

# Book Review

## The Blue Revolution

by Ian Calder, 1999.

Earthscan Publications, London, 192 pp.

Ian Calder is familiar to many New Zealand land-use hydrologists as an eminent modeller and water yield researcher, and now professor of water resources management at the University of Newcastle. He visited Landcare Research on sabbatical in the mid-1990s and applied his LUC97 model to water yield data from the Glendhu experimental catchments.

Calder's rather grandly titled book, *The Blue Revolution*, is an uneasy mix of observations on the global need for Integrated Water Resource Management and detailed summaries of much of his hydrological research around the world. His commentary on the impacts of afforestation on water yield is particularly relevant to New Zealand readers, because of current interest in this issue among regional councils and forest companies.

"The Blue Revolution" is described as a holistic approach to land and water management. It requires a shift from past engineered approaches to water management, to take into account the whole ecosystem as well as social and economic factors. This integrated approach makes us aware of the need to step beyond plot-scale hydrological research to catchment scale and larger. It also means building research and catchment management teams that include scientists from all disciplines, as well as resource managers, policy makers and community representatives.

Calder's integrated water resources management theme coincides with recent moves by our own Foundation for Research, Science and Technology towards multi-disciplinary projects such as the Motueka Integrated Catchment Management initiative. As Calder reminds us, water issues are not just technical issues, they are emotional and political. Integrated catchment management is about finding a satisfactory solution, not necessarily the optimal one.

The book opens with a description of The Blue Revolution and why this integrated approach is needed globally to protect land and water resources for the future. Calder then launches into the detail of evaporation from tall and short vegetation. Some scene setting to establish the relevance of this issue to integrated catchment management would have helped here. He then illustrates the importance of good research by presenting and then challenging the following seven myths about forests and water resources:

- Forests increase rainfall
- Forests increase runoff

- Forests increase dry season flows
- Forests reduce erosion
- Forests reduce floods
- Forests improve water quality
- Agroforestry increases production.

While some of these statements are obviously incorrect to us hydrologists, they are believed by many in the wider community, including in New Zealand local government. You will need to read the book to see why he challenges what he calls “the old paradigms”.

The following chapter describes in some detail the various methods for estimating evaporation from short versus tall vegetation. Again, the reasons for dwelling on this part of the hydrological cycle are not clearly stated in the context of his theme of integrated water resource management.

The second half of the book reviews global efforts to implement the concepts of the Blue Revolution. These include the UNCED principles for the management of water agreed at the Rio Earth Summit in 1992, namely (in a somewhat modified form) that:

1. Water has multiple uses and water and land must be managed in an integrated way
2. Water should be managed at the lowest appropriate level (a participatory approach)
3. Water allocation should take account of the interests of all who are affected
4. Water should be recognised and managed as an economic good.

The principles of sustainable development are outlined with examples given of implementation approaches such as The Natural Step, triple bottom line reporting, and environmental accounting. Calder presents his Blue Revolution as not just finding sustainable solutions, but finding solutions that satisfy all stakeholder sectors. He reviews the work of the Global Water Partnership and the World Water Council, who since publication of this book have completed a World Water Vision addressing global freshwater issues.

Calder presents examples of global water issues—many from his own experience—ranging from salinization in Australia, to river restoration in the US, to tradeable water right proposals in the UK. Some of the Forst Research Institute/Landcare Research results from the Maimai, Big Bush, and Glendhu catchments are included here.

The book concludes by summarising Integrated Water Resources Management. Calder describes some of the soft system tools for incorporating the human dimension, and hard systems tools such as Decision Support Systems.

*The Blue Revolution* will appeal to those interested in land-use hydrology

as well as those looking for a global overview of water resource management challenges for the 21st century. It is also a useful reference for researchers and resource managers working in the growing area of Integrated Catchment Management.

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