



Problems with DSE's Net Gain Calculator

In Issue 2 of EcoRamblings I discussed the [Net Gain Calculator](#), an important tool released by DSE to help contractors estimate potential gain of one or more offset proposals.

At the time I heralded the software as 'the final piece of the puzzle' as it allowed consultants to avoid having to refer to the 'Vegetation Gain Approach - Technical basis for calculating gains through improved native vegetation management and revegetation' ([DSE 2006 PDF](#)) - a horrible document full of convoluted criteria.

It appears that I was a bit hasty. In the May 2007 DSE Port Phillip Region Framework Update, Russell Costello (Native Vegetation Officer) reported that the calculator gives

results that are inconsistent with the gain guide.

Although an updated version of the calculator is proposed, DSE has indicated that consultants should not rely on the calculator and all results should be cross-checked against the relevant benchmark and the gain guide.

Taking into consideration this need to verify it's results, the calculator is of little use as its only function is to circumvent the need for cross-checking the benchmarks and gain guide in the first place.

DSE should abandon future releases of the calculator until such time as it's output is considered reliable and is able to be used as a surrogate to manual calculations.

**Oxalis compressa* (Winged Wood-sorrel)

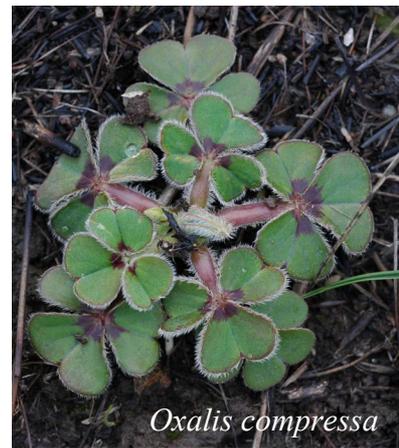
In September 2000 David Cameron and Randall Robinson (DSE) recorded a new weed for Victoria - **Oxalis compressa* (Winged Wood-sorrel) - from the gardens of Arthur Rylah Institute, Heidelberg.

Until recently this was the only confirmed record of the species in Victoria. In July 2007 however, a large infestation was noted by me in Broadmeadows Valley Park (Westmeadows), and subsequently other infestations have been recorded in Broadmeadows, Dallas and Sunbury.



Oxalis compressa

Although superficially similar to **Oxalis pes-caprae* (Soursob), the species is readily distinguished by its compressed villous petioles or leaf stalks ([Flora of South Australia](#)) - especially apparent on younger plants (see below).



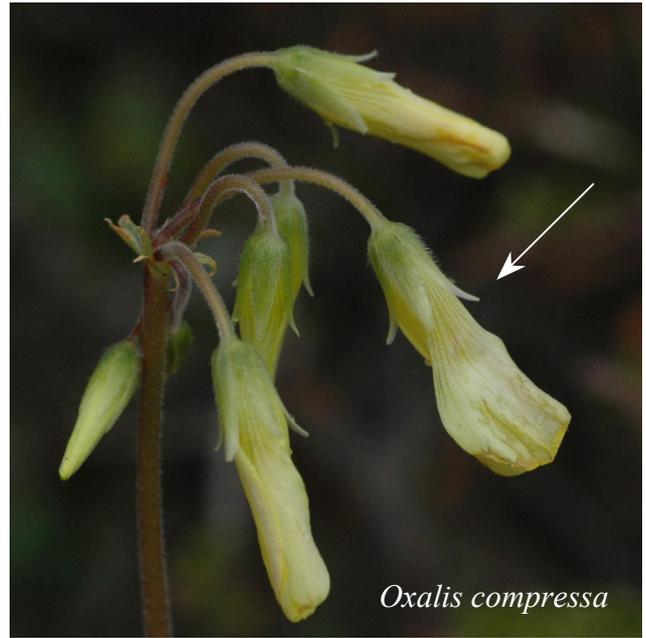
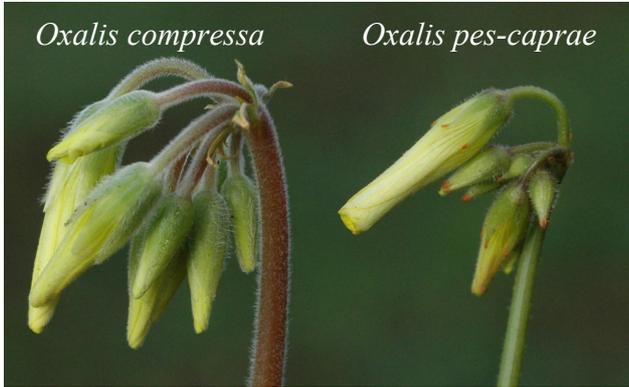
Oxalis compressa

