

The responsibilities of ecological consultants in disseminating outcomes from threatened species surveys: a call to arms

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Introduction

Ecological consultants are often in the enviable position of being paid to botanically explore and seek out threatened plants. Yes, there are attractive jobs in remote or pristine locations where few botanists have trod before, but there are also less desirable projects in weed-infested remnants across highly fragmented landscapes or in heavily urbanised environments. Both offer the potential to uncover important information on threatened plants. But are we, as consultants, fulfilling our responsibilities for the cause of conservation by disseminating the outcomes of threatened species surveys and monitoring? The pages of *Australasian Plant Conservation*, for example, are largely filled with articles prepared by university and government agency researchers, but consultants seldom feature. Why is this, when consultants are perhaps some of the few professional botanists where much of their time is spent collecting data on threatened species?

Opportunities and responsibilities

With any profession there are opportunities, and ecological consultants are no exception. Granted, a large number of contracts are associated with the development industry, requiring general perhaps monotonous flora surveys to be undertaken to determine if any species of significance are present in an area. These can, and often do, result in lists of common species and weeds with no presence of threatened species. But other more rewarding contracts allow new understandings of specific taxa or groups of taxa, or present opportunities to explore large tracts of privately-owned lands, and it is with jobs like these that consultants can make a real contribution to knowledge on threatened species.

In some situations, even those repetitive more general flora surveys on a development site can result in the re-discovery of species previously thought extinct, or in some cases the discovery of entirely new taxa. *Hibbertia fumana*, for example, was known only from herbarium specimens collected in Sydney in the early 1800s but was surprisingly re-discovered in abundance following routine surveys conducted by consultants for a proposed development (Duretto *et al.* 2017). *Callistemon*

megalongensis, newly discovered in the western Blue Mountains of NSW, was present within a standard floristic survey plot being undertaken for a contract mapping project on behalf of the governing council (Douglas 2003), and *Acacia wollarensis* was detected and recognised as a new species only through inspection by consultants of a proposed offset property in the upper Hunter Valley of NSW (Bell and Driscoll 2017). The critically endangered *Persoonia pauciflora* was discovered through contract flora surveys of a proposed development site in central eastern NSW (Weston 1999), while in WA *Tetratheca paynterae* subsp. *cremnobata* and *T. erubescens* were both uncovered as a result of commissioned surveys of lands on behalf of the mining industry (Bull 2007). In some cases, plant taxonomists choose to name a new taxon after their consultant discoverers (e.g., *Haloragis milesiae*, Wilson and Makinson 2015; *Leptospermum benwellii*, Bean 2004; *Zieria odorifera* subsp. *copelandii*, Duretto and Forster 2008). In all of these cases, persistence and careful observation by consultants in sampling vegetation during otherwise routine surveys has uncovered critical new finds.

Ecological consultants work under a number of responsibilities, and these will depend on the type of survey being contracted, the desires of clients for project confidentiality, and the conditions imposed on them by licencing agreements in place with government agencies. Above all of these, however, is the responsibility for the advancement of science and dissemination of information that can assist conservation. Over two decades ago, Kitching (1994) suggested that we all have a responsibility to the rest of nature, to observe and defend it through all means possible, and that should include circulating our findings to aid species protection. Under the International Convention on Biological Diversity, signatory countries are obliged to investigate and manage biodiversity for the benefit of all. Australia has been a signatory to this Convention since 1992, and since that time state and federal jurisdictions have implemented legislation to ensure that biodiversity is managed in an ethical and righteous manner. Ecological consultants play a key role in this, for it is they who are at 'the coal face' as they document biodiversity and highlight taxa of significance to meet the requirements

of this legislation. And as indicated in the examples quoted above, ecological consultants often play a crucial role in the advancement of taxonomy, a role where collaboration with taxonomists can greatly assist the accelerated discovery of new species anticipated under the decadal plan for taxonomy in Australia (TDPWG 2018).

Publish – but where?

