



GroundTruth

*Water, Wetlands and
Environmental Engineering*

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Curriculum Vitae – Dr. Mark Graham

Personal Details:

Name: Mark Graham
Profession: Aquatic Scientist
Date of Birth: 24 October 1964
Marital Status: Married
Identity Number: 641024 5871 186

Education and Training:

- 1987 BSc (Agriculture, University Natal, Pietermaritzburg) - majoring in Rangeland Ecology
- 1991 MSc (Biological Sciences, University of Natal, Durban).
- 2004 PhD (Botany, University of North West (Potchefstroom)).

Key Qualifications:

Over 25 years of experience in terrestrial and aquatic ecosystem functioning and management.

Particular areas of expertise include:

- Specialist inputs to Reserve Studies, environmental impact assessments (EIAs) and studies, specifically those associated with water and water quality related issues.
- Biodiversity specialist and team leader in various ESIA studies to Equator Principles standards, in particular IFC Performance Standards on Social & Environmental Sustainability and World Bank Group Environmental, Health & Safety Guidelines, particularly focusing on water related issues.
- Management of an ISO 17025 quality accredited water analytical laboratory.
- External specialist auditor for SANAS (South African National Accreditation Society).
- Management of the National River Health Programme - Quality Assurance programme.
- Provincial SASS5 quality assurance auditor.
- Integrated water resource management (IWRM) and Integrated Catchment Management (ICM).
- Conservation planning, specifically around freshwater aquatic conservation issues, including rivers, wetlands and lakes.
- Statistical and multivariate analytical approaches to applied ecological data.
- Publication of the standard method for the SASS5 technique as well as accreditation of this method to the ISO 17025 standard.
- Development and publication of community based tools for water quality Assessment (miniSASS).

Current Employment:

Organisation: Groundtruth Water, Wetlands & Environmental Consultants
Position: Director
Duties: Management of GroundTruth CC providing applied environmental solutions, water quality and biomonitoring services to local and international industries and mining houses. Provision of specialist inputs to Reserve studies. Co-developer and pioneer of a range of low technology, simple aquatic

biomonitoring and water quality monitoring tools to be used in community level “citizen science” catchment monitoring initiatives, including the miniSASS tool.

Professional Memberships:

- Professional Natural Scientist (Pr.Sci.Nat) in Ecological Science - The South African Council for Natural Scientific Professions (Reg. No. 400099/96)
- Fellow of the Water Institute of Southern Africa (FWISA)
- Member - Southern African Society of Aquatic Scientists (SASAqS).
- Member - KZN Provincial Implementation Team, River Health Programme (RHP).

Experience Record:

- 2003 to 2004 Umgeni Water, KwaZulu-Natal, South Africa
Specialist Environmentalist
This position was principally to market and conduct specialist investigations around aquatic resources and water quality issues for the water and environmental industries.
- 1995 to 2003 Umgeni Water, KwaZulu-Natal, South Africa
Scientist Hydrobiology
Managing of the Umgeni Water Hydrobiology water laboratory as well as the conducting of specialist investigations around aquatic and terrestrial resources.
- 1992 to 1995 Umgeni Water, KwaZulu-Natal, South Africa
Water Research Commission, Research Scientist
- 1988 to 1990 University Of Natal, Durban, Biological Sciences Department, KwaZulu-Natal
Researcher

Countries Worked in:

Democratic Republic of Congo, Guinea, Kenya, Lesotho, Mozambique, Namibia, South Africa, Tanzania, Zimbabwe, Zambia.

Examples of Historical & Current Projects:

- Provision of applied environmental solutions, water quality and biomonitoring services to local and international industries and mining houses (e.g. AngloGold Ashanti (AGA), SAPPI, Mondi, Singisi Forests, Banro Mining (DRC), Phelps Dodge (DRC), Kalumines (DRC), Kisanfu (DRC), Letseng, Liphobong and Kao Diamond Mines (Lesotho), – covering the following mineral resources gold, diamonds, copper, coal), consultants (e.g. SRK, ACER, SiVEST, Arcus Gibb, SEF), developers and regional and national government departments (e.g. Ezemvelo KZN Wildlife, eThekweni Municipality, DWAF, Water Research Commission, Lesotho Highlands Development Authority etc.).
- Provision of specialist inputs to Reserve studies (e.g. Weza, Mkhuze, Mzimkhulu, Izotsha and Xuka Reserves)
- Kwadukuza Landfill - Study of the aquatic ecosystems that receive treated effluent from the Stanger Waste Water Treatment Works (WWTW), namely the Mvoti River

