

INVITED VIEWS IN BASIC AND APPLIED ECOLOGY

Place, case and process: Applying ecology to sustainable development



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Abstract

We outline a pragmatic approach through which ecologists, by participating in interdisciplinary research, can engage with sustainable development. The approach is based on three points of intersection that facilitate the integration of ecological insights with insights from other disciplines and stakeholders. The first point of intersection, *place*, emphasizes the value of carefully choosing where to conduct an interdisciplinary research project. We argue that, from a sustainability perspective, research will be of most applied value if it takes place in locations that actually face urgent sustainability problems (including biodiversity decline). The second point of intersection, *case*, suggests that integration among different disciplines can be facilitated by choosing common study cases or units of analysis. For example, ecologists and scientists from other disciplines can focus on the same farms, villages or landscapes in their work. Sharing cases helps to create comparable data for integration, but also facilitates communication across disciplinary boundaries because it creates shared experiences in the field. The third point of intersection, *process*, relates to operational features of team research that improve integration across disciplines and communication with stakeholders. Key process-related features are working in a small, co-located team, planning for independent as well as joint project activities, involving some key stakeholders early on in the research process, and carefully targeting communication at different relevant audiences. In combination, an approach centred around place, case and process provides a tangible and pragmatic way for ecologists to meaningfully engage with real-world sustainability problems.

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Zusammenfassung

Wir schildern einen pragmatischen Ansatz, mit dem Ökologen mittels interdisziplinärer Forschungsprojekte zur nachhaltigen Entwicklung beitragen können. Unser Ansatz basiert auf drei Aspekten, die die Integration ökologischer Erkenntnisse mit den Erkenntnissen anderer Disziplinen und Stakeholdern ermöglichen. Der erste Aspekt—„*Place*“ oder „*Ort*“—bezieht sich auf die sorgfältige Auswahl des Ortes, an dem interdisziplinäre Forschung stattfinden soll. Forschung wird den größten angewandten Nutzen für die Nachhaltigkeit haben, wenn an einem solchen Ort tatsächlich akute Nachhaltigkeitsprobleme bestehen (inkl. Verlust von Biodiversität). Der zweite Aspekt—„*Case*“ oder „*Fall*“—bedeutet, dass den Analysen die gleichen Fälle zu Grunde liegen sollten und somit die Integration verschiedener disziplinärer Sichtweise vereinfacht wird. So können Ökologen und Wissenschaftler anderer Disziplinen beispielsweise die gleichen Bauernhöfe, Dörfer oder Landschaften zu ihrem Forschungsgegenstand machen. Die Arbeit an gemeinsamen Fällen trägt dazu bei, vergleichbare Daten zu generieren und die Kommunikation über disziplinäre Grenzen hinweg zu erleichtern; nicht zuletzt, weil es so bei der Feldarbeit zu gemeinsamen Erfahrungen kommen kann. Der dritte Aspekt—„*Process*“ oder „*Prozess*“—beschreibt, wie Abläufe im Forschungsprozess die Integration zwischen Disziplinen und die Kommunikation mit Stakeholdern fördern können. Besonders wichtig sind hierbei die Nutzung gemeinsamer Räumlichkeiten, die Planung gemeinsamer aber auch unabhängiger Forschungsaktivitäten, das frühe Einbinden wichtiger Stakeholder in den Forschungsprozess, und gezielte Kommunikation der Forschungsergebnisse an unterschiedliche Zielgruppen. Der hier beschriebene Ansatz um die drei Schnittstellen *Place*, *Case* und *Process* zeigt einen konkreten und pragmatischen Weg auf, wie Ökologen mit ihrer Expertise zur Lösung realer Nachhaltigkeitsprobleme beitragen können. © 2013 Gesellschaft für Ökologie. Published by Elsevier GmbH. All rights reserved.

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Introduction

Ecology is the science of understanding the interactions of life with its environment. At no time in history has ecology been more important from a practical perspective: we are on the verge of the sixth mass extinction event (Pereira et al. 2010; Barnosky et al. 2011), but the first one caused by a biological species – namely, *Homo sapiens*. Many young scholars are now attracted to ecology not only because they are interested in how the world works. Rather, they hope that ecological expertise might help maintain and foster life on Earth. To such scholars, science provides an important knowledge base, but their ultimate goal is the practical application of this knowledge. Many labels exist for those interested in pursuing ecology for the sake of a goal broader than the pursuit of knowledge per se. They call themselves conservation biologists, restoration ecologists or sustainability scientists; or sometimes simply applied ecologists or landscape ecologists.

The desire to apply ecology to real-world problems is not always easy to satisfy in a modern academic context. Reward structures in academia are largely indifferent to real-world contributions, often encourage specialisation and empire-building to the detriment of the integration of knowledge, and inadvertently might even erode collegiality and creativity (Colquhoun 2007; Sherren 2009; Fischer, Ritchie, & Hanspach 2012; Kaushal & Jeschke 2013). One specific challenge related to interdisciplinary collaboration relates to the substantial time commitment required by contributing individuals. Shared problem framing can be difficult and requires frequent and sometimes time-consuming exchange among collaborators. Similarly, the preparation of research papers

can take longer than in the case of traditional, disciplinary papers (Campbell 2005). Moreover, existing reward systems increasingly focus on “big data”, rather than a deep understanding of local ecological issues (Lindenmayer & Likens 2011), and funding can be particularly difficult to obtain for interdisciplinary work (Campbell 2005).

This paper is based on the premise that many ecologists (especially “next generation” ecologists) are interested in applying their scientific understanding to effect real-world outcomes, but lack a clear vision, or systematic approach, for how to do so within existing institutional structures. Here, we outline our own approach for how to apply ecology to the world in the context of interdisciplinary team research. We believe it is vital that ecology is integrated with other disciplines (especially social sciences such as sociology, economics and public policy) to meaningfully contribute to solving real-world problems – of which we have no shortage in the 21st century. To solve real-world problems, the insights of ecologists are necessary but, by themselves, insufficient. Ecology could help, for example, to identify desirable management options in a particular setting (such as an agricultural landscape). But “rational evidence” on its own will not be enough to cause the widespread uptake of more desirable management options (Adams & Sandbrook 2013). In such a context, important complementary insights are needed on the values and needs of local stakeholders, as well as on existing governance structures and how these could be altered.

We make no claims that the approach to interdisciplinary team research we outline here is necessarily superior to other approaches. We simply argue that it is one pragmatic way in which ecologists can engage meaningfully with real-world problems. The approach we describe is structured around

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