

Diversity, distributions and conservation biogeography

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Diversity and Distributions (DDI) was launched in January 1998. In its seven years of existence, the journal has published numerous outstanding papers dealing with many facets of the ecology of biodiversity. All the topics suggested as key themes for the journal in my editorial in the inaugural issue (Richardson, 1998) have attracted contributions. As promised, biological invasions have been given prominence in the journal. In the past decade invasion ecology has emerged as a crucial area of study for ecologists worldwide. There are several reasons for this. Firstly, there is an urgent need to gain a predictive understanding of invasions to reduce the impacts of current invaders and prevent further invasions. Secondly, ecologists and biogeographers are increasingly seizing opportunities provided by human-mediated introductions of organisms for unravelling crucial elements of the ecology of diversity and distributions. Papers focussing on aspects of introduced species have appeared in most of the 37 issues (including three double issues) of *DDI*. Contributions on this theme have ranged from detailed studies of single invasive species (e.g. Jakobs *et al.*, 2004), thorough studies of the invasive biota in particular regions (e.g. Dark, 2004), assessments of mechanisms whereby alien species impact on invaded systems (e.g. Rossiter *et al.*, 2003), detailed modelling studies (e.g. Welk *et al.*, 2002), to conceptual contributions (e.g. Colautti & MacIsaac, 2004; Huston, 2004). A highlight was the double thematic issue on 'Plant Invasion Ecology' that appeared in September 2004 (Richardson, 2004).

Key contributions to *DDI* have by no means been confined to the field of biological invasions. Recent issues have carried notable papers describing, amongst other things, the components of diversity of understudied groups, including parasites of fishes (Poulin, 2004) and cyanobacteria (Rejmánková *et al.*, 2004), critical assessments of techniques for surveying biodiversity (e.g. O'Dea *et al.*, 2004), and various analytical approaches for the quantitative description of biodiversity (e.g. Ricotta, 2004). Systematic conservation planning is a rapidly emerging field of huge importance, and several trend-setting papers have appeared in the pages of *DDI* (e.g. Cowling *et al.*, 1999). Special issues of the journal have addressed 'Diversity, stability and conservation of Mediterranean-type ecosystems in a changing world' (Lavorel & Richardson, 1999), and 'Amphibian declines: untangling the complexity' (Storfer, 2003). Any reader interested in the 'nuts and bolts' of biodiversity in a changing world will have found much of interest in recent issues of the journal. This issue sees the adoption of a new subtitle for *DDI*—'A Journal of Conservation Biogeography'. The decision to drop the former subtitle ('A Journal of Biological Invasions and Biodiversity') was taken at the annual editorial meeting of *Journal of Biogeography*, *Global Ecology and Biogeography* and *DDI* in April 2004. This step, not lightly taken, is part of the ongoing efforts of the editorial team to ensure that Blackwell Publishing's trilogy of biogeography journals provides researchers with the best possible coverage of the wide (and expanding) range of topics within this dynamic field. The revised core focus areas of each of the three journals are outlined on the inside back cover of the journal. What will these changes mean for *DDI*?

Diversity and Distributions has already established itself as an important medium for the publication of cutting-edge research in the field of biological invasions. Invasions will continue to form a key component of the journal's content. As in the past, we would like to focus on the ecology of invasions, i.e. the factors that determine why some species are more successful invaders than others, the components of invasibility, and the many dimensions of impact — the effect that invasive species have on the ecosystems they invade. Many exciting and important papers addressing these topics will appear in *DDI*'s pages in 2005 and beyond. The scientific study of biological invasions extends well beyond pure ecology and biogeography. For example, invasions raise pressing ethical and economic issues. Contributions on these topics fall outside the scope of this journal, unless clear links are made to fundamental biogeographical or ecological dimensions of the invasion phenomena.

