

# RESEARCH CONNECTIONS

## AUSTRALIA

### How to successfully inform on efficient irrigation and water use. A local government experience

#### Author

Richard Dilena

#### Article abstract

In previous years the primary focus for reporting on water use has been on maintaining expenditure within financial budgets. Whilst providing meaningful data on expenditure trends within a year, there was no evaluation provided on the effectiveness of irrigation operations - are green assets being maintained to the desired standard? There has also been a realisation that water use will vary according to weather conditions, that is, in dry seasons more water will be used to preserve/maintain assets to the required standard than in wet seasons. The concept of having flexibility in financial budgets to accommodate this is being examined at present. The challenge, however, with having this flexibility is to show that in periods of high or low water use, and associated cost impact, irrigation is still being carried out effectively and sustainably - that is, applying the correct amount of water to maintain plants to the required standard in response to varying weather conditions, and that water is not being wasted. Current Monthly Irrigation Reports are one page with a short summary of any major issues, current financial status, two key efficiency graphs, and concise explanatory comments. Feedback has been positive with a greater awareness of irrigation operations and water use among staff.

Published in: IAL 2015 Regional Conference, Penrith, New South Wales

Download article: [irrigation.org.au/wp-content/uploads/2015/06/IAL-2015-Richard-Dilena-non-referred-paper1.pdf](http://irrigation.org.au/wp-content/uploads/2015/06/IAL-2015-Richard-Dilena-non-referred-paper1.pdf)

Price: Free

### Reframing landscape fragmentation's effects on ecosystem services

#### Authors

Matthew G.E. Mitchell, Andrés F. Suarez-Castro, Maria Martinez-Harms, Martine Maron, Clive McAlpine, Kevin J. Gaston, Kasper Johansen, Jonathan R. Rhodes

#### Highlights

- Fragmentation generally has negative effects on ecosystem service supply.
- However, fragmentation can have positive or negative effects on service flow
- Understanding these contrasting effects is crucial for ecosystem service management.
- The authors develop a framework and testable hypotheses to advance research in this area.
- The authors argue that fragmentation's effects on ecosystem service flow can be positive or negative, and use their framework to construct testable hypotheses about the effects of fragmentation on final ecosystem service provision. Empirical efforts to apply and test this framework are critical to improving landscape management for multiple ecosystem services.

Published in: *Trends in Ecology and Evolution*, Volume 30, Issue 4, April 2015, pp. 190-198

Download article: [www.cell.com/trends/ecology-evolution/abstract/S0169-5347\(15\)00023-3](http://www.cell.com/trends/ecology-evolution/abstract/S0169-5347(15)00023-3)

Price: US\$31.50

## NEW ZEALAND

### The current state of community-based environmental monitoring in New Zealand

#### Authors

Monica A. Peters, David Hamilton, Chris Eames, John Innes, Norman W. H. Mason

First author: School of Science, University of Waikato, New Zealand

#### Article abstract (modified)

Volunteers engaged in community-based environmental monitoring (CBEM); a form of citizen science, can

track changes in species abundance and distribution, measure ecosystem health, and provide data for local, regional and national environmental decision-making. A total of 296 environmental restoration-focused community groups throughout New Zealand responded to an online questionnaire, the objective of which was to investigate the current state of CBEM and contextual factors shaping groups' monitoring activities. Overall, the results show that significant gains in CBEM could be made by targeting support towards groups managing small areas. The significant positive effect of partner support and constraints imposed by resourcing and technical skills on monitoring activity show that government agencies and science professionals could play a critical role in growing CBEM. Prioritising these collaborative partnerships to design and implement monitoring programmes will maximise the value of monitoring, by meeting groups' and potentially partners' information needs.

Published in: *New Zealand Journal of Ecology*, Volume 40, Issue 3, pp. 279-288

Download article: [newzealandecology.org/nzje/3273](http://newzealandecology.org/nzje/3273)

Price: Free

## INTERNATIONAL

### Communicating the benefits of urban trees: A critical review

#### Author

Andy J. Moffat

#### Article abstract

There has been considerable debate in recent years about how arboriculturists can increase their influence in order to maintain and improve the ecosystem goods and services delivered by urban trees. This paper is a personal interpretation of possible reasons why such a debate is actually necessary in Britain, given that the sector has now acquired considerable knowledge about tree benefits to society. The concept of urban forestry is clouded in multiple

interpretations and communication about the benefits of trees with urban communities and their politicians has been poor. On balance it has probably failed. There remain tangible opportunities to enhance tree cover in urban areas, but capitalising on them will require effective advocacy. Some ideas to improve this position are offered, though more to move the debate forward rather than to provide a definitive action plan.