So how can we disseminate important findings? Even seemingly minor outcomes from surveys can improve management of a species, and publication of these data to a wide audience is highly desirable. Publication of important and significant new findings does not always need to comprise a detailed and lengthy ecological study of a target species, as may be suitable for a scientific journal. In many cases, the critical findings of a project can be summarised in a few paragraphs (such as in the abstract of a full scientific paper), and it is the facts contained in such summaries that often influence how management and policy decisions are made. There are at least three avenues for potential publications open to consultants that are rarely used, and each can potentially contribute to conservation. Bulletins such as *Australasian Plant Conservation* provide the perfect conduit to relay new information on threatened plants and their habitats, but it is unfortunate that ecological consultants rarely contribute. A review of the twenty-six volumes of *Australasian Plant Conservation* published since its inception in 1991 (as *Danthonia*) shows a strong dichotomy between articles penned by government agency staff or community groups and those prepared by ecological consultants (Figure 1). Of 784 articles submitted during this period, only 50 (6.4 %) were prepared solely by ecological consultants, and a further 25 (3.2 %) were collaborations between consultants and agency staff. For a publication that promotes itself as being “a forum for information exchange for all those

involved in plant conservation”, ecological consultants, often at the forefront of discovering new populations, extending distributional ranges and uncovering important ecological traits, are letting the team down considerably.

Low publication rates may be acceptable in a profession with limited members, but the number of ecological consultants has undergone rapid growth in recent decades as it keeps pace with legislative expectations. In recognition of this, some States have formed professional bodies to foster, encourage and inform their membership of latest developments. For some, dissemination of information through newsletters or bulletins forms an important communication opportunity for members, and this represents a second avenue for consultants to advise of significant finds. An online search of these organisations in Australia shows that three States are active in this area (NSW, WA, VIC). Two of these (NSW, WA) allow public access to their newsletters and bulletins (*Consulting Ecology*; *ECA WA News*), and a third (VIC) has an active Facebook account. It is of interest to glean from these publications the extent to which new information and data on threatened plant species are published. Understandably, the bulk of information presented in all of them relates to administrative issues, feedback from workshops and conferences, book reviews and recent research publications, updates on specific taxonomic groups, updates on legislation and government initiatives, new equipment technologies and trials thereof, and general observations from members’ holidays and the like. Very few contributions actually document important new finds or discoveries relating to threatened plants made by members during the course of work activities. This is particularly disturbing, given that organisations established by and for consultants seem to provide the perfect platform for advising colleagues and others of significant finds. By comparison, significant observations relating to fauna are far more evident in these publications and yet there are considerably more threatened plants than animals in all Australian States.

As an example, Figure 2 summarises the relative contributions relating to significant flora and fauna observations published in *Consulting Ecology* (newsletter of the NSW Ecological Consultants Association) from its inception in 1999 until 2017. Rarely do observations relating to threatened flora get a mention, yet newsletters such as this provide a perfect opportunity for distributing new information. Observations on interesting and significant fauna results have consistently outnumbered those on flora. Given that most ecological consultants are time-poor, brief submissions advising colleagues of survey results in a publication such as this should be entirely feasible (and our fauna colleagues seem to be managing this better than us), when the alternative of preparing more detailed scientific papers seems insurmountable.

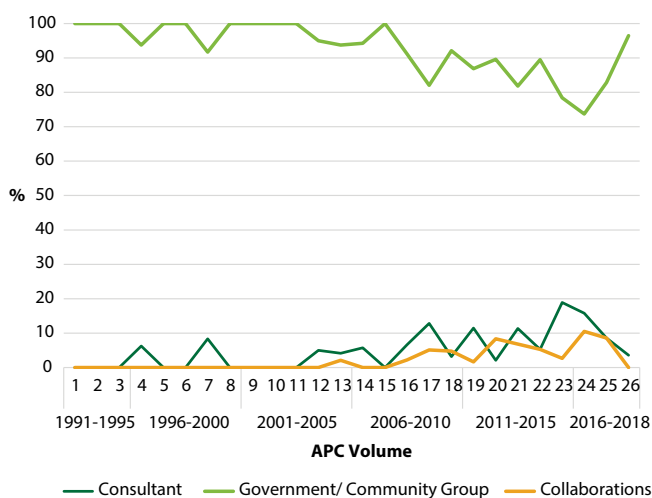


Figure 1. Percentage contributions of ecological consultants and other professionals to APC over the past twenty-seven years (Volume 1-26), 1991 to 2018 (n = 784).

