

9. Discussion

The *Accounting for Nature* model is an accounting framework for presenting information on the biophysical condition of environmental assets. This framework uses scientific standards to consolidate a wealth and diversity of datasets and scientific knowledge into an *Econd*, a common unit of measure of asset condition. *Econds* can improve our understanding of the environment, inform policy and investment decisions, and assist in monitoring the impact and effectiveness of policies and investments on those assets over time.

For the first time, the *Accounting for Nature* model has been trialled in Australia with support of NRM Regions Australia and the Wentworth Group of Concerned Scientists. The trial demonstrated that it is practical, feasible and robust to develop a set of asset condition accounts at a regional (landscape) scale in Australia.

The trial has demonstrated that the environmental asset approach is appropriate and useful for condition accounting. This asset approach is used by policy makers across the world to describe, understand and make decisions on the provision of environmental goods and services that are of value to people into the future (Cosier 2011; United Nations *et al.* 2012). Asset-based approaches have been widely used in Australia to frame environmental reporting programs (Bureau of Meteorology 2013; State of the Environment Committee 2011), government investment programs (eg the Australian Government's Natural Heritage Trust, Caring for Our Country and National Landcare Programs), state government investment programs (Stoneham *et al.* 2003), and regional natural resource management plans (GHD 2012; Murray-Darling Basin Authority 2012). Asset-based approaches are also used in international standards and agreements such as the UN System of Environmental Economic Accounts (United Nations *et al.* 2012), and the Convention on Biological Diversity (Convention on Biological Diversity Conference of the Parties 2010).

The trial used an Australia-wide approach to identifying regional assets, using a 2012 survey of assets in Australia's 54 NRM regional plans (GHD 2012). The regional plans described approximately 35 environmental assets that are of value to communities, with roughly 15 assets in common across the regions (GHD 2012; **Table 1** and **Supplementary Material 7**). The trial piloted the *Accounting for Nature* methodology with 11 of these 15 assets, with seven of these exhibiting sufficient documentation to allow analysis in this report. This survey found that native vegetation is listed in 80% of regional plans, rivers in 73%, wetlands in 77%, native fauna (threatened species) in 68%, soils in 48%, and estuaries in 57% of regions. These assets provide an important foundation for building a national set of regional environmental accounts.

A Seven Step process provided a consistent and robust methodology for systematically selecting and combining these indicators to describe the condition of environmental assets. This process was developed during the trial and was set out in the *Guidelines for Constructing Regional Environmental (Asset Condition) Accounts* (Sbrocchi 2013).

One of the objectives of the trial was to see how much existing data could be adapted to populate regional accounts. Much of the data used was sourced from existing monitoring programs, such as the Bushland Condition Monitoring Program in South Australia, the Sustainable Rivers Audit in the Murray-Darling Basin, the Healthy Waterways Partnership in Queensland, and the Index of Wetland Condition in Victoria. Where information was not already available, the discipline imposed by the procedures in the Seven Step process provided a mechanism to source and compile the information necessary to describe condition of environmental assets.

The *Accounting for Nature* model requires each account to satisfy a minimum standard to ensure that the information is of sufficient quality to inform policy and investment decisions at scales appropriate to those decisions. Although the NRM regions made commendable efforts to reuse and re-analyse existing data to construct their accounts, the trials found that infrequent or one-off sampling is not capable of providing a meaningful condition assessment of assets, particularly for assets with high temporal variability. Where information was readily available that is capable of satisfying these standards, by acting collaboratively with experts in state and commonwealth agencies and other scientific institutions, regions were able to access data and leverage expertise to organise this information into the common accounting framework.

Overwhelming evidence from the trial demonstrates that formalising assessment and monitoring programs is a fundamental prerequisite to producing meaningful information on the condition and trend of Australia's ecosystems and natural resource assets in a consistent, reliable and cost-effective manner. The trials have exposed the limitations of short term, project-based data collection that dominates many environmental monitoring programs across Australia. It has also demonstrated there are many opportunities to reduce costs in sourcing data by optimising sampling design, using citizen science, remote sensing and telemetry, and working collaboratively with state or other agencies to maximise efforts. There is also potential to build on the wealth of historical data that exists.



The benefit of adopting a standard reference condition approach across all assets provided the foundation for the creation of the common unit of measure (the *Econd*). This is seen as the building block for environmental asset condition accounts. The trial demonstrated that reference condition benchmarks exist for many assets in Australia and underpin a number of existing assessment programs, for example for river, wetlands and native vegetation assets (DOE 2012; DSE 2006; Norris and Thoms 1999). Where such reference benchmarks existed for an asset they were incorporated into the accounts. Where reference benchmarks did not exist, most regions were able to use a range of methods to estimate the reference condition benchmark, including through the use of expert elicitation, scientific models, or biological surveys of reference sites (DSE 2006).

Regional accounts are the appropriate scale for natural resource management decisions because it is this scale that most closely emulates landscape processes. It is for this reason the trial has focused primarily on the relevance of the *Accounting for Nature* model at the NRM region scale. Environmental decisions are however made at multiple scales, by multiple agencies, across multiple jurisdictions. Accounts at state and national levels are therefore also necessary to inform policies, priorities and meet other statutory obligations. Significant cost savings and efficiencies will obviously be gained if regional scale accounts are also capable of informing accounts at these other scales. Setting national protocols and indicator selection standards for each of the major assets is necessary to align and direct the use of indicators for regional and supra-regional (eg state, national or international) accounting purposes.

While it was beyond the scope of this trial to quantify the degree to which this is possible for all assets, an assessment was conducted across multiple regions using one asset (native vegetation). To test the feasibility of the proposition, a protocol and indicator selection standard was developed for an asset common to all regions (native vegetation), from which each region then developed a native vegetation account. Once appropriate standards are in place, the Seven Step process that was developed in the trials provides a consistent and robust methodology for systematically describing the quality, as well as the quantity, of each of these environmental assets. The results for native vegetation demonstrate that once national protocols and data collection standards are put in place, and the Seven Step process is followed, it is possible to construct accounts that can inform policy and investment decisions at multi-jurisdictional levels.

