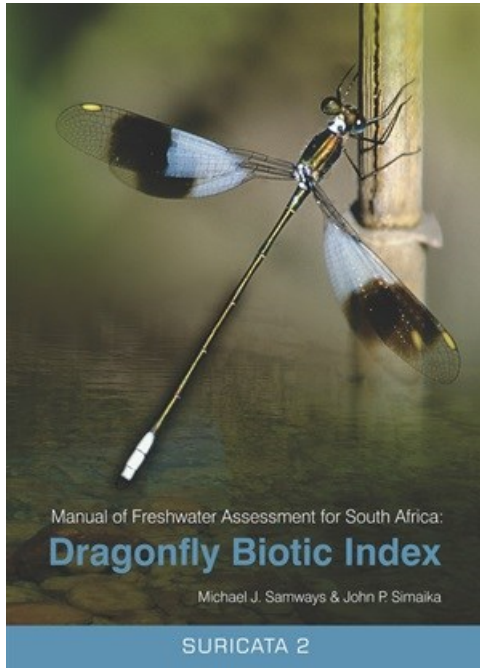


Experts shed light on the role of dragonflies in water management

South Africa's 162 beautiful, sun-loving dragonfly species are helping conservationists, water managers, and farmers to get to grips with the state of local freshwater sources such as dams, rivers, and streams. Two Stellenbosch University (SU) researchers wrote a book which sets out how these insects can be used as freshwater monitors.



The new 224-page full colour *Manual of Freshwater Assessment for South Africa: Dragonfly Biotic Index* is written and compiled by Prof Michael Samways, renowned insect conservationist of the SU Department of Conservation Ecology and Entomology, and water ecologist Dr John Simaika, a research fellow in the SU Department of Soil Science. "Using dragonflies in freshwater assessments is so simple because they are relatively easy to identify," says Prof Samways. "All you need is a good guide, a pair of close-focus binoculars, and a sunny day."

The book synthesizes the research they have been doing together over the past decade to compile an easy-to-use biotic index that is relevant for South African water systems. In the process, they have also been involved in finding new species or re-discovering ones that were thought to have become extinct. The manual, which contains full-colour photographs and line drawings, can also be used as a field guide to locate and identify dragonfly species. Many of the photographs were taken by the authors themselves during the course of their research work on dragonflies, a broad term used for the true and familiar dragonflies as well as the small and usually more slender and delicate

damselflies.

Dr Simaika describes the book as an easy read. "It is easily accessible, as anyone can download it, print it or share it, anywhere in the world," he notes. The manual is available as a book or on CD, and will also be made available to [download for free in the near future](#). It is published by the South African National Biodiversity Institute (SANBI), as part of its Suricata series.

"Books such as this one are a great starting point for getting people to care about something. If only one in ten readers were to think more deeply about freshwater conservation, then we will have done a good job," adds Dr Simaika. "I hope it will also encourage people already working in the water sector, particularly in the water resource arena, to think differently about freshwater biodiversity conservation, which all too often takes a back seat to providing water for human uses."



Brachytheris lacustris, Red Groundling - John Simaika

Why use dragonflies to assess freshwater systems?

Dragonflies are found in all parts of the world, except in the Polar regions. Some are highly sensitive to any human impact, while others are real opportunists that are able to live in the most artificial of habitats, such as cattle troughs and even bird baths. "This range of sensitivities makes dragonflies very useful as good indicators of freshwater quality and conservation," says Prof Samways.

"When a water system becomes degraded through for instance pollution or damming there is always a change in the species found in an area, with a shift from sensitive specialists towards more generalists that are not that particular," he elaborates. "If you know which species are present in and around a water source you are able to measure the extent to which a freshwater body is, for instance, returning to its original condition after being polluted or after the clearing of alien plants."

How does the scoring system highlighted in the manual work?

Prof Samways and Dr Simaika developed their dragonfly biotic system over the course of the past decade. "One of the advantages of the dragonfly biotic index is that you do not have to wade into the water to collect samples when you want to do an assessment, but can do so from the reasonable comfort of a streambank or the edge of a dam," Prof Samways adds on a practical note.

The index takes three main features of each of the 162 South African species into account. Scores are given to each species, and these can be weighed up when weighing up the state of different water sources.



Syncordulia gracilis, Yellow Presba - John_Simaika

The features used are:

- The general distribution of a species (for instance, if it is commonly found over a wide area, or only in a few localities);
- Its threat status (whether it is rated as threatened or near extinct on the so-called 'Red List' of the International Union of Conservation of Nature and Natural Resources); and
- Its sensitivity towards changes by humans to the water sources around which it is found.

When a system deteriorates there is a shift in the total scores of all the species present, from high to low. When the system improves again, there is a subsequent shift in the other direction. "In short, we can use dragonflies to determine whether we should be worried about a system which is going downhill, or how well we are doing to improve another, " adds Dr Simaika.

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