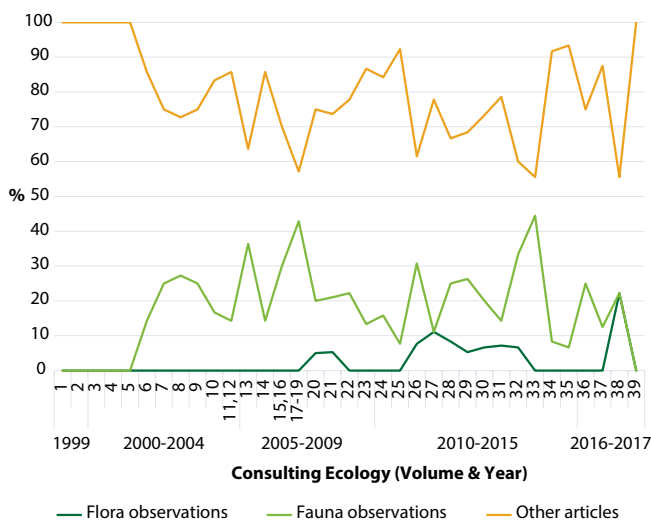


Figure 2. Percentage contributions of flora and fauna observations to Consulting Ecology over the past nineteen years (Volume 1-39), 1999 to 2017 (n = 392).

For those consultants who have the passion and drive to contribute long-term to plant conservation, the field of taxonomy provides a third avenue for potential publication. Taxonomic journals, such as *Austrobaileya*, *Muelleria*, *Nuytsia*, *Swainsona*, *Telopea*, and *Australian Systematic Botany*, offer opportunities to publish more in-depth studies on the taxonomy of threatened species or groups of species, but few consultants are represented there. Some of the few examples include Bellette (2014), who presented his findings on the distribution and taxonomy of *Xanthorrhoea glauca* subsp. *angustifolia* following extensive examination of specimens in Victoria, and in response to recognised difficulties with taxonomic characters used in their identification: he saw problems in an existing taxonomy and set out to improve it. Similarly, Carr (2006) described *Dianella tenuissima* from the Blue Mountains of NSW as one step towards resolving the poor circumscription of most taxa in this genus. For keen consultants, unusual specimens collected in the field may lead to close collaboration with professional taxonomists and the publication and description of new species.

OK – so what will I publish?

So what sort of observations on threatened plant species can and should be published by ecological consultants? These are many and varied, judging by the following examples that have already been prepared by consultants and published in the literature. Suitable topics could be the outcomes from a specific targeted search for a species or a group of threatened species (e.g., Copeland and Hunter 2005; Murdock *et al.* 2011) or new understandings on a species gained from a specific project (e.g., Payne 2014; Hunter and Hunter 2016; Bell 2017). They could document significant new range extensions or re-discoveries of a species (e.g., Nicholson 1995; Weber 2009) or collate several years of new records for a species