References

- Bureau of Meteorology. (2013) Guide to environmental accounting in Australia. In: *Environmental Information Programme Publication Series no. 3 p. 122*. Bureau of Meteorology, Canberra.
- Convention on Biological Diversity Conference of the Parties. (2010) Strategic Plan for Biodiversity 2011-2020. Nagoya, Aichi Prefecture, Japan.
- Cosier P. (2011) Accounting for the Condition of Environmental Assets. In: Expert meeting on Ecosystem Accounts, London.
- DOE. (2012) National Vegetation Information System (NVIS) v4.1. Environmental Resources Information Network (ERIN), Australian Government Department of the Environment, Canberra.
- DSE. (2006) Index of Wetland Condition: Review of wetland assessment methods. Victorian Government, Department of Sustainability and Environment, Melbourne. p30.
- GHD. (2012) Review of Regional Natural Resource Management Plans. Final Report prepared for the National NRM Working Group.
- Murray-Darling Basin Authority. (2012) Sustainable Rivers Audit 2: The Ecological Health of Rivers in the Murray-Darling Basin at the End of the Millennium Drought (2008-2010). Summary. (ed K. Molloy). Murray-Darling Basin Authority, Canberra, ACT.
- Norris R. H. & Thoms M. C. (1999) What is river health? *Freshwater Biology* **41**, 197-209.
- Sbrocchi C. (2013) Guidelines for Constructing Regional Environmental (Asset Condition) Accounts: *Quick Guide*. Wentworth Group of Concerned Scientists, Sydney.
- State of the Environment Committee. (2011) Australia state of the environment 2011. Independent report to the Australian Government Minister for Sustainability, Environment, Water, Population and Communities. Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Stoneham G., Chaudhri V., Ha A. & Strappazon L. (2003) Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial. *Australian Journal of Agricultural and Resource Economics* **47**, 477-500.
- United Nations, European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Cooperation and Development & World Bank. (2012) System of Environmental-Economic Accounting Central Framework. United Nations Statistics Division.

References

- Abal E. G., Bunn S. E. & Dennison W. C. (2005) Healthy Waterways Healthy Catchments: Making the connection in South East Queensland, Australia. Moreton Bay Waterways and Catchments Partnership, Brisbane.
- ACEAS. (n.d.) Australian Centre for Ecological Analysis and Synthesis (ACEAS) Portal. Accessed online, [<http://aceas.org.au/portal/>].
- Alluvium Consulting. (2011) Framework for the Assessment of River and Wetland Health: Findings from the Trials and Options for Uptake. In: *Waterlines Report Series No 58*. National Water Commission, Canberra, ACT.
- Andrews S. S. & Carroll C. R. (2001) Designing a soil quality assessment tool for sustainable agroecosystem management. *Ecological Applications* **11**, 1573-85.
- ANZECC. (1992) Australian Water Quality Guidelines for Fresh and Marine Waters. Australian and New Zealand Environment and Conservation Council (ANZECC), Canberra.
- ANZECC. (2000) Core Environmental Indicators for Reporting on the State of the Environment. Commonwealth of Australia (Environment Australia and Australian and New Zealand Environment and Conservation Council State of the Environment Reporting Task Force, ANZECC), Canberra, ACT, AU.
- ANZECC & ARMCANZ. (2000) Australian and New Zealand guidelines for fresh and marine water quality: Volume 1 - The guidelines. Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).
- Aquatic Ecosystems Task Group. (2012) Aquatic Ecosystems Toolkit. Module 2. Interim Australian National Aquatic Ecosystem Classification Framework. Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Attard M., Thompson M., Kelly R. & Locatelli A. (2012) Tamar Estuary Ecosystem Health Assessment Program Monitoring Report 2012. NRM North, Tasmania.
- Audubon Society & Cornell Lab of Ornithology. (2014) Eremaea eBird. Accessed online: 29/09/14, [<http://ebird.org/content/australia/>].
- Australian Bureau of Statistics. (2005) Australian System of National Accounts. Australian Bureau of Statistics, Canberra.
- Australian Bureau of Statistics. (2013) Measures of Australia's Progress. Australian Bureau of Statistics, Canberra.
- Australian Government. (2014) NRM Regions Map. Accessed online: 15/03/2014, [<http://155.187.3.82/biodiversity/threatened/nrm-regions-map.html>].
- Australian Maritime College. (2009) Tamar Estuary and Esk Rivers Ecosystem Health Monitoring Program: Estuary and Marine Framework. Australian Maritime College, Launceston.
- Baldock J., Macdonald L. & Sanderman J. (2013) Foreword to 'Soil Carbon in Australia's Agricultural Lands'. *Soil Research* **51**.
- Baldock J. A., Grundy M. J., Griffin E. A., Webb M. J., Wong M. T. F. & Broos K. (2009a) Building a foundation for soil condition assessment: CSIRO Land and Water Science Report. CSIRO Land and Water Science Report series ISSN: 1834-6618.
- Baldock J. A., Grundy M. J., Wilson P., Jacquier D., Griffin T., Chapman G., Hall J., Maschmedt D., Crawford D., Hill J. & Kidd D. (2009b) Identification of areas within Australia with the potential to enhance soil carbon content. CSIRO, Canberra.
- Baldwin A. (2014) NRM North Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/northern-tasmania-tas/>].
- Bannister J. (2001) Status of southern right whales (*Eubalaena australis*) off Australia. *Journal of Cetacean Research and Management. Special Issue* **2**, 103-10.
- Bannister J. L. (2008) Population Dynamics Of Right Whales Off Southern Australia, 2007. Final Report To The Commonwealth Of Australia And The Western Australian Museum. Western Australia Museum, Welshpool DC.
- Bannister J. L. (2009) Southern Right Whale Aerial Survey, Southern Australian Coast. Western Australian Museum, Welshpool DC, Western Australia.
- Bannister J. L. (2010) Southern Right Whale Aerial Survey, Southern Australian Coast, August 2010. Final Report on work funded by the Australian Government. Western Australian Museum, Welshpool DC, Western Australia.
- Bannister J. L. (2014) Monitoring Population Dynamics of right whales off Southern Australia, 2012 and 2013. *Final Report to the Australian Marine Mammal Centre*. **14**.
- Bennett A. & Ford L. (1997) Land use, habitat change and the conservation of birds in fragmented rural environments: a landscape perspective from the Northern Plains, Victoria, Australia. *Pacific Conservation Biology* **3**, 244-61.
- Bennett A. & Radford J. (2004) Landscape thresholds for the conservation of biodiversity in rural environments. Land & Water Australia, Canberra.
- Bennett A., Radford J. & Haslem A. (2006) Properties of land mosaics: implications for nature conservation in agricultural environments. *Biological Conservation* **133**, 250-64.
- Birdlife Australia. (2014) Atlas & Birdata. Accessed online: 29/09/14, [<http://birdlife.org.au/projects/atlas-and-birdata>].

