

University of Cape Town
Research Report 2010
Faculty of Science
Department of Botany

(Including the Bolus Herbarium and the Institute for Plant Conservation)

Head of Department: Professor Jeremy Midgley

Departmental Profile

Botany is a vibrant department, which strives towards the development of a centre of excellence for research and teaching of the ecology, evolution, physiological ecology and systematics of marine and terrestrial plants of southern Africa. The department includes two research units, the Bolus Herbarium and the Plant Conservation Unit, and is also home to the Department of Environmental Affairs & Tourism Chief Directorate: Marine & Coastal Management. Research thrusts include plant population, community and reproductive ecology, systematics, floristics, biogeography and evolutionary biology of the unique Cape Floral Kingdom and its response to different land use practices, ecology and economics of marine and freshwater algae, the ecophysiology of plant responses to pollution and global change, the physiology of plant nitrogen-fixing symbioses and dendrochronology and palaeoecology. The Plant Conservation Unit focuses on sustainable land use, restoration and palaeoecology/environmental history with an emphasis on the conservation of the vegetation of the winter rainfall region of South Africa, while the Bolus Herbarium is researching the taxonomy of and curating a specimen collection of over a third of a million southern African species. The staff is also active on Research Councils, policy-making forums and advisory committees.

Departmental Statistics

Permanent and long-term contract staff

Professors	5
Associate Professors	1
Senior Lecturers	4
Lecturers	2
Scientific Staff	2
Technical Support Staff	7
Administrative and Clerical Staff	3
TOTAL	24

Honorary Staff

Honorary Professors	3
Honorary Assoc. Professors	1
Honorary Research Associates	10

TOTAL	14
--------------	-----------

Students

Postdoctoral	5
Doctoral	23
Master's	27
Honours	14
Undergraduate	441
TOTAL	510

Research Fields and Staff

Permanent staff

Professor Jeremy Midgley
Head of Department; plant ecology; evolutionary biology; forest ecosystem dynamics.

Professor John J. Bolton
Phycology; marine and freshwater biology; mariculture.

Professor William J. Bond
Plant ecology; evolutionary biology; conservation biology; fire and community dynamics.

Dr Samson B. Chiphango
Physiology; nitrogen fixation.

Associate Professor Michael D. Cramer
Physiology; ecophysiology; plant nutrition.

Dr Edmund February
Senior Lecturer: palaeoecology; ecophysiology.

Dr Lindsey Gillson
Deputy Director of the Plant Conservation Unit: conservation ecology; palaeoecology; theoretical ecology; landscape history.

Professor Terry Hedderson
Plant systematics; bryology; molecular systematics; life history traits.

Professor M. Timm Hoffman
Director of the Plant Conservation Unit: plant ecology; conservation biology; community ecology; biodiversity.

Ms Tshifhiwa Mandiwana-Neudani
Systematics; biogeography.

Dr A. Muthama Muasya
Senior Lecturer: plant systematics; molecular systematics; biogeography.

Dr Anthony G. Verboom
Senior Lecturer: Plant systematics, ecophysiology, biogeography.

Honorary Professors

Professor Richard Cowling
Plant ecology; conservation biology; community ecology; biodiversity.

Professor John S. Donaldson
Biodiversity.

Professor Peter Linder
Systematics; taxonomy; evolutionary biology.

Honorary Associate Professors

Associate Professor Robert J Anderson
Phycology.

Honorary Research Associates

Dr N Allsopp
Ecophysiology.

Dr N Bergh
Systematics.

Dr P Carrick
Restoration ecology.

Dr B Harding
Phycology.

Dr S Higgins
Ecosystems Ecology.

Dr A.G. Rebelo
Ecology.

Dr R Rohde
Environmental Historian.

Dr G. Scott
Systematics.

Dr A Seydack
Forest Ecology.

Professor C Stirton
Plant Systematics.

