

Dr Jeffrey Shellberg

Private Consultant in Hydrology and Catchment Restoration

& Adjunct Research Fellow, Australian Rivers Institute, Griffith University

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Jeff Shellberg is a practical field hydrologist and landscape geomorphologist with 20+ years of experience researching river and land use management issues, providing sound land management guidance, and actively rehabilitating degraded fluvial environments and catchments. For the last decade in northern Australia, Jeff has been investigating the causes of gully erosion, developing best management practices for land management on erodible soils, and implementing, practical rehabilitation options for alluvial gullies along major rivers. Most recently Jeff has been working as a consultant to Aboriginal Land Managers on Cape York working to improve the health and management of wetlands, rivers and sacred sites across diverse cultural landscapes impacted by development. Previously Jeff worked as a stream hydrologist in the western United States researching and actively restoring the physical habitat of degraded salmon rivers impacted by logging, grazing, agriculture, and urbanization. His work and experience is firmly supported by a deep foundation in river restoration principles and natural channel evolution, as well as cultural landscapes of Indigenous People. A majority of his work has been directly collaborative with Native American Tribes and Aboriginal Land Management organisations following a bottom-up perspective of capacity building and self-governance.

Education

- PhD, Fluvial Geomorphology, Griffith University, Brisbane, QLD, AUS (2011)
- MSc, Forest Hydrology, University of Washington, Seattle, WA, USA (2003)
- BSc, Physical Hydrology, California State University, Chico, CA, USA (1996)

Fields of Expertise

- Hydrology and Fluvial Geomorphology
- Catchment and Channel Restoration and Rehabilitation
- Gully Erosion and Land Degradation
- Forest Hydrology and Catchment Water Yield
- Water Quality Monitoring
- Forest, Riparian, and Vegetation Monitoring
- Land Use Impacts on River Systems, Riparian Zones, Fish Habitat, and Water Quality
- Practical Land Use Management in Savannah and Forest Environments
- Indigenous Land Management

Project Experience

- Mitchell River Delta, Kowanyama Wetlands Program (2011-2016)
 - The Christensen Fund, Kowanyama Aboriginal Land Office and Kowanyama Aboriginal Shire Council.
- Olkola Aboriginal Corporation Land Management Program (2012-2015)
 - Olkola Country Geodiversity and Biodiversity Assessment, Management Options, Cultural History
- National Environmental Science Programme (NESP) Project 1.7 (2015)
 - Reducing Sediment Sources to the Reef: Testing the Effectiveness of Managing Alluvial Gully Erosion
- Reef Rescue R&D Project (2011-2013)
 - Sediment Sources, Sinks and Drivers in the Normanby Catchment, Cape York
- Tropical River and Coastal Knowledge (TRaCK) Research Hub (2007-2011)
 - Land Use Impacts on Gully Erosion

- Makah Indian Tribe, Fisheries Management Program (2002-2007)
– Salmon Fisheries Restoration, Forest Hydrology Management, Cultural Rights Protection
- U.S. Bureau of Land Management, National Park Service, Fish and Wildlife Service (1996-2000)
– Assessment and Restoration of Land Use Impacts on Riparian Zones, Water Quality, and Salmon Habitat.

Publications (Available at https://www.researchgate.net/profile/Jeffrey_Shellberg/publications)

