert, Western Australia. *The Western Australian Naturalist*, 22: 199-204.
- ◆ Pate, JS, Jeschke, WD, Dawson, TE, Raphael, C, Hartung, W & **Bowen, BJ** (1998) Growth and seasonal utilization of water and nutrients by *Banksia prionotes* Lindley. *Australian Journal of Botany*, 46 511-532.
- ◆ **Bowen, BJ** & Pate, JS (1993) The significance of root starch in post-fire shoot recovery of the resprouter *Stirlingia latifolia* R. Br. (Proteaceae). *Annals of Botany*. 72: 7-16.
- ◆ Pate, JS, Froend, RH, **Bowen, BJ**, Hansen, A & Kuo, J (1990) Seedling growth and storage characteristics of seeder and resprouter species of Mediterranean-type ecosystems of SW. Australia. *Annals of Botany*. 65: 585-601.

- ◆ **Bowen, BJ** & Morgan, EH (1988) Effect of osmolar and ionic composition of the extracellular fluid on transferrin endocytosis and exocytosis and iron uptake by reticulocytes. *Journal of Cellular Physiology*. 134: 1-13.
- ◆ **Bowen, BJ** & Morgan, EH (1987) Anaemia in the Belgrade rat: evidence for defective membrane transport of iron. *Blood*. 70: 38-44.
- ◆ McArdle, HJ, Douglas, AJ, **Bowen, BJ** & Morgan, EH (1985) The mechanism of iron uptake by the rat placenta. *Journal of Cellular Physiology*. 124: 446-450.
- ◆ **Bowen, BJ**, Codd, CG & Gwynne, DT (1984) The katydid spermatophore (Orthoptera: Tettigoniidae): male nutritional investment and its fate in the mated female. *Australian Journal of Zoology*. 32: 23-31.
- ◆ Gwynne, DT, **Bowen, BJ** & Codd, CG (1984) The function of the katydid spermatophore and its role in fecundity and insemination (Orthoptera: Tettigoniidae). *Australian Journal of Zoology*. 32: 15-22.

Theses and Non-refereed Publications:

- ◆ **Bowen BJ**, Froend, RH & O'Neil, K (2002). *Literature Review: Wetland Values and Threats and the Function and Management of Wetland Buffers*. Technical Report, Ministry of Planning, West. Aust.
- ◆ Reid, A, **Bowen, BJ**, Fuss, A, Ladd, P, Lamont, BB, Markey, A, Ladd, PG & Pate, JS (1996) Understanding Stirlingia - an important export crop. *Proceedings of IV National Workshop for Australian Native Plants*. 4: 263-269.
- ◆ **Bowen, BJ** (1994) *Wetland Plant Species of the Swan Coastal Plain and the South West of Western Australia: An annotated list*. Claris: File Maker Pro.
- ◆ **Bowen, BJ** & Pate, JS (1991) Adaptations of S.W. Australian Members of the Proteaceae: Allocation of Resources During Early Growth. *Proceedings of the International Protea Associations Sixth Biennial Conference*. 6: 289-301.
- ◆ **Bowen, BJ** (1991) *Fire Response Within the Family Proteaceae: A Comparison of Plants Displaying the Resprouter and Seeder Mode of Recovery*. PhD thesis, The University of Western Aust., Perth.
- ◆ **Bowen, BJ** & Froend, RH (1989) *Forrestfield Hot Fire Training Centre-Vegetation Survey*. Report to Fire and Emergency Services Authority of WA.
- ◆ **Bowen, BJ**, Hebbert, DR & Morgan, EH (1985) Effects of EDTA and EGTA on transferrin receptors in reticulocytes. *Proceedings of the Australian Physiological and Pharmacological Society*. 17: 26.
- ◆ **Bowen, B** and Codd, C (1982) The function of the spermatophylax in a species of katydid: *Requina verticalis* (Walker). Department of Zoology, The University of Western Australia, Perth.
- ◆ **Bowen, B**, Burt.J, Codd, C, Hebbert, D, Hunton, J & Vinks, S (1982) Functional Significance of the Relative Size of Aristotle's Lantern in the Sea Urchin,

Echinometra Mathaei (De Blainville), At Rottnest Island, Western Australia. Honours thesis (Zoology), The University of Western Australia, Perth.