- Water Affairs Model Gap Analysis - To list and describe all the models frequently used for the DWA (National and Regional Offices and Catchment Management Agencies) as well as other institutions for water resource analysis.
- eThekweni Rivers Conservation Plan- Developed level IV river types under current climatic and flow conditions.
- Specialist input into the Eskom Ingula IPSS for the initiation and implementation of a comprehensive biomonitoring programme for the aquatic systems affected by the IPSS development for the Ingula Pumped Storage Scheme.
- Modelling the impacts on hydrological flows as a result of the Agrizone development within the Dube Tradeport at King Shaka Airport. Additionally designing the long term monitoring programme for all water resources associated with the King Shaka Airport.
- Undertaking of the routine storm and surface water monitoring programme for the King Shaka International Airport.
- Co-developer and pioneer of a range of low technology, simple aquatic biomonitoring and water quality monitoring tools to be used in community level “citizen science” catchment monitoring initiatives, including the miniSASS tool.

Examples of International Projects:

- Lihobong Diamond Mine: Wet and dry season aquatic biodiversity assessments conducted during 2009 to determine the baseline condition of the aquatic environment affected by the Lihobong Diamond Mine Project, prior to the expansion of the current mining situation.
- DRC Kalumines: - The primary focus of the project was to establish a biodiversity baseline for the terrestrial and aquatic ecosystems.
- Sani Pass road upgrade - Specialist EIA input **Recommendations** drawn from an assessment report will provide input to the Environmental Management Plan (EMP) for the road construction. This will include various mitigation measures and management protocols that should be best adhered during the construction phase in order to reduce unnecessary impacts to the aquatic ecosystems in the Sani Pass area.
- Lesotho Highlands Development Authority. Management policy research and review.
- Provision of specialist inputs to Reserve studies for Ncala (Mozambique), Letseng (Lesotho) and Island Dam (Zimbabwe).
- Orange-Senqu River Commission (ORASECOM). Water quality sampling as part of a transboundary project, commissioned by the Orange-Senqu River Commission (ORASECOM). ORASECOM, represented by delegates from South Africa, Botswana, Namibia and Lesotho the measured the water quality at sites along major river systems in the Orange River basin occurring in these four countries.

Papers and Publications

Dickens C, Graham M, De Winnaar G, Hodgson K, Tiba F, Sekwele R, Sikhakhane S, De Moor F, Barber-James H, Van Niekerk. K. 2008. *The impacts of high water flow releases from an impoundment on in-stream ecological processes*. Pretoria: Water Research Commission.

Dickens C, Graham P. 1998. Biomonitoring for effective management of wastewater discharges and the health of the river environment. *Aquatic Ecosystem Health and Management* 1: 199-217.

Dickens CWS, Graham PM. 2002. The South African Scoring System (SASS) version 5 rapid bioassessment method for rivers. *African Journal of Aquatic Science* 27: 1-10.

Kleynhans CJ, Louw MD, Graham M. 2009. Module G: *EcoClassification and EcoStatus determination in river EcoClassification: Manual for Index of Habitat Integrity*. Pretoria, South Africa: Joint Water Research Commission and Department of Water Affairs and Forestry Report.

Graham PM, Dickens CWS, Taylor RJ. 2004. miniSASS — A novel technique for community participation in river health

monitoring and management. *African Journal of Aquatic Science* 29 (1): 25–35.

Graham PM, Dickens CWS, Mbowe S. 1998. *Modelling the water quality in impoundments within the Umgeni Water operational area and the consequences for potable water treatment costs*. WRC Report No: 615/1/98.

Dickens CWS, Graham PM & Freese S. 1996. *Algal rupture during abstraction from reservoirs and the consequences for water treatment*. Water Research Commission. WRC Report No: 588/1/96.

