CSIRO PUBLISHING

Pacific Conservation Biology, 2015, **21**, 255–256
http://dx.doi.org/10.1071/PCv21n4_ED

Editorial

The scholarship of teaching in conservation biology

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The textbooks tell us that communication and education are critical to spreading the conservation message, and some of us do these tasks daily via academic jobs in which teaching consumes a large part of our time. However, critical discussion about how we teach conservation biology may not have the profile it deserves in the conservation or education literatures. Academics often speak about teaching loads, implying that teaching is a burden distracting from more important activities. It is more neutral to refer to teaching allocations, where no burden is implied and one could even argue that the allocation is a benefit, an opportunity to communicate about conservation. However, a significant barrier to a change in thinking about the opportunities afforded to academics by teaching is the perception, sadly too often well founded, that departmental administrations and promotion committees value research productivity above good teaching, restricting career opportunities for those dedicated to high-quality teaching.

Rather than viewing the situation as a 'teach or research' dichotomy, perhaps more attention could be given to the opportunities given by teaching to participate in the scholarship of teaching by publishing papers on teaching initiatives and their outcomes. Specific cases of education campaigns are published in conservation journals, often in the context of communicating to school children or the general public (e.g. Genovart *et al.* 2013). *Conservation Biology*, for example, includes papers with an education focus in its 'Conservation practice and policy' section, while papers addressing education and communication issues are published by *Biological Conservation* and *Pacific Conservation Biology*. It is my subjective impression that far fewer papers are published on teaching methods for conservation biology at the tertiary level. Lack of outlets for such papers is not an issue. If they are written with the guidelines of the journal in mind, papers on such topics may well be suitable for the conservation journals mentioned above. There are also numerous journals publishing papers related to tertiary education (including papers on conservation or environmental topics) listed on web pages such as https://www.csun.edu/science/ref/professional_development/sci_ed_journals.html. While I would advocate choosing a potential journal from these lists on the basis of readership and desired audience, those labouring under departmental administrations clinging to the discredited belief that it is possible to judge the quality of a paper by the journal in which it appears (Adler *et al.* 2008) will still find ample opportunity to choose 'high impact' journals in which to publish.

The diversity of publication types in the education journals is large, but to my (non-specialist) eye there seem to be three broad types: research papers reporting empirical investigations of a salient question in science education, practitioner papers reporting and evaluating a teaching initiative the authors have applied in their own teaching, and what one could colloquially call 'a chalkie review' that updates a topic beyond the textbook coverage for full-time teachers who rarely have the opportunity to stay abreast of the research literature. As an example of an empirical investigation, education researcher Simone Volet and biologist Natalie Warburton combined to investigate ways to enhance self-directed learning skills in a beginning cohort of tertiary students (Warburton and Volet 2013). One significant outcome was increased awareness by students of how their own approaches to study influenced the depth and quality of their learning. Turning to reporting teaching initiatives, Lampert (2015) approached teaching the impacts and control of invasive species through an exercise involving 'inventing' potentially successful invasive species, as well as listing potential control methods and their wider environmental consequences. Finally, as an example of a 'chalkie review,' Prance (1997) explained the environmental services and economic value of tropical rain forests as background for teachers.

As a quick, rough indication of the uptake of these opportunities by conservation biologists, on 22 November 2015 I conducted separate searches using the terms 'conservation', 'environment' and 'evolution' in the title, abstract or keywords of papers from *The American Biology (ABT)* and the *Journal of Biological Education (JBE)* using the Scopus database. I used the terms 'conservation' and 'environment' as indicators of terms closely related to conservation biology and 'evolution' as an indicator of a broad biological topic to serve as a rough control. *ABT* had published 13 papers featuring 'conservation', 36 featuring 'environment' and 165 featuring 'evolution'. The figures for *JBE* were 16, 61 and 57 respectively. While not wishing to read too much into such a simple exercise, the figures do show that there are opportunities to publish on conservation topics in education journals. More speculatively, conservation academics may not be taking up these opportunities as much as those concerned with teaching other topics in the biological sciences.

Pacific Conservation Biology also welcomes the opportunity to publish papers on the theme of conservation education. We are interested in empirical studies and reports of successful teaching initiatives, but not 'chalkie reviews' (they should be

directed to an appropriate education journal). Reflecting on teaching initiatives offers a chance for conservation academics with a high teaching 'load' to rethink it as an 'allocation' and grab the opportunity to communicate via publication.

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