REFERENCES

- Black J., Hashimzade N. & Myles G. (2009) *A Dictionary of Economics*. Oxford University Press Oxford.
- Blackley R. (2014a) Queensland Murray-Darling Basin Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/queensland-murray-darling-basin-qld/>].
- Blackley R. (2014b) Decadal Land Use Layers (raster and vector) 1769-2019. In: *Community Resource Information System* (ed Queensland Murray-Darling Committee). unpublished, Toowoomba, QLD, AU.
- Blackley R., Sbrocchi C., Grundy M., Steinfeld C., Biggs A. & Sillburn D. (2015) Geographical systems approach to the assessment of soil erosion using RUSLE model for natural resource management planning In: *Environmental Accounting Working Paper Series*. Wentworth Group of Concerned Scientists, Sydney.
- Bleby K., Harvey J., Garkaklis M. & Martin L. (2008) Literature Review: Vegetation Condition Assessment, Monitoring & Evaluation Version 4. In: *Resource Condition Monitoring - Native Vegetation Integrity Project*. Department of Environment and Conservation WA, Kensington, WA.
- Brough D. M. (2003) Creation of soil attribute surfaces for landscape salinity hazard assessment - Ver. 2. In: *Enhanced Resource Assessment Report 2003-02 p. pp22*. Queensland Government (Department of Natural Resources & Mines), Brisbane.
- Brough D. M., Claridge J. & Grundy M. (2006) Soil and landscape attributes: A Report on the creation of a soil and landscape information system for Queensland.p. p80. Queensland Government - Department of Natural Resources Mines & Water, Brisbane.
- BRS. (2010) Precipitation - Mean annual rainfall (mm). (ed The Australian Government (Bureau of Rural Sciences)). CSIRO, The Atlas of Living Australia.
- Bunn S. E., Abal E. G., Smith M. J., Choy S. C., Fellows C. S., Harch B. D., Kennard M. J. & Sheldon F. (2010) Integration of science and monitoring of river ecosystem health to guide investments in catchment protection and rehabilitation. *Freshwater Biology* **55**, 223-40.
- Bureau of Meteorology. (2013) Guide to environmental accounting in Australia. In: *Environmental Information Programme Publication Series no. 3 p. 122*. Bureau of Meteorology, Canberra.
- Bureau of Meteorology. (2014) Water Accounting Standards Board. Accessed online: 01/08/2014, [<http://www.bom.gov.au/water/standards/wasb/>].
- Business Dictionary. (2015). WebFinance, www.businessdictionary.com.
- Cameron B. & Truman G. (2014) Namoi Catchment Management Authority Regional Environmental Account Trial, Information Statement 2014. Available online [www.wentworthgroup.org/environmentalaccounts/namoi/].
- Chapman G., Gray J., Murphy B., Atkinson G., Leys J., Muller R., Peasley B., Wilson B., Bowman G., Mcinnes-Clarke S., Tulau M., Morand D. & Yang X. (2011) Assessing the condition of soils in NSW. In: Technical report series. Office of Environment and Heritage, Sydney.
- Connolly R., Bunn S., Campbell M., Escher B., Hunter J., Maxwell P., Page T., Richmond S., Rissik D., Roiko A., Smart J. & Teasdale P. (2013) Review of the use of report cards for monitoring ecosystem and waterway health. Report to: Gladstone Healthy Harbour Partnership, Queensland, Australia.
- Convention on Biological Diversity Conference of the Parties. (2010) Strategic Plan for Biodiversity 2011-2020. Nagoya, Aichi Prefecture, Japan.
- Cosier P. (2011) Accounting for the Condition of Environmental Assets. In: *Expert meeting on Ecosystem Accounts*, London.
- Cosier P. & McDonald J. (2010) A common currency for building environmental (ecosystem) accounts. In: *16th Meeting of the London Group on Environmental Accounting*.
- Costanza R. (2008) Natural Capital. In: *Encyclopaedia of Earth* (ed C. J. Cleveland). Environmental Information Coalition, National Council for Science and Environment, Washington, D.C.
- Cotching W. & Kidd D. (2010) Evaluation of surface soil condition in Tasmania, Australia. In: *19th World Congress of Soil Science*, Soil Solutions for a Changing World, Brisbane, Australia.
- Cowardin L. M., Carter V., Golet F. C. & LaRoe E. T. (1979) Classification of wetlands and deepwater habitats of the United States. Fish and Wildlife Service, U.S. Dept. of the Interior, Washington D.C.
- CSIRO. (2013) Australian Soil Carbon Research Program: SCaRP data. (ed Commonwealth of Australia (CSIRO)).
- DAF. (2014) Report card on conditions and trends. Accessed online: September, [<https://www.agric.wa.gov.au/climate-land-water/resource-assessment/report-card-conditions-and-trends>].
- Dalal R., Allen D., Bray S., Pringle M., Hall T., Phelps D. & Cobon D. (2009) SCaRP Soil carbon research program: Project 9, the pasture type and management affect soil carbon stocks in grazing lands of Northern Australia. Department of Science, Information Technology, Innovation and the Arts (DSITIA) (formerly DERM) and Qld Department of Agriculture, Fisheries and Forestry (QDAFF)(formerly DEEDI), cached.
- Dalal R. & Mayer R. (1986) Long term trends in fertility of soils under continuous cultivation and cereal cropping in southern Queensland. II. Total organic carbon and its rate of loss from the soil profile. *Australian Journal of Soil Research* **24**, 281-92.
- Dalmazzone S. & La Notte A. (2009) Environmental accounting at different levels of government: the state of the art. In: *Governing the Environment: Salient Institutional Issues* (eds A. Breton, G. Brosio, S. Dalmazzone and G. Garrone) pp. 266-91. Edward Elgar Publishing, Gloucestershire, UK.
- Dalmazzone S. & La Notte A. (2013) Multi-scale environmental accounting: methodological lessons from the application of NAMEA at sub-national levels. *Journal of Environmental Management* **130**, 405-16.
- Davies P. E., Stewardson M., Hillman T.J., Roberts J. & Thoms M. (2012a) Sustainable Rivers Audit 2: The ecological health of rivers in the Murray-Darling Basin at the end of the Millennium Drought (2008-2010). Volume 1. Murray-Darling Basin Authority, Canberra, ACT.