Quayle LM, Dickens CWS, Graham M, Simpson D, Goliger A, Dickens JK, Freese S, Blignaut J. 2010. *Investigation of the positive and negative consequences associated with the introduction of zero-phosphate detergents into South Africa*. WRC Report No: TT 446/10.

Dickens C, Kotze D, Mashigo S, Mackay H, Graham M. December 2003. *Guidelines for integrating the protection, conservation and management of wetlands into catchment management planning*. Water Research Commission. WRC Report No: TT 220/03.

Curriculum Vitae – Craig Cowden

Personal Details:

Name: Craig Cowden
Profession: Wetland Ecologist
Date of Birth: 14 March 1978
Nationality: South African



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Key Qualifications:

Eighteen years' experience in ecosystem functioning and management, specializing in wetland ecosystems. Involvement in a variety of studies to determine practical and applied ecological solutions. Specialist input into various studies, focusing on:

- Mapping and infield delineation of wetland habitat within various regions of Southern Africa, including South African provinces of KwaZulu-Natal, Mpumalanga, Free State, Eastern Cape and Gauteng, and Lesotho for inventory and management purposes.
- Assessment of various wetland ecosystems to highlight potential impacts, within current and proposed landscape settings, and recommend appropriate mitigation and offsets based on assessing wetland ecosystem service delivery (functioning) and ecological health/integrity.
- Assessment of various wetland ecosystems to plan appropriate wetland rehabilitation activities and performance evaluation and monitoring of wetland rehabilitation projects.
- Literature reviews and research relating to impacts, best management practices, promoting biodiversity, monitoring and evaluating rehabilitation within wetland ecosystems.

Education and Training:

- 2018 M.Sc. (Environmental Science) Rhodes University, Grahamstown.
- 2017 Wetland Delineation Course - Wetland Training Institute, Convington (Louisiana), United States of America.
- 2017 Natural Processes for the Restoration of Drastically Disturbed Sites. VII World Conference on Ecological Restoration, Foz do Iguassu, Brazil, August 26, 2017.
- 2015 A Methodology for Determining Buffer Zones for Rivers, Wetlands and Estuaries. National Training and Development Workshop, Pretoria, Gauteng, November 24-25, 2017.
- 2005 Wetland Assessments to Inform Wetland Rehabilitation Planning - University of KwaZulu-Natal.
- 2001 Forest Certification Course - SGS Qualifor.
- 2001 Wetland Rehabilitation Planning and Implementation - Mondi Wetlands Project.
- 1999 B.Sc. (Agriculture) University of Natal, Pietermaritzburg – Four-year Degree (Honours equivalent), majoring in Wildlife Science & Zoology.

Professional Memberships:

- Professional Natural Scientist (Pr.Sci.Nat) in Ecological Science - The South African Council for Natural Scientific Professions (Reg. No. 400197/05)
- Founding Member - South African Wetland Society
- Member -Society of Wetland Scientists (International)
- Member -Society of Ecological Restoration (International)

Professional Awards:

- National Wetland Award under the "Stewardship" category awarded in 2013 in recognition of the wetland rehabilitation associated with the Greater Edendale Mall development.
- Mondi Wetlands Programme acknowledgment of "Contributions towards wetland conservation" awarded in 2012.

Experience Record:

2009 to Present: GroundTruth - Management of the wetland division within GroundTruth.

2001 to 2009: Land Resources International (LRI) - Management of the environmental division within LRI.

Examples of Projects:

- Implementation of wetland rehabilitation planning in various provinces, including KwaZulu-Natal, Mpumalanga, Limpopo, Gauteng, Free State and Western Cape for the Working for Wetlands Programme from 2005-2012, 2016-2018.
- Wetland specialist input and support to Burundi Nature Action and Association pour la Conservation de la Nature au Rwanda on behalf of the International Union for the Conservation of Nature – Netherlands Committee.

- Assessments of impacted wetland systems and rehabilitation planning to inform the offset requirements for proposed development at the Cascades Mall in Pietermaritzburg.
- Assessments of impacted wetland systems and rehabilitation planning to inform the offset requirements for Exxaro coal mining operations.
- Assessment of wetland systems potentially affected by the proposed expansion of Lumwana Mine near Solwezi, Zambia on behalf of SRK Consultants.
- Water Research Commission research project on developing a monitoring and evaluation framework to assess wetland rehabilitation in South Africa.