Contact Details

Postal address: Department of Botany, University of Cape Town, Private Bag X3,
Rondebosch, 7701, South Africa
Telephone: +27 21 650 2447
Fax: +27 21 650 4041
E-mail: bot-web@uct.ac.za
Web: <http://www.uct.ac.za/depts/botany/>
UCT General enquiries: +27 21 650 9111
UCT web: <http://www.uct.ac.za>

Research Output

Edited books

HOFFMAN, M.T., JÜRGENS, N. AND SCHMIEDEL, U. (eds) 2010. *Biodiversity in Southern Africa*. 1375pp. Goettingen & Windhoek: Klaus Hess Publishers/Verlag. ISBN 9783933117441. [PCU]

HOFFMAN, M.T., SCHMIEDEL, U. AND JÜRGENS, N. (eds) 2010. *Biodiversity in Southern Africa – Volume 3: Implications for Landuse and Management*. 226pp. Goettingen & Windhoek: Klaus Hess Publishers. ISBN 9783933117472. [PCU]

Chapters in books

HOFFMAN, M.T. AND ROHDE, R. 2010. An analysis of 20th century vegetation change in Namaqualand using repeat photography. In U. Schmiedel and N. Jürgens (eds), *Biodiversity in Southern Africa – Volume II: Patterns and Processes at Regional Scale*, pp. 15-21. Göttingen & Windhoek: Klaus Hess Publishers. ISBN 9783933117465. [PCU]

HOFFMAN, M.T. AND TODD, S.W. 2010. Using fixed-point photography, field surveys, and GIS to monitor environmental change: an example from Riemvasmaak, South Africa. In *Repeat Photography-Methods and Applications in the Natural Sciences*, pp. 46-56. Washington DC: Island Press. ISBN 9781597267137. [PCU]

HOFFMAN, M.T., ROHDE, R., DUNCAN, J. AND KALEME, P. 2010. Repeat photography, climate change, and the long-term population dynamics of tree aloes in southern Africa. In *Repeat Photography-Methods and Applications in the Natural Sciences*, pp. 133-142. Washington DC: Island Press. ISBN 9781597267137. [PCU]

MUSIL, C., MAPHANGWA, K., RAITT, L. AND NYAGA, J. 2010. Responses of dwarf succulent plants, lichens, and soils to experimental climate warming in an arid South African ecosystem. In T. Hoffman, U. Schmiedel and N. Jürgens (eds), *Biodiversity in Southern Africa – Volume 3: Implications for Landuse and Management*, pp. 246-250. Göttingen & Windhoek: Klaus Hess Publishers. ISBN 9783933117472.

ROHDE, R. AND HOFFMAN, M.T. 2010. Landscape and vegetation change in Namibia since 1876 based on the photographs of the Palgrave Commission. In U. Schmiedel and

N. Jürgens (eds), *Biodiversity in Southern Africa – Volume II: Patterns and Processes at Regional Scale*, pp. 6-14. Gottingen & Windhoek: Klaus Hess Publishers. ISBN 9783933117465. [PCU]

SCHMIEDEL, U., LINKE, T., CHRISTIAAN, R., FALK, T., GRONGROFT, A., HAARMEYER, D., HANKE, W., HENSTOCK, R., HOFFMAN, M.T., KUNZ, N., LABITZKY, T., LUTHER-MOSEBACH, J., LUTSCH, N., MEYER, S., PETERSEN, A., ROWER, I.U., VAN DER MERWE, H., VAN ROOYEN, M.W., VOLLAN, B. AND WEBER, B. 2010. Environmental and socio-economic patterns and processes in the Succulent Karoo-frame conditions for the management of this biodiversity hotspot. In T. Hoffman, U. Schmiedel and N. Jürgens (eds), *Biodiversity in Southern Africa – Volume 3: Implications for Landuse and Management*, pp. 109-150. Gottingen & Windhoek: Klaus Hess Publishers. ISBN 9783933117472. [PCU]

SCOTT, G. 2010. Traditional medical practice in Africa. In S.B Kayne (ed.), *Traditional Medicine*, pp. 82-118. Cornwall: Pharmaceutical Press-Royal Pharmaceutical Soc Great Britain. ISBN 9780853698333.

Articles in Peer-reviewed Journals

AH-PENG, C., BARDAT, J., ELLIS, L.T., HEDDERSON, T.A., MALOMBE, I., MATCHAM, H., POCS, T., PORLEY, R., SENECA, A., SODERSTROM, L. AND WILBRAHAM, J. 2010. Additions to the bryoflora of Reunion Island 3: new and interesting records from the Tropical Bryology Group (British Bryological Society). *Journal of Bryology*, 32: 288-295.

AH-PENG, C., BARDAT, J., STAMENOFF, P., HEDDERSON, T.A. AND STRASBERG, D. 2010. Bryophytes de l'île de La Reunion: diversit, endmicit et conservation. *Cryptogamie Bryologie*, 31(3): 241-270.