- Davies P. E., Stewardson M., Hillman T. J., Roberts J. & Thoms M. (2012b) Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought(2008–2010). Volume 2. (ed K. Molloy). Murray–Darling Basin Authority, Canberra, ACT.
- Davies P. E., Harris J. H., Hillman T. J. & Walker K. F. (2008) SRA Report 1: A Report on the Ecological Health of Rivers in the Murray–Darling Basin, 2004–2007. Prepared by the Independent Sustainable Rivers Audit Group for the Murray–Darling Basin Ministerial Council.
- Davies P. E., Harris J. H., Hillman T. J. & Walker K. F. (2010) The Sustainable Rivers Audit: assessing river ecosystem health in the Murray–Darling Basin, Australia. *Marine and Freshwater Research* **61**, 764.
- de Caritat P., Cooper M. & Wilford J. (2011) The pH of Australian Soils: Field Results From A National Survey. *Soil Research* **49**, 173–82.
- DECC. (2006) Reconstructed and extant distribution of native vegetation in the Central West Catchment. NSW Department of Environment and Conservation, Dubbo.
- Deeley D. M. & Paling E. I. (1999) Assessing the ecological health of estuaries in Australia. In: *LWRRDC Occasional Paper 17/99* (Urban Subprogram, Report No. 10). Marine and Freshwater Research Laboratory, Institute for Environmental Science Murdoch University, Murdoch University.
- DEWHA. (2009) Assessment of Australia's Terrestrial Biodiversity 2008. Report prepared by the Biodiversity Assessment Working Group of the National Land and Water Resources Audit for the Australian Government. Department of Environment, Water, Heritage and the Arts, Canberra.
- Department of Environment and Water Resources. (2007) Australia's Native Vegetation: A summary of Australia's Major Vegetation Groups, 2007. Commonwealth of Australia, Canberra.
- DEPI. (2013) Index of Stream Condition: The third benchmark of Victorian river condition. In: *ISC3. Victorian Department of Environment and Primary Industries*.
- DERM. (2009) Wetland mapping. Department of Environment and Resource Management, Brisbane.
- DEWHA. (2009) Assessment of Australia's Terrestrial Biodiversity 2008. p. 316. Report prepared by the Biodiversity Assessment Working Group of the National Land and Water Resources Audit, Canberra.
- DEWNR. NatureMaps. Department of Environment, Water and Natural Resources South Australia, www.naturemaps.sa.gov.au.
- Dictionary of Accounting. (2010). Oxford University Press, Oxford, New York.
- Dixon I., Dobbs R., Townsend S., Close P., Ligtermoet E., Dostine P., Duncan R., Kennard M. & Tunbridge D. (2011) Trial of the Framework for the Assessment of River and Wetland Health (FARWH) in the Wet/Dry Tropics for the Daly and Fitzroy Rivers. Charles Darwin University.
- DOE. (2012) National Vegetation Information System (NVIS) v4.1. Environmental Resources Information Network (ERIN), Australian Government Department of the Environment, Canberra.
- DNRE. (1999) An Index of Stream Condition: Reference Manual. Second Edition. Victoria Department of Natural Resources and Environment (DNRE), Melbourne.
- DSE. (2004) Index of Stream Condition: The Second Benchmark of Victorian River Condition: Factsheets. In: *ISC 2 Factsheets. Victorian Department of Sustainability and Environment (DSE), Melbourne*.
- DSE. (2005) Index of Stream Condition: The Second Benchmark of Victorian River Condition Report. In: *ISC2. Victoria Department of Sustainability and Environment (DSE), Melbourne*.
- DSE. (2006) Index of Wetland Condition: Review of Wetland Assessment Methods.p. 30. Victoria Department of Sustainability and Environment (DSE), Melbourne.
- DSE. (2013) Ecological Vegetation Classes. Department of Sustainability and Environment Victoria. Accessed online: August 2014, [<http://www.dse.vic.gov.au/conservation-and-environment/ecological-vegetation-classes-evc>].
- Eco Logical Australia. (2011) Evaluation of Biodiversity Outcomes in the Namoi Catchment: Vegetation Extent and Condition. Project 10COFNRM-0027 prepared for the Namoi CMA.
- EHMP. (2008) Ecosystem Health Monitoring Program 2006-07 Annual Technical Report. South East Queensland Healthy Waterways Partnership, Brisbane.
- EHP. (2012) State of the Environment Queensland 2011.p. 298. Department of Environment and Heritage Protection (EHP), Brisbane.
- Environment Australia. (2001) A Directory of Important Wetlands in Australia: Third edition. Environment Australia, Canberra.
- ESCAVI. (2003) Australian Vegetation Attribute Manual Version 6.0. Executive Steering Committee for Australian Vegetation Information, Canberra.
- ESCAVI. (2007) Native vegetation condition in Australia: a synthesis of outcomes from pilot projects on national monitoring and evaluation indicators. Executive Steering Committee for Australian Vegetation Information, Canberra.
- European Commission, International Monetary Fund, Organisation for Economic Co-Operation and Development, United Nations & World Bank. (2009) System of National Accounts 2008. New York.
- Fahrig L. (2003) Effects of habitat fragmentation on biodiversity. *Annual Review of Ecology Evolution and Systematics* **34**, 487–515.
- Fisk G. (2010) EHMP Review Report, Prepared for the South East Queensland Healthy Waterways Partnership. BMT WBM Pty Ltd, Brisbane, QLD.