Articles Inside

* <i>Ornithogalum longibracteatum</i> (Pregnant Onion)	2
The need for mandatory reporting by ecological consultants	3
The response of temperate grasslands to grazing	4
The Framework: A Review - Part 2	4

****Oxalis compressa* (Winged Wood-sorrel), cont'd**

Other attributes that distinguish *Oxalis compressa* (Winged Wood-sorrel) from *Oxalis pes-caprae* (Soursob) is the pubescent undersurface of the leaflets, pubescent peduncle (flower stalk), recurved sepals (when the flowers are open) and the absence of the two apical orange calli present on the sepals of the latter species.



****Ornithogalum longibracteatum* (Pregnant Onion)**

An infestation of this species was recently recorded on the bank of an ephemeral creek in Sunbury. Originating from garden refuse the weed had spread over 5m² and was poised to move downstream with soil likely to be washed away in future rainfall events.



The species was spreading by asexually produced bulbils formed between the onion-like outer layers. One 15-20 centimetre bulb that I dissected had 20-30 bulbils under the tunic!



Although plants had produced inflorescences in previous years and one plant was flowering when I discovered the infestation, no capsules or seedlings were seen.

The need for mandatory reporting by consultants

In my experience there are two types of clients that ecological consultants encounter. People who are interested in what you find and those that prefer you did not find anything. It is the latter group that causes the greatest problem, as they are the impetus for the dishonest behaviour that is currently rife in this industry.

The most difficult group to work with are people looking to develop land, whether this is a land developer, an individual or government agency – any plants, animals, habitat or vegetation discovered by a consultant only creates problems for them and they make every effort to ignore and/or downplay their significance.

In a significant portion of clients the topic quickly changes to what can be done to destroy the ecological asset or whether I would be willing to change my assessment! Once the conversation strays to this topic I find myself walking to the door or being asked to leave because I refuse to change my report. It is the latter situation that I wish to discuss here.

At present, the collection of scientific data to support planning applications is self-regulated. In Victoria, it is up to the applicant to acquire an

ecological survey to support their application – as is the situation federally for the Environment Protection & Biodiversity Conservation Act 1999. The problem with this approach is that if an applicant does not like what the ecological consultant finds, the report is thrown away and another company approached. The applicant continues the process until they find someone whose report matches their expectations – either through design or through incompetence. Considering that regulatory agencies have neither the time or experience to check the report against what is actually in the field, these substandard assessments are rarely challenged.

It is my opinion that consultants should report directly to regulatory agencies, as this would reduce the ability of people to select the result that best meets their needs and to influence what should be an independent scientific assessment. This would also allow the regulatory agency to verify that the fieldwork and preliminary analysis meet minimum industry standards.

Appropriate mitigation options can then be discussed between the consultant, the regulatory agency and the property developer.

Websearch

There has been a push over the last few years to provide high quality distributional, taxonomic, illustrative and photographic material for a variety of plants and animals on the Internet. The following is a sample of high quality websites currently available on the Internet that can help you learn more about taxa that you are unfamiliar.

Australian Plant Name Index
<http://www.anbg.gov.au/cpbr/databases/apni.html>
A list of all published names of Australian vascular plants.

Australia's Virtual Herbarium
www.anbg.gov.au/avh
Distribution maps, based on herbarium records, for all known vascular plants recorded in Australia.

Electronic Flora of South Australia
www.flora.sa.gov.au
Distribution maps, based on herbarium records, and fact sheets for all known vascular plants recorded in South Australia.