from a number of projects to provide an update on distribution or abundance (e.g., Copeland and Hunter 1999; Bell and Driscoll 2005). They could outline trials for new survey techniques (e.g., Fletcher and Erskine 2012; Wapstra and Yates 2016), identify problems in existing taxonomy (e.g., Bell *et al.* 2007; Carr 2007) or contribute to or describe species new to science (e.g., Hunter 1998; Douglas 2003). They could compile observations from one or more surveys to more fully describe the habitat of a species (e.g., Miles and Cameron 2007; Mills 2015), or identify the preferred niches of those species or their response to disturbances (e.g., Hunter *et al.* 1998; Douglas 2005; Bell and Holzinger 2015). They could provide a re-assessment of conservation risk assessment based on existing or new survey data (e.g., Douglas 2009; Bell and Sims submitted), or new threats to a species may be identified (e.g., Heinrich and Dowling 2000). Lessons learnt from translocation projects provide another avenue for publication (such as those detailed in recent issues of APC), as do success stories where threatened species have benefited from collaboration in the face of development (e.g., Honczar 2005). Collaborations between consultants and government agencies or community groups may ease the pressures of consultants finding the time to write up important observations, and there are several cases of such partnerships already in the literature. For example, Allen and Turton (2009) investigated the effects of fire on *Epacris hamiltonii*, Bower *et al.* (2015) examined reproduction and pollination in *Genoplesium littorale*, Patykowski *et al.* (2014) reviewed the conservation ecology of *Pomaderris vacciniifolia*, and Douglas and Wilson (2015) formerly described a new species of bottle brush, *Callistemon purpurascens*.

These are all good examples of how ecological consultants can contribute to conservation planning for threatened plant species. Based on the topics addressed to date by consultants, the range is broad and with a little thought most consultants should be capable of conjuring up at least one article on their observations and data collected over the years. This information is too valuable to remain in the poorly accessed grey literature, and deserves a wider audience.

Conclusions

Ecological consultants are fortunate in that they are granted access to survey plants in remote localities or on government and privately-owned land. Many of these surveys result in the finding of new populations of rare and significant plant species, and often important data on population size, habitat, threats, distribution or ecology is gathered. Once presented to respective clients at the completion of each job, an important next step should be, where appropriate, to disseminate findings more widely. Journals and bulletins (such as those mentioned above), provide an appropriate medium for this so that government authorities and others in management and administrative roles can incorporate this new

information into conservation planning. However, it is unfortunate that few consultants possess the will nor the time to publish their findings. But why are consultants so dismissive of publishing? Ambrose (2016) described this as ‘the publication dilemma’ and provided three key reasons why consultants do not regularly publish: confidentiality agreements with clients, intellectual ownership of data and reports, and lack of time and inclination. These are all legitimate reasons, and Ambrose suggested the answer may come down to a bit of give-and-take between consultants, clients, industry, and government agencies. There is no easy solution, at least in the short term, and realistically the onus will inevitably fall on consultants to devote more work or personal time to preparing publications, with the knowledge that the more they publish the more respected within the industry they will become. Sole traders are more likely to be able to create time to prepare publications than those who work in larger consultancies, however larger organisations should encourage publications from their staff to elevate and promote credibility, both for the individuals involved and the supporting organisation.

And so, a call to arms for all consultants: collect, collate, prepare and publish!

References

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The full list of references are available in the appendix at: https://www.anpc.asn.au/sites/default/files/apc/APC27-2_Bell_AppendixReferences.pdf

The importance of readily available and accurate information when assessing impacts on threatened flora species

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A consultant’s quandary

Many botanists who work as consultants are familiar with undertaking flora surveys and impact assessments within places where they have little prior experience or knowledge. Clients’ expectations are often that we know everything about the plants and vegetation communities we assess. But this is an unreasonable and impossible expectation – no one person can, or does, know it all.

Furthermore, the nature of consulting means that there are often budget and timing constraints limiting the time spent on site surveying, identifying the plants and vegetation communities, and analysing data. These limitations are generally outside the control of the consultant, imposed by clients with inflexible timeframes, and a lack of appreciation for the complexities of

ecological assessment. My weekends can be spent running through keys on PlantNET and conducting literature reviews for threatened species, tasks that often take a lot longer than the budget permits.

The assessment process and guidelines that we follow go some way to addressing these limitations. Nevertheless, one of the primary challenges we face as consultants is completing thorough and accurate impact assessments when information about the plants and vegetation communities we are assessing is difficult to access. Ensuring that data on threatened flora is accurate and readily available for use by consultants is the most important step in establishing a solid foundation of information on which impact assessments can be based, which may in turn assist in improving conservation outcomes.