REFERENCES

- Gallant J. (2010) 1 Second SRTM-Derived Digital Elevation Models User Guide (1 second DSM, DEM& DEM-S and 3 second DSM, DEM & DEM-S). Version 1.0.3. Geoscience Australia.
- GHD. (2012) Review of Regional Natural Resource Management Plans. Final Report prepared for the National NRM Working Group.
- Gobius N. (2014) Northern Gulf Resource Management Group and Cape York NRM Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/northern-gulf-cape-york-qld/>].
- Goldney D., Kerle J. & Fleming M. (2007) Status of vertebrate fauna and their habitat in the Central West Catchment. Report to the Central West CMA.
- Grealish G., Clifford D., Wilson P. & Ringrose-Voase A. (2011) National Soil Condition Monitoring for soil pH and soil carbon. Objectives, Design, Protocols, Governance and Reporting. CSIRO Land and Water Science, Canberra.
- Green K. (2015) Australian Alpine Research Bibliography. Accessed online: 12/06/15, [http://www.aias.org.au/pdfs_docs/Australian%20Alpine%20Bibliog%20-%20references%20A-E.pdf].
- Greenhalgh A. (2014) Central West Catchment Management Authority Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/central-west-nsw/>].
- Grundy M. & Sbrocchi C. (unpub) Approaches for accounting for the condition of soil. In: *Environmental Accounting Working Paper Series*. Wentworth Group of Concerned Scientists, Sydney.
- Harms B., Hughes K. & Payne J. (2008) Detailed soil reference sites for improved land management - report for the Queensland Murray-Darling Committee. Queensland Government (Department of Natural Resources and Water), Brisbane, QLD, AU.
- Harris S. & Kitchener A. (2005) From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation (Edition 1). Department of Primary Industries, Parks, Water and Environment. Printing Authority of Tasmania, Hobart.
- Healey M., Raine A., Parsons L. & Cook N. (2012) River Condition Index In New South Wales: Method Development and Application. NSW Office of Water, Sydney.
- Healthy Waterways. (2014) EHMP Partners. Accessed online: 15/06/15, [<http://www.ehmp.org/EcosystemHealthMonitoringProgram/AboutEHMP/Whoisinvolved.aspx>].
- Heinsohn G. E. (1977) Ecology and conservation of the dugong, Dugong dugon, in Australia. p. 33. Department of Environment Housing and Community Development.
- Heinsohn G. E. & Marsh H. (1980) Ecology and conservation of the dugong, Dugong dugon, in Australia. p. 75. Australian National Parks and Wildlife Service.
- Hnatiuk R., Thackway R. & Walker J. (2009) Vegetation. In: *Australian soil and land survey: field handbook (3rd Edition)* (ed National Committee for Soil and Terrain Information). CSIRO Publishing, Melbourne.
- Hughes R. M., Kaufmann P. R., Herlihy A. T., Kincaid T. M., Reynolds L. & Larsen D. P. (1998) A process for developing and evaluating indices of fish assemblage integrity. *Canadian Journal of Fisheries and Aquatic Sciences* **55**, 1618-31.
- International Whaling Commission (IWC). (2001) Report of the workshop on the comprehensive assessment of right whales: A worldwide comparison. *Journal of Cetacean Research and Management Special Issue* **2**, 1-35.
- IPCC. (2013) Procedures for the preparation, review, acceptance, adoption, approval and publication of IPCC reports. In: *Appendix A to the Principles Governing IPCC Work*, Adopted at the Fifteenth Session (San Jose, 15-18 April 1999) and amended the Thirty-Seventh Session (Batumi, 14-18 October 2013).
- IUCN. (2012) IUCN Red List Categories and Criteria: Version 3.1. p. 32. International Union for the Conservation of Nature, Gland, Switzerland and Cambridge.
- Jackson E. (2014) Northern Agricultural Catchments Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/northern-agricultural-wa/>].
- Karlen D. L. (2004) Soil quality as an indicator of sustainable tillage practices. *Soil and Tillage Research* **78**, 129-30.
- Karr J. R. (1981) Assessment of Biotic Integrity Using Fish Communities. *Fisheries* **6**, 21-7.
- Karr J. R. (2006) Measuring Biological Condition, Protecting Biological Integrity. In: *Principles of Conservation Biology* (eds M. Groom, K. Gary, C. Meffe and R. Carroll). Sinauer Associates.
- Koch A., Chappell A., Eyres M. & Scott E. (2015) Monitor Soil Degradation or Triage for Soil Security? An Australian Challenge. *Sustainability* **7**, 4870-92.
- Lanyon J. (2003) Distribution and abundance of dugongs in Moreton Bay, Queensland, Australia. *Wildlife Research* **30**, 397-409.
- Larmour G. (2001) Chapter 2: Wetland classification system, Criteria for inclusion and Data presentation. In: *A Directory of Important Wetlands in Australia: Third edition*. Environment Australia, Canberra.
- Lear R. J. (1977) The Dugong (Dugong dugon) in Moreton Bay. pp. 54-8. Australian National Parks and Wildlife Service.
- Lesslie R., Thackway R. & Smith J. (2010) A national-level Vegetation Assets, States and Transitions (VAST) dataset for Australia (version 2). Bureau of Rural Sciences, Canberra.