Publications

- **Cowden C**, Kotze DC, Ellery WN & Sieben EJJ. 2014. *Assessment of the long-term response to rehabilitation of two wetlands in KwaZulu-Natal, South Africa*. African Journal of Aquatic Science, Vol. 39, No. 3.
- Rivers-Moore NA, **Cowden C**. 2012. *Regional prediction of wetland degradation in South Africa*. *Wetlands Ecology and Management*, DOI 10.1007/s11273-012-9271-5.
- Macfarlane DM, Walters D & **Cowden C**, 2011. A wetland health assessment of KZN's priority wetlands. Draft Unpublished Report prepared for Ezemvelo KZN Wildlife, Pietermaritzburg.
- **Cowden C** & Kotze DC, 2009. WET-RehabEvaluate: Guidelines for the monitoring and evaluation of wetland rehabilitation projects. WRC Report No. TT 342/08, Water Research Commission, Pretoria.
- Kotze DC, **Cowden C**. 2009. KZN Biodiversity Stewardship Programme: Guidelines for the *in situ* Management of Ecosystems in KwaZulu-Natal, according to Biodiversity Conservation Principles – Wetlands. Unpublished Report prepared for Ezemvelo KZN Wildlife by Land Resources International, Pietermaritzburg.
- **Cowden C**, Ellery W, Kotze D, Grenfell M, McCulloch D, Woods D, Grenfell S, Bambus O. 2009. *Performance evaluation of the wetland rehabilitation undertaken at Killarney Wetland in Ntsikeni Nature Reserve, KwaZulu-Natal Province* In Kotze DC, Ellery WN. 2009. *WET-OutcomeEvaluate: An Evaluation of the rehabilitation outcomes at six wetland sites in South Africa*. WRC Report No. TT 343/09. Water Research Commission, Pretoria.

Conference Presentations:

- **Cowden C**, Kotze D, Walters D, Browne B. Monitoring and evaluation framework for wetland restoration in South Africa, using an urban wetland case study. *Presented during VII World Conference on Ecological Restoration*. Foz do Iguassu, Brazil, August 28 - September 1, 2017.
- **Cowden C**. Wetland specialist input into the Working for Wetlands rehabilitation planning cycle. 21st National Wetlands Indaba, Hoedspruit, Mpumalanga, October 25-28, 2016.
- **Madikizela B**, Cowden C, Kotze D, Ellery W. *Documenting lessons and refining the wetland restoration field of practice in South Africa: The response of two wetlands to Working for Wetlands Restoration*, Presented during V World Conference on Ecological Restoration. Wisconsin, USA, September 6-11, 2013.
- **Cowden C**, Kotze D, Ellery W. *Assessment of the long-term response of specific wetlands to rehabilitation interventions by Working for Wetlands*, 17th National Wetlands Indaba. Klein Kariba, Limpopo, October 23-26, 2012.
- **Cowden C**. *Urban Wetland Rehabilitation: A KwaZulu-Natal Case Study*, 16th National Wetlands Indaba. Didima, KwaZulu-Natal, October 18-21, 2011.

Curriculum Vitae – Matthew Janks

Personal Details:

Name: Matthew Janks
Profession: Wetland Specialist
Date of Birth: 07 September 1989
Marital Status: Married
Nationality: South African



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Key Qualifications:

Matthew Janks has been appointed as a Wetland Specialist at GroundTruth since July 2014, and specialises in wetland vegetation. His main tasks include the following:

- Mapping and infield delineation of wetland and riparian habitat;
- Assessing impacts on wetland ecosystems within current and proposed landscape settings;
- Assessing wetland ecosystem services (functioning) and ecological integrity;
- Wetland vegetation monitoring;
- Rehabilitation monitoring and evaluation;
- Specialist wetland Environmental Control Officer;
- Rehabilitation Planning;
- Geographic Information Systems;

His Master's in Botany thesis held the following title: Montane wetlands of the Great Escarpment of South Africa: plant communities and environmental drivers