ANDERSON, P., HOFFMAN, M.T. AND O'FARRELL, P.J. 2010. Above ground perennial plant biomass across an altitudinal and land-use gradient in Namaqualand, South Africa. *South African Journal of Botany*, 76: 471-481. [PCU]

BELLSTEDT, D.U., PIRIE, M.D., VISSER, J.C., DE VILLIERS, M.J. AND GEHRKE, B. 2010. A rapid and inexpensive method for the direct PCR amplification of DNA from plants. *American Journal of Botany*, 97: e65-68.

BOATWRIGHT, J.S. 2010. A rare new species of *Polhillia* (Genisteae, Fabaceae). *South African Journal of Botany*, 76: 142-145.

BOATWRIGHT, J.S. 2010. *Pearsonia mbabanensis*, an overlooked synonym of *P. Sessilifolia* subsp. *Marginata* (Tribe Crotalarieae). *Bothalia*, 40: 83-84.

BOATWRIGHT, J.S. AND MANNING, J. 2010. *Caesia sabulosa* (Hemerocallidaceae), a new species from the greater Cape region of South Africa. *South African Journal of Botany*, 76: 524-529.

BOATWRIGHT, J.S. and MANNING, J. 2010. Inclusion of the genus *Jodrellia* in *Bulbine* (Asphodeloideae). *Bothalia*, 40: 59.

- BOATWRIGHT, J.S. AND MANNING, J. 2010. Notes on the genus *Trachyandra* (Asphodelaceae: Asphodeloideae) 1: a review of the *T. thyrsoides* group (Section *Trachyandra*), including three new species from the Northern Cape. *South African Journal of Botany*, 76: 499-510.
- BOLTON, J.J. 2010. The biogeography of kelps (Laminariales, Phaeophyceae): a global analysis with new insights from recent advances in molecular phylogenetics. *Helgoland Marine Research*, 64: 263-279. [Ma-Re Institute]
- BOND, W.J. 2010. Do nutrient-poor soils inhibit development of forests? A nutrient stock analysis. *Plant and Soil*, 334: 47-60.
- BOND, W.J. AND PARR, C. 2010. Beyond the forest edge: ecology, diversity and conservation of the grassy biomes. *Biological Conservation*, 143: 2395-2404.
- BOND, W.J. AND SCOTT, A. 2010. Fire and the spread of flowering plants in the Cretaceous. *New Phytologist*, 188: 1137-1150.
- BOUCHENAK-KHELLADI, Y., MAURIN, O., HURTER, J. AND VAN DER BANK, M. 2010. The evolutionary history and biogeography of Mimosoideae (Leguminosae): an emphasis on African acacias. *Molecular Phylogenetics and Evolution*, 57: 495-508.
- BOUCHENAK-KHELLADI, Y., VERBOOM, G.A., SAVOLAINEN, V. AND HODKINSON, T.R. 2010. Biogeography of the grasses (Poaceae): a phylogenetic approach to reveal evolutionary history in geographical space and geological time. *Botanical Journal of the Linnean Society*, 162: 543-557.
- BRUYNS, P.V., AL-FARSI, A. AND HEDDERSON, T.A. 2010. Phylogenetic relationships of *Caralluma* R. Br. (Apocynaceae). *Taxon*, 59(4): 1031-1043.
- CHAMAILLE-JAMMES, S. AND BOND, W.J. 2010. Will global change improve grazing quality of grasslands? A call for a deeper understanding of the effects of shifts from C₄ to C₃ grasses for large herbivores. *Oikos*, 119: 1857-1861.
- COETSEE, C., BOND, W.J. AND FEBRUARY, E.C. 2010. Frequent fire affects soil nitrogen and carbon in an African savanna by changing woody cover. *Oecologia*, 162: 1027-1034.
- COMPTON, J.S., HERBERT, C., HOFFMAN, M.T., SCHNEIDER, R. AND STUUT, J.-B. 2010. A tenfold increase in the Orange Rivermean Holocene mud flux: implications for soil erosion in South Africa. *Holocene*, 20: 115-122. [PCU]
- CRAMER, M.D. 2010. Phosphate as a limiting resource: introduction. *Plant and Soil*, 334: 1-10.
- CRAMER, M.D., VAN CAUTER, A. AND BOND, W.J. 2010. Growth of N₂-fixing African savanna *Acacia* species is constrained by below-ground competition with grass. *Journal of Ecology*, 98: 156-167.
- EDWARDS, E.J., OSBORNE, C.P., STROMBERG, C.A.E., SMITH, S.A., BOND, W.J., CHRISTIN, P., COUSINS, A.B., DUVALL, M.R., FOX, D.L., FRECKLETON, R.P.,