- Likens G. E. & Lindenmayer D. B. (2011) A strategic plan for an Australian Long-Term Environmental Monitoring Network. *Austral Ecology* **36**, 1-8.
- Lu H., Gallant J., Prosser I. P., Moran C. & Priestly G. (2001) Prediction of Sheet and Rill Erosion Over the Australian Continent, Incorporating Monthly Soil Loss Distribution. *CSIRO Land and Water Technical Report* **13**, pp31.
- Macquarie Dictionary. (2005). The Macquarie Library Pty Ltd, Macquarie University NSW Australia.
- Manning D. (2014) SEQ Catchments Regional Environmental Account Trial, Environmental Account 2014. Available online [<http://nrmregionsaustralia.com.au/our-projects/regional-environmental-accounts/>].
- Marsden Jacob Associates. (2011) The future of our bay: The business case for managing and enhancing South East Queensland's waterways (2012 - 2015). Department of Environment and Resource Management, Brisbane.
- Marsh H. & Lawler I. R. (2006) Dugong distribution and abundance on the urban coast of Queensland: a basis for management. In: *Marine and Tropical Science Research Facility Interim Projects* p. 79, Townsville, Queensland.
- Marsh H., Saalfeld W. K. & Preen A. R. (1990) The distribution and abundance of dugongs in southern Queensland waters: implications for management. Queensland Department of Primary Industries.
- McCristal N., Hasker J., Smithyman D. & Eigenraam M. (2014) Corangamite Catchment Management Authority Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/corangamite-vic/>].
- McDonald J., Tulloch A. & Possingham H. P. (2014) Fire as a landscape complexity metric contributing to native vegetation composition assessments. In: *Environmental Accounts Working Paper Series* (ed W. G. o. C. Scientists). University of Queensland, Brisbane.
- McKenzie N. J. & Dixon J. C. (2007) Monitoring soil condition across Australia, Recommendations from the Expert Panels. Prepared on behalf of the National Committee on Soil and Terrain for the National Land and Water Resources Audit.
- McKenzie N. J., Henderson B. & McDonald W. S. (2002) Monitoring soil change. Principles and practices for Australian conditions. CSIRO Land and Water Technical Report 18/02. CSIRO Land and Water, Canberra.
- McKenzie N. J., Jacquier D. W., Maschmedt D. J., Griffin E. A. & Brough D. M. (2005) The Australian Soil Resource Information System: technical specifications. Version 1.5. National Committee on Soil and Terrain Information, Australian Collaborative Land Evaluation Program, Canberra.
- MDBA. (2011) Sustainable Rivers Audit 2, Interpreting the Results: Factsheet. In: *SRA2. Murray-Darling Basin Authority*, Canberra.
- MDBA. (2012) Sustainable Rivers Audit 2: The Ecological Health of Rivers in the Murray-Darling Basin at the End of the Millennium Drought (2008-2010). Summary. (ed K. Molloy). Murray-Darling Basin Authority, Canberra, ACT.
- Meek P. D., Ballard G., Claridge A., Kays R., Moseby K., O'Brien T., O'Connell A., Sanderson J., Swann D. E., Tobler M. & Townsend S. (2014) Recommended guiding principles for reporting on camera trapping research. *Biodiversity and Conservation* **23**, 2321-43.
- Millennium Ecosystem Assessment. (2003) Ecosystems and human well-being: A framework for assessment. Island Press, A report of the Conceptual Framework Working Group of the Millennium Ecosystem Assessment. Washington, DC.
- Millennium Ecosystem Assessment. (2005) Ecosystems and Human Well-being: Multiscale Assessments. In: *The Millennium Ecosystem Assessment Series*. Island Press, Washington DC.
- Moss A., Cox M., Scheltinga D. & Rissik D. (2006) Integrated estuary assessment framework. Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Coastal CRC), Indooroopilly.
- National Water Commission. (2006) A baseline assessment of water resources for the National Water Initiative: Integrated Theme Discussion Paper. In: *Australian Water Resources*, Discovery Phase. National Water Commission, Canberra.
- Nevill J. (2003) Australian inventories of freshwater ecosystems. Only One Planet Consulting, Victoria.
- Newall P., Tiller D. & Lloyd L. (2012) Technical Report for Freshwater Monitoring Framework & Report Card for the Tamar Estuary and Esk Rivers Program. Report to NRM North. Lloyd Environmental Pty Ltd, Syndal, Victoria, Australia.
- NLWRA. (2001) Australian Agriculture Assessment 2001: Volume 1. National Land & Water Resources Audit, Canberra.
- NLWRA. (2002) Australian catchment, river and estuary assessment 2002: Volume 1. National Land and Water Resources Audit, Turner, ACT.
- NLWRA. (2008) Fundamental Data required to support National Monitoring and Evaluation indicator reporting. In: *NLWRA Factsheet Series*. National Land & Water Resources Audit.
- Norris R. H., Dyer F., Hairsine P., Kennard M., Linke S., Merrin L., Read A., Robinson W. & Ryan C. (2007a) Assessment of River and Wetland Health: Testing the Framework. In: *Australian Water Resources 2005* p. 65. National Water Commission, Canberra.
- Norris R. H., Dyer F., Hairsine P., Kennard M., Linke S., Merrin L., Read A., Robinson W., Ryan C., Wilkinson S. & Williams D. (2007b) Assessment of River and Wetland Health: A Framework for Comparative Assessment of the Ecological Condition of Australian Rivers and Wetlands. In: *Australian Water Resources 2005*. National Water Commission, Canberra.
- Norris R. H. & Thoms M. C. (1999) What is river health? *Freshwater Biology* **41**, 197-209.
- North Central CMA. (n.d.) Regional Catchment Strategy: Draft Wetlands Discussion Paper.