CalPhotos
<http://calphotos.berkeley.edu/>
Images of plants and fungi found within California. Useful for visualising common weeds or Australian plants that have become naturalised in this area.

Charles Sturt University Virtual Herbarium
<http://www.csu.edu.au/herbarium/>
Detailed scanned images of herbarium collections made from the Murray and Murrumbidgee Region.

Frogs of Australia
<http://frogs.org.au/frogs/>
Distributional, ecological and taxonomic data about the frogs of Australia, compiled by the Amphibian Research Centre.

Museum of Victoria
<http://www.museum.vic.gov.au/bioinformatics/>
Comprehensive information on butterflies, snakes, frogs, mammals and lizards of Victoria.

The Wolf Spiders of Australia
<http://www.lycosidae.info/identification/australia/>
An annotated checklist of Wolf Spiders occurring in Australia with scanned images of rare illustrations.



The response of temperate grasslands to grazing

Grasses can be classified based on various physiological adaptations to changing rainfall, temperature, salinity and nutrient patterns ([Sinclair 2002](#)). Of particular interest to ecologists is the photosynthetic pathway that a species employs as there has been a strong correlation found between the two main groups, C₃ and C₄ grasses, and their tolerance to grazing ([Rogers 1993](#); [Johnston 1996](#)). C₃ and C₄ grasses can be crudely described as winter-growing and summer-growing grasses respectively ([Johnston 1996](#); [Sinclair 2002](#)). An understanding of the C₃ - C₄ mix and its change under varying conditions can provide insight into a grasslands response to varying conditions.

Temperate grasslands have three indigenous elements: C₃ grasses, C₄ grasses and herbs. The relative proportion of each of these elements vary depending on the fire history, grazing history and historical farming practices ([Johnston 1996](#); [Groves and Whalley 2002](#)). As a

lifeform-group herbs represent the greatest species diversity while grasses represent the bulk of the biomass ([Tremont 1994](#); [Tremont and McIntyre 1994](#); [Dorrough et al. 2004a](#)^{PDF}).

In general terms, grazing results in the rapid loss of C₄ grasses followed by native herbs and eventually C₃ grasses, with the gradual introduction of European C₃ grasses and herbs. Aside from physical disturbance and biomass reduction, subtle changes in nutrient balance (particularly nitrogen through stock faeces) reduce the competitive advantage of indigenous C₄ grasses, which are better adapted to low nitrogen levels, and allow non-indigenous elements requiring higher nitrogen levels to invade the grassland. The addition of fertilizer and the sowing of legumes compound the problem further, which rapidly leads to the loss of the remaining indigenous C₃ grasses ([Groves and Whalley 2002](#)).

The Framework: A Review – Part 2

The Native Vegetation Management Framework was designed to be implemented by non-skilled workers essentially eliminating the need for input by experienced ecological consultants.

By and large, this objective has failed, as even the most basic ecological assessment requires the ability of the assessor to distinguish native species from weeds, and indigenous vegetation from non-indigenous vegetation. In addition, apart from simply listing what plants, animals, vegetation or habitat occurs in an area they are meant to provide some input into the likely effects a development may have on these ecological issues and how these effects can be mitigated. There are very few practicing Natural Resource Consultants that are suitably qualified or experienced to address these issues.

Let us initially look at the need to be able to identify plants. The [Vegetation Quality Assessment Manual](#) provides a form to be completed by the assessor that apparently negates the need to document what plants are present in the area, as would traditionally have been the case when collecting quadrat data. But this is not actually the case. The Understorey Assessment requires the number of indigenous plants in a variety of lifeform categories to be recorded. It is imperative that the assessor is able to identify the bulk, if not all, of the herbs, grasses, shrubs and trees present. The problem is that this is usually not the case. There are people out there

marketing themselves as being able to do this work, and they can't even distinguish common indigenous species.

This problem is not unexpected, considering that most science degrees inadequately prepare their students to do this simple task. You can major in botany from any major university in Australia with only the ability to identify a small number of common plant families and species. It is imperative that graduates should have adequate experience before being allowed to call themselves ecological consultants. In addition, despite not being required by DSE, assessors should list what plants they saw during their assessment so that anyone reviewing their work can satisfy themselves that the vegetation was adequately documented.