- HARTWELL, J., GHANNOUM, O., HUANG, Y., JANIS, C.M., KEELEY, J., KELLOGG, E.A., KNAPP, A.K., LZAKEY, A.D.B., NELSON, D.M., SAARELA, J.M., SAGE, R.F., SALA, O., SALAMIN, N., STILL, C.J. AND TIPPLE, B. 2010. The origins of C₄ grasslands: integrating evolutionary and ecosystem science. *Science*, 328: 587-591.
- EKBLUM, A. AND GILLSON, L. 2010. Dung fungi as indicators of past herbivore abundance, Kruger and Limpopo National Park. *Palaeogeography Palaeoclimatology Palaeoecology*, 296: 14-27. [PCU]
- EKBLUM, A. AND GILLSON, L. 2010. Fire history and fire ecology of Northern Kruger (KNP) and Limpopo National Park (PNL), southern Africa. *Holocene*, 20(7): 1063-1077. [PCU]
- EKBLUM, A. AND GILLSON, L. 2010. Hierarchy and scale: testing the long term role of water, grazing and nitrogen in the savanna landscape of Limpopo National Park (Mozambique). *Landscape Ecology*, 25: 1529-1546. [PCU]
- FEBRUARY, E.C. AND HIGGINS, S. 2010. The distribution of tree and grass roots in savannas in relation to soil nitrogen and water. *South African Journal of Botany*, 76: 517-523.
- GALLO, J.A., PASQUINI, L., REYERS, B. AND COWLING, R.M. 2009. The role of private conservation areas in biodiversity representation and target achievement within the Little Karoo region, South Africa. *Biological Conservation*, 142(2): 446-454.
- GAUVIN-BIALECKI, A., AH-PENG, C., SMADJA, J. AND STRASBERG, D. 2010. Fragrant volatile compounds in the Liverwort *Drepanolejeunea madagascariensis* (STEPH.) GROLLE: approach by the HS-SPME technique. *Chemistry & Biodiversity*, 7: 639-648.
- GEHRKE, B., MARTIN-BRAVO, S., MUASYA, M. AND LUCENO, M. 2010. Monophyly, phylogenetic position and the role of hybridization in *Schoenoxiphium* Nees (Cariceae, Cyperaceae). *Molecular Phylogenetics and Evolution*, 56: 380-392.
- HOFFMAN, M.T., MADDEN, C.F., KRUGER, R., ERASMUS, K., SAAYMAN, N. AND BOTHA, J.C. 2010. Measuring the impact of indigenous herbivores: reply to Kerley and Landman. *African Journal of Range and Forage Science*, 27(3): 181-183. [PCU]
- HUYGH, W., LARRIDON, I., REYNDERS, M., MUASYA, A.M., GOVAERTS, R., SIMPSON, D. AND GOETGHEBEUR, P. 2010. Nomenclature and typification of names of genera and subdivisions of genera in *Cypereae* (Cyperaceae): 1. Names of genera in the *Cyperus* clade. *Taxon*, 59(6): 1883-1890.
- KGOPE, B., BOND, W.J. AND MIDGLEY, G.F. 2010. Growth responses of African savanna trees implicate atmospheric [CO₂] as a driver of past and current changes in savanna tree cover. *Austral Ecology*, 35: 451-463.
- KLAK, C. 2010. Three new species and two new combinations in the Aizoaceae from the Western and Northern Cape of South Africa. *South African Journal of Botany*, 76: 299-307.

KULMATISKI, A., BEARD, K.H., VERWEIJ, R. AND FEBRUARY, E.C. 2010. A depth-controlled tracer technique measures vertical, horizontal and temporal patterns of water use by trees and grasses in a subtropical savanna. *New Phytologist*, 188: 199-209.

LINDER, P., BAEZA, C.M., BARKER, N., GALLEY, C., HUMPHREYS, A.M., LLOYD, K., ORLOVICH, D., PIRIE, M.D., SIMON, B.K., WALSH, N. AND VERBOOM, G.A. 2010. A generic classification of the Danthonioideae (Poaceae). *Annals of the Missouri Botanical Garden*, 97: 306-364.