- **Shellberg, J.G.**, Spencer, J., Brooks, A.P., Pietsch, T., 2016. Degradation of the Mitchell River Fluvial Megafan by Alluvial Gully Erosion Increased by Post-European Land Use Change, Queensland, Australia. *Geomorphology*, 266(1), 105-120.
- Rose, C.W., **Shellberg, J.G.**, and Brooks, A.P., 2015. Modelling suspended sediment concentration and load in a transport-limited alluvial gully in northern Queensland, Australia. *Earth Surface Processes and Landforms*, 40, 1291–1303.
- Barber, M., Jackson, S., **Shellberg, J.**, Sinnamon, V., 2014. Working Knowledge: characterising collective indigenous, scientific, and local knowledge about the ecology, hydrology and geomorphology of Oriners Station, Cape York Peninsula, Australia. *Rangelands*. 36(1) 53-66.
- **Shellberg, J.G.**, Brooks, A.P. and Rose, C.W., 2013b. Sediment production and yield from an alluvial gully in northern Queensland, Australia. *Earth Surface Processes and Landforms*, 38, 1765-1778.
- **Shellberg, J.G.**, Brooks, A.P., Spencer, J. and Ward, D., 2013a. The hydrogeomorphic influences on alluvial gully erosion along the Mitchell River fluvial megafan, northern Australia. *Hydrological Processes*, 27(7), 1086-1104.
- Ward, D., Pusey, B., Brooks, A., Olley, J., **Shellberg, J.**, Spencer, J. and Knight, J., 2011 Riverine landscapes and aquatic system diversity. In: B. Pusey (Editor), *Aquatic biodiversity in northern Australia: patterns, threats and future*. Charles Darwin University Press, Darwin, N.T., Australia, pp. 5-22.
- **Shellberg, J.G.**, Bolton, S.M. and Montgomery, D.R., 2010. Hydrogeomorphic Effects on Bedload Scour in Bull Char (*Salvelinus confluentus*) Spawning Habitat, Western Washington, USA. *Canadian Journal of Fisheries and Aquatic Sciences*, 67: 626-640.
- **Shellberg, J.**, Brooks, A. and Spencer, J., 2010. Land-use change from indigenous management to cattle grazing initiates the gulying of alluvial soils in northern Australia, *Soil Solutions for a Changing World 19th World Congress of Soil Science*, 1 - 6 August 2010. Brisbane, Australia, pp. 59-62.
- Brooks, A.P., **Shellberg, J.G.**, Spencer, J. and Knight, J., 2009. Alluvial gully erosion: an example from the Mitchell fluvial megafan, Queensland, Australia. *Earth Surface Processes and Landforms*, 34: 1951-1969, + 2010. Erratum. *Earth Surface Processes and Landforms*, 35: 242–245.
- Brooks, A.P., Spencer, J., **Shellberg, J.G.**, Knight, J. and Lymburner, L., 2008. Using remote sensing to quantify sediment budget components in a large tropical river - Mitchell River, Gulf of Carpentaria, *Sediment Dynamics in Changing Environments* IAHS Publication, 325: 225-236.
- Gibbins, C., **Shellberg, J.**, Moir, H. and Soulsby, C., 2008. Hydrological influences on adult salmonid migration, spawning, and embryo survival. In: D.A. Sear and P. DeVries (Editors), *Salmonid Spawning Habitat in Rivers: Physical Controls, Biological Responses, and Approaches to Remediation*. American Fisheries Society Symposium, 65: 195-223.

Reports (Available at https://www.researchgate.net/profile/Jeffrey_Shellberg/publications)

- **Shellberg, J.**, Sinnamon, V., Paul, P., Drewien, G., Howley, C., Turpin, G., Schultz, P., Connor, S., Alpher, B., Lane, T., Nanson, R., Jardine, T., 2016 Draft. *The Cultural, Physical, and Biological Diversity of Coastal Wetland and Dune Woodland Systems in the Mitchell River Delta: Topsy Creek to South Mitchell*. Report to The Christensen Fund, the Kowanyama Aboriginal Shire Council, the Kowanyama Aboriginal Land and Natural Resources Management Office, and the Abm Elgoring Ambung Corporation. 303pp.
- Akram, S., **Shellberg, J.**, Yu, B., 2016. *A Preliminary Dry-Season Water Balance for the Upper Laura River Catchment and Lakeland Agricultural Region, Cape York Peninsula*. Produced by the Griffith University School of Engineering for South Cape York Catchments.
- **Shellberg, J.**, Ferrier, Å., Ross, M., Lowdown, J., Burns, R., Turpin, G., Brown, A., Gambold, N., Kulka, H., Kulka, G., Ross, B., Ross, A., Ross, D., Ross, C., Ross, D., 2015. *Retracing Eric Mjöberg's Historic Exploration through Olkola Country in 1913 on Cape York: A Journey to Document Cultural, Ethnobotanical, Wildlife, and Landscape Change to Guide Cultural Preservation, Land Management, and Future Business Opportunities*. The Olkola Aboriginal Corporation with funding from the Queensland Department of Environment and Heritage Protection (EHP) and Queensland Indigenous Land and Sea Grant Program. .
- **Shellberg, J.**, Ross, M., Hogbin, A., Preece, N., Grimes, K. (Editors), 2015. *Kimba Plateau Physical and Biological Diversity, Olkola Country, Cape York Peninsula*. Published by Olkola Aboriginal

Corporation, with funding from the Queensland Government's Indigenous Land and Sea Grants Program through the Department of Environment and Heritage Protection, 122pp.