Following on from simple plant identification is the ability to distinguish between vegetation types. The Department of Sustainability & Environment has addressed this by providing vegetation maps for most of the state and descriptions of the known Ecological Vegetation Classes. The problem is that the mapping is very crude for most of the state (1:100,000) and for the most part modeled. It is necessary then to carefully review all the available data and your field observations to adequately classify the vegetation and use the appropriate benchmark in your assessment. Experience in a variety of ecosystems is imperative when doing

The Framework: A Review – Part 2, cont'd

this type of work, as the incorrect choice of benchmark can result in the incorrect habitat scores and consequently higher or lower offset values.

Ok, considering having a science degree does not guarantee someone can identify plants or vegetation how do you distinguish between companies saying they can do ecological surveys. The first thing you need to clarify is who is doing the work and ensure they are actually the person on the ground conducting the survey. Second, ask them to provide a list of quadrats the assessor has collected and list what vegetation types they are from. Anyone worth their salt in Victoria would have registered any quadrats they have collected on the Flora Information System and so this data can be readily provided. Thirdly, ask them how many peer-reviewed ecological papers they have published and in what discipline. You would expect the assessor would be a senior author of at least 2-3 papers in ecology or conservation to be considered adequately experienced.

Ecology is defined as "the science of the relationships between organisms and their environment" ([TheFreeDictionary](#)).

This definition brings us to the crux of what an ecological consultant does, apart from documenting what plants and animals utilise an area, an ecologist discusses the impacts of the proposed development and suggests appropriate mitigation. This is where classical training in ecology, as traditionally started in most science degrees, lays a foundation. Coupled with several years experience in natural resource management, usually working for the Department of Sustainability & Environment or Parks Victoria, you can expect they will have a reasonable understanding of (a) the interactions between the dominant plants, animals and vegetation in common ecosystems in Victoria, (b) the principal events controlling ecosystem function, (c) common techniques used to manipulate vegetation structure, and (d) common pest / weed control techniques utilised in bushland management.

Who is Simon Cropper?



Considering you have taken the time to listen to my ramblings I thought it only fair that I let you know a little bit about myself so you can decide for yourself whether my views are legitimate. I have been a professional ecologist since 1985 and have been involved in survey work, the development and implementation of monitoring programs, detailed ecological research and management of both significant species & ecosystems. I also authored the book 'Management of endangered plants' published by CSIRO. In 1993, I established the natural resource consultancy Botanicus, which has since serviced a broad range of government and private sector clients, and has conducted numerous flora & fauna surveys throughout Victoria.

Housekeeping

Please feel free to distribute this publication to anyone interested in Natural Resource Management. If you would like to have future issues automatically sent to you by email, send me an email with SUBSCRIBE ECORAMBLINGS in the subject line to my email address below. If at any stage you wish to discontinue receiving future issues, send me an email with UNSUBSCRIBE ECORAMBLINGS in the subject line.

Please note that numerous links to the Internet have been provided in this document to help direct the reader to supportive documentation or further reading. I have assumed that most people will have broadband and Acrobat® Reader on their system. I apologise if this is not the case. I have marked links pointing to Acrobat® Portable Document Format files with the PDF symbol. The reader can be downloaded from the [Adobe Website](#).

Articles in this document can be cited in the same way as traditional journals, viz. Cropper, S.C. (2006) Heat stress in outdoor workers. *EcoRamblings* 1: 1-2.



BOTANICUS AUSTRALIA PTY LTD

PO Box 160, Sunshine VIC 3020

Phone: 03 9311 5822.

Fax: 03 9311 5833

Email: scropper@botanicus-aust.com.au

ISSN 1834-2442

© Botanicus Australia Pty Ltd 2006

The opinions expressed in this newsletter are those of Simon Cropper and have been provided for educational purposes only. Care should be taken in relying on them in specific situations without gaining expert advice regarding your needs. Consequently, no warranty is provided by Simon Cropper or Botanicus Australia Pty Ltd, and both parties disclaim any liability that may arise from you relying on any information published in this newsletter.