MAKOI, J.H.J.R., BELANE, A., CHIMPHANGO, S.B. AND DAKORA, F.D. 2010. Seed flavonoids and anthocyanins as markers of enhanced plant defence in nodulated cowpea (*Vigna unguiculata* L. Walp.). *Field Crops Research*, 118: 21-27.

MAKOI, J.H.J.R., CHIMPHANGO, S.B. AND DAKORA, F.D. 2010. Elevated levels of acid and alkaline phosphatase activity in roots and rhizosphere of cowpea (*Vigna unguiculata* L. Walp) genotypes grown in mixed culture and at different densities with sorghum (*Sorghum bicolor* L.). *Crop & Pasture Science*, 61: 279-286.

MAKOI, J.H.J.R., CHIMPHANGO, S.B. AND DAKORA, F.D. 2010. Photosynthesis, water-use efficiency and $\delta^{13}\text{C}$ of five cowpea genotypes grown in mixed culture and at different densities with sorghum. *Photosynthetica*, 48(1): 143-155.

MALGAS, P.R., POTTS, A., OETTLE, N.M., KOELLE, B., TODD, S.W., VERBOOM, G.A. AND HOFFMAN, M.T. 2010. Distribution, quantitative morphological variation and preliminary molecular analysis of different growth forms of wild rooibos (*Aspalathus linearis*) in the northern Cederberg and on the Bokkeveld Plateau. *South African Journal of Botany*, 76: 72-81. [PCU]

MIDGLEY, G., DAVIES, I.D., ALBERT, C.H., ALTWEGG, R., HANNAH, L., HUGHES, G., OHALLORAN, L.R., SEO, C., THORNE, J.H. AND THUILLER, W. 2010. BioMove – an integrated platform simulating the dynamic response of species to environmental change. *Ecography*, 33: 612-616.

MIDGLEY, G.F., BOND, W.J., KAPOV, V., RAVILIOUS, C., SCHARLEMANN, J. AND WOODWARD, I. 2010. Terrestrial carbon stocks and biodiversity: key knowledge gaps and some policy implications. *Current Opinion in Environmental Sustainability*, 2: 264-270.

MIDGLEY, J.J. 2010. Causes of secondary sexual differences in plants – evidence from extreme leaf dimorphism in *Leucadendron* (Proteaceae). *South African Journal of Botany*, 76: 588-592.

MIDGLEY, J.J. 2010. More mysterious mounds: origins of the Brazilian *campos de murundus*. *Plant and Soil*, 336: 1-2.

MIDGLEY, J.J., CLARKE, P.J. AND LAWES, M.J. 2010. Resprouting as a key functional trait in woody plants – challenges to developing new organizing principles. *New Phytologist*, 188: 651-654.

MIDGLEY, J.J., LAWES, M.J. AND CHAMAILLE-JAMMES, S. 2010. Savanna woody plant dynamics: the role of fire and herbivory, separately and synergistically. *Australian*

Journal of Botany, 58: 1-11.

MOORE, G., SMITH, G.F., FIGUEIREDO, E., DEMISSEW, S., LEWIS, G., SCHRIRE, B., RICO, L., VAN WYK, A.E., GLAZEWSKI, J.I., MUASYA, A.M. AND STIRTON, C.H. 2010. *Acacia*, the 2011 Nomenclature Section in Melbourne, and beyond. *Taxon*, 59(4): 1188-1195.

MOORE, T., VERBOOM, G.A. AND FOREST, F. 2010. Phylogenetics and biogeography of the parasitic genus *Thesium* L. (Santalaceae), with an emphasis on the Cape of South Africa. *Botanical Journal of the Linnean Society*, 162: 435-452.

MUASYA, A.M. AND DE LANGE, P.J. 2010. *Ficinia spiralis* (Cyperaceae) a new genus and combination for *Desmoschoenus spiralis*. *New Zealand Journal of Botany*, 48(1): 31-39.

MUASYA, A.M., HARVEY, Y., CHEEK, M., TAH, K. AND SIMPSON, D. 2010. *Coleochloa domensis* (Cyperaceae), a new epiphytic species from Cameroon. *Kew Bulletin*, 65: 323-325.