- **Shellberg, J.**, Ross, M., Burns, R., Coleman, F., Hogbin, A., Grimes, K., Turpin, G., Lyon, B., Lyon, S., Howley, C., Carroll, J., Ross, A., Ross, B., Kulka, G., Ross, T., Kulka, K., Ross, R. Jr., Bramwell, W., 2014. *Crosbie Station Physical and Biological Landscapes, Olkola Country, Cape York Peninsula*. Published by Olkola Aboriginal Corporation, with funding from the Australian Government's Caring for Our Country program and Queensland Department of Aboriginal and Torres Strait Islander and Multicultural Affairs, 77pp.
- **Shellberg, J.**, 2014. *Physical and Biological Values of Olkola Country, Central Cape York Peninsula*. Published by Olkola Aboriginal Corporation with funding from Bush Heritage Australia, 141pp.
- **Shellberg, J.G.**, Brooks, A.P., 2013. *Alluvial Gully Prevention and Rehabilitation Options for Reducing Sediment Loads in the Normanby Catchment and Northern Australia*. Griffith University, Australian Rivers Institute, Final Report for the Australian Government's Caring for our Country - Reef Rescue Initiative, 312pp.
- Brooks, A., Spencer, J., Olley, J., Pietsch, T., Borombovits, D., Curwen, G., **Shellberg, J.**, Howley, C., Gleeson, A., Simon, A., Bankhead, N., Klimetz, D., Eslami-Endargoli, L., Bourgeault, A., 2013. *An Empirically-Based Sediment Budget for the Normanby Basin: Sediment Sources, Sinks, and Drivers on the Cape York Savannah*, Griffith University, Australian Rivers Institute, Final Report for the Australian Government Caring for Our Country - Reef Rescue Program
- **Shellberg, J.G** and Brooks, A.P. 2012 *Alluvial Gully Erosion: A Dominant Erosion Process Across Tropical Northern Australia*. An Educational Report for the Tropical Rivers and Coastal Knowledge program.
- Barber, M., **Shellberg, J.**, Jackson, S. and Sinnamon, V., 2012. *Working Knowledge: local ecological and hydrological knowledge about the flooded forest country of Oriners Station, Cape York*. Commonwealth Scientific and Industrial Research Organisation (CSIRO), Darwin, 247 pp.
- **Shellberg, J.G.**, Grimes, K.G., 2012. *Landforms and Hydrogeology of Crosbie Station, Cape York Peninsula*. A Report Produced by the Australian Rivers Institute and Regolith Mapping; Produced for the Olkola Aboriginal Corporation, December 2012, pp. 92.
- **Shellberg, J.G.**, 2011. *Alluvial Gully Erosion Rates and Processes Across the Mitchell River Fluvial Megafan in Northern Queensland, Australia*. PhD Dissertation, Griffith University, Australian Rivers Institute, School of Environment, 251pp.
- Rustomji, P., **Shellberg, J.**, Brooks, A., Spencer, J. and Caitcheon, G. 2010. *A catchment sediment and nutrient budget for the Mitchell River, Queensland*. A report to the Tropical Rivers and Coastal Knowledge (TRaCK) Research Program. CSIRO Water for a Healthy Country Flagship. 119 pp.
- Haggerty, M.J., Ritchie, A.R.; **Shellberg, J.G.**; Crewson, M.J. 2009. *Lake Ozette Sockeye Limiting Factors Analysis*. Prepared for NOAA Fisheries and the Makah Indian Tribe, in Cooperation with the Lake Ozette Sockeye Steering Committee, Port Angeles, WA, 566p.
- **Shellberg, J.G.**, 2002. *Hydrologic, geomorphic, and biologic influences on redd scour in bull char (*Salvelinus confluentus*) spawning streams*. University of Washington, M.S. Thesis, 224pp, Seattle, WA.
- Bolton, S.M., **Shellberg, J.G.**, 2001. *Ecological Issues in Floodplains and Riparian Corridors*. White Paper Prepared for WDFW, WDE, and WDOT, Center for Streamside Studies, University of Washington.

Independent Referees

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