His Honour's in Biodiversity and Conservation project held the following title: Using Mark-recapture to provide population census data for use in Red listing of invertebrates: the rare terrestrial snail *Prestonella bowkerii* as a case study

Education and Training:

- 2015: Soil classification short course, Cedara College
- 2015: TWA (Tools for Wetland Assessment) course, Rhodes University
- 2015: Masters Degree (Botany), Rhodes University
- 2011: Honours Degree (Biodiversity and Conservation with distinction), Rhodes University
- 2010: Bachelor's Degree (Botany and Environmental Science), Rhodes University

Professional Memberships

- Professional Natural Scientist (Pr.Sci.Nat) in Ecological Science – The South African Council for Natural Scientific Professions (Reg. No. 117219)

Experience Record:

July 2014 -Present GroundTruth – Water, Wetlands and Environmental Engineering Consultants. Assisting in wetland delineations, and GIS. Some of the projects include;

- Delineation of wetland habitats within KwaZulu-Natal and Mpumalanga;
- Assessment of wetland habitats within KwaZulu-Natal and Mpumalanga;
- Monitoring and evaluation of wetland rehabilitation projects within KwaZulu-Natal and Mpumalanga;

- Inputs into developing a wetland rehabilitation monitoring and evaluation framework.

June 2015: National Geographic Society assisting in botanical survey of the Cuito River, Angola.

2013-2014: Conservation Support Services. Assisting in desktop and field mapping. Some projects include:

- Updating the 1:50 000 maps of the Northern Cape
- In field land use map verification
- Alien invasive tree mapping

Examples of Projects

- Foskor Richards Bay wetland delineation and assessment
- Edendale Ward 20 wetland delineation and assessment
- Clovelly dam wetland delineation
- Hilton erf 330 delineation and assessment
- Riverhorse Valley wetland rehabilitation wetland monitoring
- Riverhorse Valley wetland Environmental Control Officer
- Exxaro Coal Mine wetland rehabilitation monitoring
- Exxaro Coal Mine relocation site wetland delineation and assessment
- Empangeni mixed use development delineation and assessment
- Khayalisha pump station wetland specialist input
- Letseng Diamond Mine wetland creation monitoring and evaluation
- Letseng Diamond Mine nitrate dynamics study
- eThekweni wetland inventory
- Edendale Mall wetland monitoring and evaluation
- THD Ntshongweni wetland delineation and assessment
- Klipport Dam wetland delineation, assessment and conceptual rehabilitation plan
- MUT pipeline wetland delineation, assessment and conceptual rehabilitation plan
- Isipingo Waste Water Treatment Works upgrade wetland delineation and assessment
- Edendale Mall wetland monitoring and management protocol
- Working for wetlands rehabilitation planning
- Development of a framework to monitor and evaluate wetland rehabilitation projects in South Africa
- Msinga Cwaka New Town freshwater ecosystem delineation and assessment
- Umlalazi road upgrade wetland delineation and assessment
- Sani Pass Hotel wetland delineation and assessment report
- Sani Pass Hotel wetland monitoring protocol
- Umhlanga Ridge Town Centre wetland creation monitoring and evaluation

Publications

- Janks, M.R., Barker, N.P. 2013. Using Mark-recapture to provide population census data for use in Red Listing of invertebrates: the rare terrestrial snail *Prestonella bowkeri* as a case study. *Biodiversity and Conservation*, 22(8):1609-1621
- Sieben, E.J.J., Collins, N.B., Corry, F.T.J., Kotze, D.C., Job, N., Muasya, A.M., Venter C.E., Mtshali, H., Zondo, S.A., Janks, M., Pretorius, L. 2016. The vegetation of grass lawn wetlands of floodplains and pans in semi-arid regions of South Africa: Description, classification and explanatory environmental factors. *South African Journal of Botany*, 104(2016):215-224
- Sieben, E.J.J., Collins, N.B., Kotze, D.C., Mofutsanyana S.S., Janks, M.R. 2017. Temperate grassy wetlands of South Africa: Description, classification and explanatory environmental variables. *South African Journal of Botany* 113:68-76
- Sieben, E.J.J., Mtshali, H., Janks, M. 2014. National wetland vegetation database: classification and analysis of wetland vegetation types for conservation planning and monitoring. WRC Report No. 1980/1/14, Water Research Commission, Pretoria.