**Published in:** *Arboricultural Journal: The International Journal of Urban Forestry*, Volume 38, Issue 2, 2016, pp. 64-82

**Download article:** [www.tandfonline.com/doi/full/10.1080/03071375.2016.1163111](http://www.tandfonline.com/doi/full/10.1080/03071375.2016.1163111)

**Price:** US\$50.00

### **Investigating possible effects of climate change on tree recruitment: Responses of abundant species to water stress in Gorongosa National Park**

**Authors**

Tara Joy Massad, Tongai Castigo, Gorongosa Restoration Project, Gorongosa National Park, Mozambique

**Highlights**

- Climate change is predicted to bring more droughts to southern Africa and the ability of seedlings to tolerate drought will affect future patterns of recruitment.
- *Combretum adenogonium*, *Vachellia xanthophloea* and *Faidherbia albida* are abundant tree species found across a moisture gradient.
- A greenhouse study showed water stress had less of an effect on *C. adenogonium* than the two more mesic species.
- *V. xanthophloea* responded to water stress increasing its root:shoot ratio.
- *F. albida* biomass decreased above- and below-ground, but population level differences indicate individuals from drier areas invest more in roots under moderate water stress.
- Together, these data suggest that these three species may continue to establish under drought conditions, but if water stress is prolonged, the ranges of *V. xanthophloea* and *F. albida* may contract.

**Published in:** *South African Journal of Botany*, Volume 106, September 2016, pp. 96-100

**Download article:** [www.sciencedirect.com/science/article/pii/S0254629915327587](http://www.sciencedirect.com/science/article/pii/S0254629915327587)

**Price:** \$35.95

### **Influence of soil properties on street tree attributes in Singapore**

**Authors**

Subhadip Ghosh, Bryant C. Scharenbroch, Daniel Burcham, Lai Fern Ow, S. Shenbagavalli, S. Mahimairaja

**Article abstract (modified)**

Soil quality is thought to be a primary driver of street tree performance and thus a major concern for urban forest growth, health and longevity. This research was conducted to evaluate the influence of soil physical, chemical and biological properties on Singapore's street trees. In total, 338 plots, 1014 trees and 32 species across Singapore's five regions were sampled. Singapore's street trees are skewed towards smaller diameters (<50 cm) and largely represented (61 per cent) by five species, four of which are non-native. Most soil properties in Singapore's streetscapes are likely not limiting for trees. Individual soil properties and multi-factor models were poor predictors of urban tree attributes across Singapore, but models improved when examined at regional scales. Relatively high soil quality, uniformity of streetscape soils and fast growth rates of these trees are proposed as explanations for why soil properties appear to poorly predict street tree attributes in Singapore.

**Published in:** *Urban Ecosystems*, Volume 19, Issue 2, June 2016, pp. 949-967

**Download article:** [link.springer.com/article/10.1007/s11252-016-0530-8](http://link.springer.com/article/10.1007/s11252-016-0530-8)

**Price:** US\$39.95

### **Unique landfill restoration designs increase opportunities to create urban open space**

**Authors**

Wolfram Hofer, Frank Gallagher, Theresa Hyslop, Tyler J. Wibbelt and Beth Ravit

**First author:** Department of Landscape Architecture and Center for Urban Environmental Sustainability (CUES), School of Environmental & Biological Sciences, Rutgers University, New Brunswick, New Jersey

**Article abstract**

The majority of humans now live in cities where access to usable open space is often limited, causing a re-examination of current practices and values related to reuse of available urban lands. Closed landfills offer an unprecedented opportunity to convert large underutilised land into usable urban open space, as well as

habitat for multiple species. However, existing landfill regulations and closure practices do not allow optimal ecological restoration designs for these underutilised properties to be realised, because current regulations focus on methods that protect required caps and prevent water infiltration. Through the exploration of two design case studies, the authors illustrate the opportunities to increase habitat diversity on closed landfills and to more closely approximate a natural topographic/vegetation interaction. Although initially a more costly restoration, unique restoration design elements enhance both long-term environmental and socio-economic values associated with the reuse of closed urban landfills, which are currently underutilised.

**Published in:** *Environmental Practice*, Volume 18, Issue 2, June 2016, pp. 106-115

**Download article:** [journals.cambridge.org/action/displayAbstract?fromPage=online&aid=10374375&fulltextType=RV&fileId=S1466046616000090](http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=10374375&fulltextType=RV&fileId=S1466046616000090)

**Price:** US\$45.00

### **Reasons to conserve nature**

**Author**

Richard G. Pearson

**Article abstract (modified)**

Is it sufficient to base arguments for conservation on the intrinsic value of nature, regardless of the services and economic benefits that biodiversity provides for humans? This question underlies much recent debate that has been at times acrimonious and has led to calls for a more inclusive approach to conservation. Here the author describes an approach that recognises the importance of the level of biological organisation and spatial extent in determining the strength of alternative arguments for why we should conserve nature. The author argues that the framework helps reconcile contrasting viewpoints and brings clarity to when different conservation management approaches (for instance, regulation versus monetary valuation) are most appropriate.

**Published in:** *Trends in Ecology and Evolution*, Volume 31, Issue 5, May 2016, pp. 366-371

**Download article:** [www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(16\)00050-1](http://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(16)00050-1)

**Price:** Free