MUASYA, A.M., MUSILI, P.M. AND VRIJDAGHS, A. 2010. *Kyllinga mbitheana* (Cyperaceae) – description, floral ontogeny and pollen micromorphology of a new species from Kenya. *Journal of East African Natural History*, 99: 65-75.

MUASYA, A.M., WILKIN, P., BURROWS, J., BURROWS, S. AND VAN WYK, E. 2010. A critically endangered new species of yam (*Dioscorea strydomiana* Wilkin, Dioscoreaceae) from Mpumalanga, South Africa. *Kew Bulletin*, 65: 421-433.

O'FARRELL, P.J., DONALDSON, J. AND HOFFMAN, M.T. 2010. Vegetation transformation, functional compensation, and soil health in a semi-arid environment. *Arid Land Research and Management*, 24: 12-30. [PCU]

POWER, S., CRAMER, M.D., VERBOOM, G.A. AND CHIMPHANGO, S.B. 2010. Does phosphate acquisition constrain legume persistence in the fynbos of the Cape Floristic Region? *Plant and Soil*, 334: 33-46.

RADLOFF, F.G.T., MUCINA, L., BOND, W.J. AND LE ROUX, P.J. 2010. Strontium isotope analyses of large herbivore habitat use in the Cape Fynbos region of South Africa. *Oecologia*, 164: 567-578.

RICHARDSON, F.D., HOFFMAN, M.T. AND GILLSON, L. 2010. Modelling the complex dynamics of vegetation, livestock and rainfall in a semiarid rangeland in South Africa. *African Journal of Range and Forage Science*, 27(3): 125-142. [PCU]

ROHDE, R., BENITO, G., SEELY, M., KULLS, C., DAHAN, O., ENZEL, Y., TODD, S.W., BOTERO, B., MORIN, E., GRODEK, T. AND ROBERTS, C. 2010. Management of alluvial aquifers in two Southern African ephemeral rivers: implications for IWRM. *Water Resources Management*, 24: 641-667. [PCU]

ROTHMAN, M., ANDERSON, R.J., BOLTON, J.J., BOOTHROYD, C.J.T. AND KEMP, F.A. 2010. A simple method for rapid estimation of *Ecklonia maxima* and *Laminaria pallida* biomass using floating surface quadrats. *African Journal of Marine Science*,

32(1): 137-143. [Ma-Re Institute]

SIEBEN, E.J.J., MORRIS, C.D., KOTZE, C.D. AND MUASYA, A.M. 2010. Changes in plant form and function across altitudinal and wetness gradients in the wetlands of the Maloti-Drakensberg, South Africa. *Plant Ecology*, 207: 107-119.

SIRAMI, C., NESPOULOUS, A., CHEYLAN, J.-P., MARTY, P., HVENEGAARD, G.T., GENIEZ, P., SCAHTZ, B. AND MARTIN, J.-L. 2010. Long-term anthropogenic and ecological dynamics of a Mediterranean landscape: impacts on multiple taxa. *Landscape and Urban Planning*, 96: 214-223.

SMIT, A.J., ROBERTSON-ANDERSSON, D.V. AND BOLTON, J.J. 2010. The effect of macroalgal and compound feeds on the sensory quality of cultivated South African abalone, *Haliotis midae* Linnaeus (Mollusca, Gastropoda). *Aquaculture Nutrition*, 16: 590-603. [Ma-Re Institute]

STAVER, A., BOND, W.J., STOCK, W.D., JANSE VAN RENSBURG, S. AND WALDRAM, M. 2009. Browsing and fire interact to suppress tree density in an African savanna. *Ecological Applications*, 19(7): 1909-1919.

STOCK, W.D., BOND, W.J. AND VAN DE VIJVER, C.A.D.M. 2010. Herbivore and nutrient control of lawn and bunch grass distributions in a southern African savanna. *Plant Ecology*, 206: 15-27.

SUINYUY, T.N., DONALDSON, J. AND JOHNSON, S.D. 2010. Scent chemistry and patterns of thermogenesis in male and female cones of the African cycad *Encephalartos natalensis* (Zamiaceae). *South African Journal of Botany*, 76: 717-725.

VIRAH-SAWMY, M., WILLIS, K.J. AND GILLSON, L. 2010. Evidence for drought and forest declines during the recent megafaunal extinctions in Madagascar. *Journal of Biogeography*, 37: 506-519.