Curriculum Vitae – Juan Tedder



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Personal Details:

Name: Juan Tedder
Profession: Aquatic ecologist
Date of Birth: 9 November 1982
Marital Status: Married
Nationality: South African

Key Qualifications:

Ten years' experience in the biomonitoring of aquatic ecosystems, including the application of various indicators of ecological health, namely benthic diatoms, macroinvertebrates, fish, riparian vegetation and water quality. An accredited SASS5 practitioner under the River Health Programme for DWS. DWS appointed provincial SASS5 auditor. Provides specialist input into various studies covering water related issues. Routine and ad-hoc monitoring and assessments of water quality and river health following toxic material spills and in the implementation of water quality monitoring plans associated with numerous small and large development projects (including the Eskom Ingula pumped storage scheme and construction phase monitoring of the King Shaka ACSA/Dube Tradeport development site and Letšeng Diamond Mine). Aquatic ecologist on numerous Ecological Water Reserve Determinations studies.

Education and Training:

- B.Sc. University of Natal KwaZulu-Natal, Pietermaritzburg – Ecological Sciences – Wildlife Sciences.
- DWS SASS5 Accreditation

Professional Memberships:

- Southern African Society of Aquatic Scientists (SASAqS)
- Certificated Natural Scientist (Cert.Sci.Nat) in Environmental Science - The South African Council for Natural Scientific Professions (Reg. No. 200033/16)

Experience Record:

2008 to Present: GroundTruth Water, Wetlands and Environmental Engineering
Ecological Scientist: Water quality and riverine health monitoring

2007 to 2007: Eskom Distribution
Working as an ASGI-SA trainee in the Environmental field; this included monitoring on construction projects and in house environmental screening for non-listed activities.

2006 to 2007: Department of Grassland Science, University of KwaZulu-Natal
Junior Technician working on modifying and testing a seed planter so that it could work of compressed air. Testing was done at Ukulinga and at Kromdraai Mine in Witbank. I was involved in data capture for two long term trials, as well as general maintenance at the Ukulinga research farm.

2005 to 2007: Field assistant at the University of KwaZulu-Natal and on various University postgraduate research projects in protected areas.

Countries Worked in:

Democratic Republic of Congo, Lesotho, Namibia, South Africa.

Historical & Current Projects:

- Management and reporting of the routine water quality and aquatic habitat monitoring programme for the Letšeng Diamonds Mine, Lesotho, including analysis and reporting of results and management interventions required.
- Development and monitoring of the water quality and aquatic habitat monitoring programme covering the multi billion Rand Eskom Ingula Pumped Storage Scheme.
- Monitoring of the operational phase storm and waste water quality monitoring plans for the multi billion Rand King Shaka International Airport, KwaZulu-Natal.
- Monitoring and assistant manager of the routine monitoring of water quality and aquatic habitat associated with the operational phase of the King Shaka International Airport, KwaZulu-Natal, including analysis and reporting of results and management interventions required.
- Involved with the construction phase water quality monitoring and analysis associated with the King Shaka International Airport and Dube Tradeport multi billion Rand development complex.
- Water quality monitoring and management plan for the Shoprite Checkers dry goods distribution centre, Canelands, KwaZulu-Natal.
- Mpophomeni waste water treatment works upgrade: assessment of potential water quality impacts, development of a water quality monitoring plan and recommendation of outflow options.
- Water quality and aquatic habitat assessment to determine potential impacts of the Darvill WWTW effluent reuse on the uMsunduzi River and Inanda Dam.
- Shongweni Dam: water quality and aquatic habitat analysis to inform recommendations reducing the impacts of sand mining on water quality.
- Aquatic ecologist for EIA on the Neotel fibre optic cable installation and wetland/riparian rehabilitation along the N3 national road between Cato Ridge and Germiston.
- Aquatic Ecologist on the second ORASECOM Joint Basin Survey PES assessment and reporting
- Delineation of wetland habitats within various regions of KwaZulu-Natal.
- Development of construction and operational phase water quality and aquatic habitat monitoring plans for various development projects.