REFERENCES

- Northern Territory Department of Land Resource Management. (2014) Vegetation Survey and Mapping Classification. Accessed online: August 2014, [<http://www.lrm.nt.gov.au/natveg/vegmapping/classification#U-mblmMvdkF>].
- NOW. (2013) Assessing estuary ecosystem health: Sampling, data analysis and reporting protocols. NSW Office of Environment and Heritage, Sydney.
- NRM Regions Australia. (2015) Regional Australian Environmental Accounts Trial. Accessed online: 14/8/2015, [<http://nrmregionsaustralia.com.au/our-projects/regional-environmental-accounts/>].
- NSW Office of Environment and Heritage. (2014) Vegetation Information System: Classification. Accessed online: August 2014, [<http://www.environment.nsw.gov.au/research/Visclassification.htm>].
- O'Connell A., Nichols J. D. & Ullas Karanth K. (2011) Camera traps in Animal Ecology: methods and analyses. Springer, New York.
- O'Connor M. & Schoer K. (2009) Environmental-Economic Accounting (EEA): Environmental Degradation in the new SEEA. Federal Statistical Office, Germany.
- OECD. (2008) Handbook on Constructing Composite Indicators: Methodology and User Guide. Organisation for Economic Co-Operation and Development, OECD Publishing, Paris, France.
- OEH & DPC. (2011) Testing the Framework for the Assessment of River and Wetland Health in New South Wales. (ed Office of Environment and Heritage & Department of Premier and Cabinet) p. 50, Sydney.
- Oxford Dictionary. (2015). Oxford University Press, www.oxforddictionaries.com.
- Pannell D., Ridley A., Seymour E., Regan P. & Gale G. (2008) Regional natural resource management arrangements for Australian states: structures, legislation and relationships to government agencies. Version 3.2. (17 September 2008).
- Pantus F. J. & Dennison W. C. (2005) Quantifying and evaluating ecosystem health: a case study from Moreton Bay, Australia. *Environmental Management* **36**, 757-71.
- Papas P. & Moloney P. (2012) Victoria's wetlands 2009-2011: Statewide assessments and condition modelling. Technical Report 229. Arthur Rylah Institute for Environmental Research, Victoria., Melbourne.
- Parkes C. (2012) Draft Standards and Accreditation Manual. Wentworth Group of Concerned Scientists, Sydney.
- Parkes D., Newell G. & Cheal D. (2003) Assessing the quality of native vegetation: The 'habitat hectares' approach. *Ecological Management and Restoration* **4**, S29-S38.
- Pirzl R. (2008) Spatial Ecology of E. Australis: Habitat Selection at Multiple Scales.p. 286. Deakin University.
- Poole E. & Wiebkin A. (2014) Eyre Peninsula Natural Resources Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/eyre-peninsula-sa/>].
- Preen A. & Marsh H. (1995) Response of dugongs to large-scale loss of seagrass from Harvey Bay, Queensland, Australia. *Wildlife Research* **22**, 507-19.
- Preen A. R. (1993) Interactions between dugongs and seagrasses in a subtropical environment. James Cook University.
- QDNRM. (2013) Soil and Land Information Database: SALI. (ed The State of Queensland (Department of Natural Resources and Mines)). The State of Queensland, Brisbane, QLD, AU.
- QDSITIA. (2008) Statewide Landcover & Trees Study (SLATS). Accessed online, [<https://www.qld.gov.au/environment/land/vegetation/mapping/slats-explained/>].
- Queensland Department of Environment and Heritage Protection. (2012) Pictures worth a thousand words: A guide to pictorial conceptual modelling. (eds J. Tilden, L. Baskerville, M. Vandergragt, Department of Science Information Technology Innovation and the Arts, H. Lammers, M. Ronan and Department of Environment and Heritage Protection). Queensland Wetlands Program, Queensland Government, Brisbane.
- Queensland Department of Environment and Heritage Protection. (2014a) Broad Vegetation Groups. Accessed online: August 2014, [<https://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/bvg.html>].
- Queensland Department of Environment and Heritage Protection. (2014b) Regional Ecosystem Database. <http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/index.php>.
- Queensland Government. (2013) AquaBAMM: Aquatic biodiversity and mapping method Information Sheet. Department of Environment and Heritage Protection, Brisbane.
- Radford J., Bennett A. & Cheers G. (2005) Landscape-level thresholds of habitat cover for woodland-dependent birds. *Biological Conservation* **124**, 317-37.
- Rapport D. J., Costanza R. & McMichael A. J. (1998) Assessing ecosystem health. *Trends in Ecology & Evolution* **13**, 397-402.
- Reynoldson T. B., Norris R. H., Resh V. H., Day K. E. & Rosenberg D. M. (1997) The Reference Condition: A Comparison of Multimetric and Multivariate Approaches to Assess Water-Quality Impairment Using Benthic Macroinvertebrates. *Journal of the North American Benthological Society* **16**, 833-52.
- Robins L. & Dovers S. (2007) NRM Regions in Australia: the 'Haves' and the 'Have Nots'. *Geographical Research* **45**, 273-90.

- Roper T., Creese B., Scanes P., Stephens K., Williams R., Dela-Cruz J., Coade G., Coates B. & Fraser M. (2011) Assessing the condition of estuaries and coastal lake ecosystems in NSW. In: *Monitoring, evaluation and reporting program Technical report series*. Office of Environment and Heritage, Sydney.
- Rosewell C. (1993) SOILOSS - a program to assist in the selection of management practices to reduce erosion. In: *Technical Handbook No. 11*. Soil Conservation Services, Sydney.
- Sanderman J., Baldock J., Hawke B., Macdonald L., Massis-Puccini A. & Szarvas S. (2011) National soil carbon research programme: field and laboratory methodologies. p. 26. Commonwealth of Australia (CSIRO Land and Water), Waite Campus, Urrbrae SA 5064.
- Sanderman J., Farquharson R. & Baldock J. (2010) Soil Carbon Sequestration Potential: a Review for Australian Agriculture CSIRO Publishing, CSIRO.
- Saunders D., Sbrocchi C., McDonald J., Tulloch A. & Possingham H. P. (2015) An evaluation of methods for accounting for the condition of regional native bird communities. In: *Environmental Accounts Working Paper Series*. Wentworth Group of Concerned Scientists, Sydney.
- Saunders D. A. & Doley A. (2013) The birds of "Koobabbie" in the northern wheatbelt of Western Australia (1987-2011) and the contribution of the farm to conservation of the region's avifauna. *Pacific Conservation Biology* **19**, 204-32.
- Saunders D. A. & McAleer A. J. T. (2012) The Conservation Value of Private Property; A Case Study of the Birds of 'Woopanatty', Arrino, in the Northern Wheatbelt of Western Australia, 1987-2002. *Pacific Conservation Biology* **18**, 164-76.
- Sbrocchi C. (2013) Guidelines for Constructing Regional Environmental (Asset Condition) Accounts: *Quick Guide*. Wentworth Group of Concerned Scientists, Sydney.
- Sbrocchi C., Davis R., Grundy M., Harding R., Hillman T., Mount R., Possingham H., Saunders D., Smith T., Thackway R., Thom B., & Cosier P. (2015a) Evaluation of the Australian Regional Environmental Accounts Trial. Published by the Wentworth Group of Concerned Scientists, Sydney.
- Sbrocchi C. & Smith A. D. M. (unpub) Approaches for accounting for marine environmental assets. In: *Environmental Accounting Working Paper Series* (ed Wentworth Group of Concerned Scientists), Sydney.
- Scheltinga D. M., Counihan R., Moss A., Cox M. & Bennett J. (2004) Users' guide for Estuarine, Coastal and Marine indicators for regional NRM monitoring. Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Coastal CRC), Indooroopilly.
- Scholz G. & Fee B. (2008) A Framework for the Identification of Wetland Condition Indicators: A National Trial – South Australia. Department of Water, Land & Biodiversity Conservation, Adelaide.
- Semeniuk C. A. & Semeniuk V. (1995) A geomorphic approach to global classification for inland wetlands. *Vegetatio* **118**, 103-24.
- Shaddick J. (2014) North Central Catchment Management Authority Regional Environmental Account Trial, Information Statement 2014. Available online [<http://wentworthgroup.org/portfolio-item/north-central-vic/>].
- Sheldon R. A. (2005) Corangamite Wetlands Strategy 2006 - 2011. Corangamite Catchment Management Authority, Colac.
- Shepherd D., Beeston G. & Hopkins A. (2001) Native Vegetation in Western Australia: Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Silburn D. (2013) Review of SedNet for C-factors.
- Silburn M. (2014) USLE C-factors for tillage/conservation cropping systems Darling Downs - May 2005. (ed R. Blackley).
- Spatial Vision. (2013) NSW Native vegetation map product specifications: User requirements specification. Developed for the NSW Office of Environment and Heritage.
- State of the Environment Committee. (2011) Australia state of the environment 2011. Independent report to the Australian Government Minister for Sustainability, Environment, Water, Population and Communities. Department of Sustainability, Population and Communities. Commonwealth of Australia, Canberra.
- State of Victoria. (2005) Index of Wetland Condition. Conceptual framework and selection of measures. (ed Department of Sustainability and Environment).
- State of Victoria. (2012) Index of Wetland Condition 2009/10. Statewide assessment of Victoria's high value wetlands. (ed Department of Sustainability and Environment).
- Stoddard J. L., Larsen D. P., Hawkins C. P., Johnson R. K. & Norris R. H. (2006) Setting expectations for the ecological condition of streams: the concept of reference condition. *Ecological applications: a publication of the Ecological Society of America* **16**, 1267-76.
- Stoneham G., Chaudhri V., Ha A. & Strappazon L. (2003) Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial. *Australian Journal of Agricultural and Resource Economics* **47**, 477-500.
- Swan W. (2010) Australia to 2050: future challenges. The Australian Treasury, Canberra.
- Szabo J. K., Vesk P. A., Baxter P. W. J. & Possingham H. P. (2011) Paying the Extinction Debt: Woodland Birds in the Mount Lofty Ranges, South Australia. *Emu* **111**, 59-70.
- Thackway R. (2013) Personal Communication. (ed C. Sbrocchi).
- Thackway R. & Lesslie R. (2005) Vegetation Assets, States and Transitions (VAST): accounting for vegetation condition in the Australian landscape. Technical Report. Bureau of Rural Sciences, Canberra.

