Trends in ecological research: reflecting on 21 years of Écoscience

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From their review of the ecological literature published in the 1980s, 1990s and 2000s, Carmel et al. (2013) concluded that ecological research is somewhat conservative with regards to topics and approaches. Across the three decades they studied, the majority of the published articles were about observational or experimental studies on single species, or reporting interactions between species. Nevertheless, they noticed a number of significant trends over the studied period: more studies on genetics, evolution, parasitism, biodiversity, climate change and scale issues, and fewer studies on demography, physiology, behaviour, grazing and vegetation dynamics. They also noted an increase in problem-solving studies, and in studies relying on modelling and meta-analyses.

Écoscience was launched in 1994 by Founding Editor Dr Serge Payette with the goal of publishing “quality articles in all areas of ecological studies, either theoretical or empirical, at any level of biological organization at different temporal and spatial scales” (Payette 1994, p. iii). These aims and scope remain unchanged to this day. After having been published independently for 21 years, Écoscience has now joined the Taylor and Francis publishing group. This milestone in the journal’s history prompted us to reflect on how the articles published in Écoscience have followed the trends revealed by Carmel et al. (2013), as well as on the necessity to go beyond some of these trends in the future.

Using the same methodology as Carmel et al. (2013), we analysed approaches and topics of studies published in Écoscience in three different years approximately a decade apart: 1994 (first publication year), 2004 and 2013 (we did not analyse 2014 because the volume included a thematic special issue).

Observations and experiments dominate in the studies published in Écoscience for the three years considered (75–95%), in line with the results presented in Carmel et al. (2013). However, the trend towards increased publication of modelling studies and meta-analyses is not apparent in Écoscience. These types of studies have always accounted for a small portion of the total articles published, and were slightly more numerous in 1994 than in 2004 or 2013. Observations and experiments remain essential today and provide data for modelling and meta-analyses. Although it might be tempting to fall for “big science” (sensu Schimel & Keller 2015) because it can drive up a journal’s impact factor, Écoscience will continue to be a home for quality observational and experimental research conducted at the local scale.

Écoscience has not yet followed the trend towards more problem-solving studies, despite the early call for more applied research by Bunnel and Dupuis (1994). Nevertheless, interesting contributions to applied ecology have been published in Écoscience. Two recent examples are a decision aid tool for the management of harmful exotic vascular plants (Lavoie et al. 2014) and an experiment on the restoration of mine waste areas by tree planting (Larchevêque et al. 2014).

Some of the trends in research topics identified by Carmel et al. (2013) are also evident in Écoscience (Table 1): fewer studies on demography and physiology, and more on biodiversity. However, some trends differ. Studies on distribution, grazing, mutualism and vegetation dynamics are increasing in Écoscience, while they are decreasing or stable in the general ecological literature (Carmel et al. 2013). The last four special issues of Écoscience (published in 2009, 2011, 2012 and 2014) were partly or entirely dedicated to vegetation dynamics. This will probably remain a trademark of the journal.

Studies on genetics, evolution, competition, climate change and statistics decreased in Écoscience, while they increased or remained stable elsewhere, according to Carmel et al. (2013). Most of these topics are part of the 100 fundamental ecological questions identified by Sutherland et al. (2013), and it is thus reasonable to expect they will be increasingly addressed in the future.