- ◆ **Bowen, B**, Burt.J, Codd, C, Hebbert, D, Hunton, J & Vinks, S (1982) *Aspects of Sexual Selection in Orthoptera*. Honours thesis (Zoology), The University of Western Australia, Perth.
- ◆ **Bowen, BJ** (1982) *Aspects of Renal Function in the Tammar (Macropus eugenii) and Quokka (Setonix brachyurus)*. Honours thesis (Zoology), The University of Western Australia, Perth.

Conference Papers or Posters Presented:

- ◆ Armistead, R, Garkaklis, MJ, Hardy, GE, Dell, B, **Bowen, BJ**, Wood, J, Gaskin, C, Lilith, M, Annettes, K, Colquhoun, I & Wilson BA (2002) The impact of plant disease on guilds of mammals in southern Australian ecosystems. *The Australian Mammal Society 48th Scientific Meeting*. Deakin University, Victoria, Australia. (Abstract/Poster)
- ◆ **Bowen, BJ** & Pate JS (2000) Effect of fire and season of burn on recovery in the resprouter *Stirlingia latifolia* R. Br. (Proteaceae). *Plant Form and Function: Adaptations to Stress (Symposium)*. University of Western Australia, Perth, Western Australia. (Paper)
- ◆ **Bowen, BJ** (1999) Effect of fire season on flowering in the resprouter *Stirlingia latifolia* R. Br. (Proteaceae). *ESA99- Ecological Connections*. Fremantle, Western Australia. (Poster)
- ◆ Ladd, PG & **Bowen, BJ** (1997) Comparison of pollen presenter and stigma form and development between the Australian and South African Proteoideae. 2nd Southern Connection Congress, *Southern Temperate Biota and Ecosystems, Past, Present and Future*, Chile (Abstract)
- ◆ Ladd, PG & **Bowen, BJ** (1997) Floral morphology and pollination in the Proteaceae in Western Australia. *Pollination Ecology in Western Australia*, Kings Park WA (Abstract)
- ◆ **Bowen, BJ** & Ladd, PG (1996) Pollen presenter and stigma form and development in the Australian Proteoideae. *Proteaceae: International Symposium on the Biology of Proteaceae*, Melbourne, Australia. (Poster)
- ◆ **Bowen, BJ** & Pate, JS (1991) Adaptations of S.W. Australian Members of the Proteaceae: Allocation of Resources During Early Growth. *International Protea Association, Sixth Biennial Conference*. Perth, Western Australia. (Paper)
- ◆ **Bowen, BJ** & Pate, JS (1988) Aspects of fire regeneration strategies in the family Proteaceae. *The Royal Society of Western Australia Banksia Woodlands Symposium*. Perth, Western Australia. (Poster)

- ◆ **Bowen, BJ**, Hebbert, DR & Morgan, EH (1985) Effects of EDTA and EGTA on Transferrin Receptors in Reticulocytes. *Australian Physiological and Pharmacological Society Conference*. Perth, Western Australia. (Poster)
- ◆ **Bowen, BJ**, Bakker, H & Bradshaw, SD (1983) *Kidney Function in Arid Zone Macropods*. ANZAAS. Perth, Western Australia. (Paper)

Membership:

- ◆ School of Biological Sciences and Biotechnology Education Committee (since 1994)
- ◆ Ecological Society of Australia (since 1999)
- ◆ Centre for Phytophthora Solutions and Management (since 2003)

Editorial:

Refereed papers for the Journals- *Annals of Botany*, *The Royal Society of Western Australia*, *Acta Oecologia* and *Botanical Journal of the Linnean Society*