REFERENCES

- Thackway R. & Lesslie R. (2008) Describing and Mapping Human-Induced Vegetation Change in the Australian Landscape. *Environmental Management* **42**, 572-90.
- Thackway R., Neldner J. & Bolton M. (2008) Vegetation. In: Australian Soil and Land Survey Handbook Guidelines for Conducting Surveys (eds N. McKenzie, M. Grundy, R. Webster and A. Ringrose-Voase). CSIRO Publishing, Melbourne.
- Thackway R., Sbrocchi C. D., Cosier P., Saunders D. A., McIntosh E. & Possingham H. P. (2015) Protocol for Constructing a Native Vegetation Condition Account: Draft. In: *Environmental Accounting Working Paper Series*. Wentworth Group of Concerned Scientists, Sydney.
- Thackway R., Sonntag S. & Keenan R. (2006) Measuring Ecosystem Health and Natural Resource Productivity - vegetation condition as an indicator of sustainable, productive ecosystems. In: *Science for Decision Makers Series*. Bureau of Rural Sciences, Canberra.
- Thackway R. T. & Specht A. (2015) Synthesising the effects of land use on natural and managed landscapes. *Science of the Total Environment* **526**, 136-52.
- Tierney G. L., Faber-Langendoen D., Mitchell B. R., Shriver W. G. & Gibbs J. P. (2009) Monitoring and evaluating the ecological integrity of forest ecosystems. *Frontiers in Ecology and the Environment* **7**, 308-16.
- Tulloch A. I. & Szabo J. K. (2012) A behavioural ecology approach to understand volunteer surveying for citizen science datasets. *Emu* **112**, 313-325.
- United Nations, European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Cooperation and Development & World Bank. (2012) System of Environmental-Economic Accounting Central Framework. United Nations Statistics Division.
- United Nations, European Commission, Organisation for Economic Co-operation and Development & World Bank. (2013) System of Environmental-Economic Accounting Experimental Ecosystem Accounting.
- Viscarra Rossel R., Chen C., Grundy M., Searle R., Clifford D. & Odgers N. (2014a) Soil and Landscape Grid National Soil Attribute Maps - Organic Carbon (3" resolution) - Release 1. v1. In: *CSIRO Data Collection*. CSIRO, Canberra.
- Viscarra Rossel R. A., Webster R., Bui E. N. & Baldock J. A. (2014b) Baseline map of organic carbon in Australian soil to support national carbon accounting and monitoring under climate change. *Global Change Biology* DOI: 10.1111/gcb.12569, pp46.
- Wallin M., Wiederholm T. & Johnson R. (2003) Guidance on establishing reference conditions and ecological status class boundaries for inland surface waters. In: *EU Common Implementation Strategy for the Water Framework Directive* (ed CIS Working Group 2.3).
- Ward T., Butler E. & Hill B. (1998) Environmental indicators for national state of the environment reporting – Estuaries and the Sea, Australia: State of the Environment (Environmental Indicator Reports). Department of the Environment, Canberra.
- Watson I. W., Novelly P. E. & Thomas P. W. E. (2007) Monitoring changes in pastoral rangelands – the Western Australian Rangeland Monitoring System (WARMS). *The Rangeland Journal* **29**, 191-205.
- Wentworth Group of Concerned Scientists. (2008) *Accounting for Nature: A Model for Building the National Environmental Accounts of Australia*. Wentworth Group of Concerned Scientists, Sydney.
- Wiebkin A. (2013) Monitoring Native Vegetation on Eyre Peninsula for the Wentworth Group's Regional Environmental Accounting Trial 2012. In: *Report to the Eyre Peninsula Natural Resources Management Board*. Department of Environment Water and Natural Resources South Australia.
- Williams J., Read C., Norton T., Dovers S., Burgman M., Proctor W. & Anderson H. (2001) Biodiversity Theme Report. Independent Report to the Commonwealth Minister for the Environment and Heritage. In: Australia State of the Environment Report 2001. CSIRO on behalf of the Department of the Environment and Heritage, Canberra.
- Wilson B. & Pennay C. (2011) The extent and change in extent of Queensland wetlands, Biodiversity and Ecosystem Sciences. Queensland Herbarium, Brisbane.
- Wilson P., Baldock J. A., Grundy M. J., Jacquier D., Griffin T., Moody P., Chapman G., Hall J., Maschmedt D., Crawford D., Hill J. & Kidd D. (2009) Identification of land with a risk of acidification. CSIRO.