VON HASE, A., ROUGET, M. AND COWLING, M. 2010. Evaluating private land conservation in the Cape Lowlands, South Africa. *Conservation Biology*, 24(5): 1182-1189. [PCU]

VRIJDAGHS, A., REYNDERS, M., LARRIDON, I., MUASYA, A.M., SMETS, E. AND GOETGHEBEUR, P. 2010. Spikelet structure and development in Cyperoideae (Cyperaceae): a monopodia general model based on ontogenetic evidence. *Annals of Botany*, 105: 555-571.

WAKELING, J., CRAMER, M.D. AND BOND, W.J. 2010. Is the lack of leguminous savanna trees in grasslands of South Africa related to nutritional constraints? *Plant and Soil*, 336: 173-182.

WEST, A., GOLDSMITH, G.R., BROOKS, P.D. AND DAWSON, T.E. 2010. Discrepancies between isotope ratio infrared spectroscopy and isotope ratio mass spectrometry for the stable isotope analysis of plant and soil waters. *Rapid Communications in Mass Spectrometry*, 24: 1948-1954.

WIGLEY, B., BOND, W.J. AND HOFFMAN, M.T. 2010. Thicket expansion in a South

African savanna under divergent land use: local vs. global drivers? *Global Change Biology*, 16: 964-976. [PCU]

YATES, C.J., ELITH, J., LATIMER, A., LE MAITRE, D., MIDGLEY, G.F., SCHURR, F. AND WEST, A. 2010. Projecting climate change impacts on species distributions in megadiverse South African Cape and Southwest Australian Floristic Regions: opportunities and challenges. *Austral Ecology*, 35: 374-391.

YATES, M.J., VERBOOM, G.A., REBELO, A.G. AND CRAMER, M.D. 2010. Ecophysiological significance of leaf size variation in Proteaceae from the Cape Floristic Region. *Functional Ecology*, 24: 485-492.

Doctoral dissertations

SCHACHTSCHNEIDER, K. 2010. Water sourcing by riparian trees along ephemeral riverbeds. Supervised by E.C. February and J. Day.

Master's degrees (by research)

BALLANTYNE, F. 2010. Palaeoecology and vegetation dynamics in the Cederberg Wilderness Area. Supervised by L. Gillson and E.C. February

BRITTON, M.N. 2010. *Tetralia triangularis* (Boeck.) C.B. Clarke and the Cape Fold Archipelago: An analysis of genetic and morphological variation in a high-altitude species native to the mountains of the Cape Floristic Region. Supervised by G.A. Verboom and T.A. Hedderson

DLUDLU, M.N. 2010. Systematic studies of the Southern African Psoraleoid legumes. Supervised by A.M. Muasya and S.B.M. Chimphango

HUBBART, B. 2010. Toxigenic phytoplankton and concomitant toxicity in the mussel *Choromytilus meridionalis* off the west coast of South Africa in the Autumn of 2007. Supervised by J.J. Bolton and G.C. Pitcher

HUNTER, R. 2010. The secretion of acid phosphatase by Proteaceae as an adaptation to limited phosphate availability. Supervised by M.D. Cramer

KRUGER, R. 2010. Untangling clumps: factors influencing seedling ecology in a semi-desert and the implications for restoration ecology. Supervised by P. Carrick and M.T. Hoffman

MAISTRY, P.M. 2010. Phosphorous requirement of indigenous N₂-Fixing legumes and rhizobial diversity in the low P soils of the Cape Floristic Region, South Africa. Supervised by S.B.M. Chimphango

NICOLSON, G.A. 2010. Road reserves as conservation assets: exploring the species of conservation concern and the ecological condition of the N7 road reserve. Supervised by M.T. Hoffman

POWER, S.C. 2010. Soil P availability limits legume persistence and distribution in the fynbos of the Cape Floristic Region. Supervised by S.B.M. Chimphango, M.D. Cramer and

G.A. Verboom

SANKAR, K. 2010. Setting optimal diet ratios of kelp (*Ecklonia maxima* (Oseck) Papenfuss) and formulated feed, and tests of a recirculating system using *Ulva* (Chlorophyta) as a biofilter, in South African abalone (*Haliotis midae*) cultivation

SKELTON, R.P. 2010. Variation in leaf traits and their effects on physiological processes in Proteaceae species from the Cape Floristic Region. Supervised by J.J. Midgley and M.D. Cramer