DDI will continue to accept and solicit significant papers dealing with all issues of biological diversity and the factors mediating distributions of all biological entities. Studies at all spatial and temporal scales are appropriate. Reports on experimental studies are welcome, as are analytical and theoretical contributions. Purely descriptive papers will generally not be considered. As indicated in the new subtitle, our aim is to move towards a focus on 'conservation biogeography', an exciting and important new domain at the interface between biogeography and conservation biology. The concept of 'conservation biogeography' is formally defined for the first time in this issue as 'the application of biogeographical principles, theories, and analyses, being those concerned with the distributional dynamics of taxa individually and collectively, to problems concerning the conservation of biodiversity' (Whittaker *et al.*, 2005). Whittaker *et al.* set out the case that biogeography is of central importance to conservation science and seek the widest possible engagement of the biogeographical community in the task of developing improved conservation guidance. Our goal is for this journal to provide a key forum for the development of this discipline, and for the exploration of the research themes they identify. The altered focus will not be apparent immediately, but will, I hope, emerge over the next few years.

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References

- Colautti, R.I. & MacIsaac, H.J. (2004) A neutral terminology to define 'invasive' species. *Diversity and Distributions*, **10**, 135–141.
- Cowling, R.M., Pressey, R.L., Lombard, A.T., Desmet, P.G. & Ellis, A.G. (1999) From representation to persistence: requirement for a sustainable reserve system in the species-rich Mediterranean-climate deserts of southern Africa. *Diversity and Distributions*, **5**, 51–71.
- Dark, S.J. (2004) The biogeography of invasive alien plants in California: an application of GIS and spatial regression analysis. *Diversity and Distributions*, **10**, 1–9.
- Huston, M.A. (2004) Management strategies for plant invasions: manipulating productivity, disturbance and competition. *Diversity and Distributions*, **10**, 167–178.
- Jakobs, G., Weber, E. & Edwards, P.J. (2004) Introduced plants of the invasive *Solidago gigantea* (Asteraceae) are larger and grow denser than conspecifics in the native range. *Diversity and Distributions*, **10**, 11–19.
- Lavorel, S. & Richardson, D.M. (1999) Diversity, stability and conservation of Mediterranean-type ecosystems in a changing world: an introduction. *Diversity and Distributions*, **5**, 1–2.
- O'Dea, N., Watson, J.E.M. & Whittaker, R.J. (2004) Rapid assessment in conservation research: a critique of avifaunal assessment techniques illustrated by Ecuadorian and Madagascan case study data. *Diversity and Distributions*, **10**, 55–63.
- Poulin, R. (2004) Parasite species richness in New Zealand fishes: a grossly underestimated component of biodiversity? *Diversity and Distributions*, **10**, 31–37.
- Rejmánková, E., Komarek, J. & Komarková, J. (2004) Cyanobacteria — a neglected component of species diversity in inland marshes of northern Belize (Central America). *Diversity and Distributions*, **10**, 189–199.
- Richardson, D.M. (1998) Editorial. *Diversity and Distributions*, **4**, 1–2.
- Richardson, D.M. (2004) Plant invasion ecology — dispatches from the front line. *Diversity and Distributions*, **10**, 315–319.
- Ricotta, C. (2004) A parametric diversity measure combining the relative abundances and taxonomic distinctiveness of species. *Diversity and Distributions*, **10**, 143–146.
- Rossiter, N.A., Setterfield, S.A., Douglas, M.M. & Hutley, L.B. (2003) Testing the grass-fire cycle: alien grass invasion in the tropical savannas of northern Australia. *Diversity and Distributions*, **9**, 169–176.
- Storfer, A. (2003) Amphibian declines: future directions. *Diversity and Distributions*, **9**, 151–163.

- Welk, E., Schubert, K. & Hoffmann, M.H. (2002) Present and potential distribution of invasive garlic mustard (*Alliaria petiolata*) in North America. *Diversity and Distributions*, **8**, 219–233.
- Whittaker, R.J., Araújo, M.B., Jepson, P., Ladle, R.J., Watson, J.E.M. & Willis, K.J. (2005) Conservation Biogeography: assessment and prospect. *Diversity and Distributions*, **11**, 3–23 .