

Preface

It was the best of times, it was the worst of times.

(Charles Dickens, *Tale of Two Cities*)

As we celebrate the completion of this second collection of essays on *Key Topics in Conservation Biology*, a reader might wonder what has changed since the publication of the first volume in 2007. Happily, one thing that has not changed is the relevance of the essays in the first volume. *Key Topics in Conservation Biology 2* does not replace *Key Topics 1*, it complements it. Less happy, however, are the changes in the state of wildlife and nature. These are commemorated in the almost complete failure of the 2010 targets set by the Convention on Biological Diversity to reduce biodiversity loss. Indeed, rare species continue to edge towards the precipice of extinction, more populous ones dwindle in abundance and distribution, environments are degraded and with them go not only beautiful and fascinating organisms but also the ecosystem services on which the human enterprise depends, and so too the quality of life deteriorates for many of the planet's ever more numerous people.

A brief stock-take of the years between *Key Topics 1* and 2 reveals that the global human population has increased by 395 million, the global economy has grown from US\$66 trillion to US\$77 trillion and CO₂ emissions have increased from 28 billion metric tons to 31.6 billion metric tons. As part of this syndrome of more people using more resources and

producing more CO₂, its hardly surprising that 80 million hectares of forests have been converted and, of the 600 marine fish stocks monitored, 52% are fully exploited, 17% over-exploited and 7% depleted. This year, Arctic Ocean sea ice coverage has shrunk to the lowest level since modern records began, smashing the previous record by 293,000 square miles. Arctic summers have been free of sea ice for the first time in thousands of years. Against this dismal backdrop, the need for conservation biology could scarcely be more pressing.

With the 2007 collection of *Key Topics 1* essays safely to hand and still relevant, our response to the escalating threats and associated challenges has been to drive the 2013 collection in *Key Topics 2* to be even more comprehensive, interdisciplinary, frank and focused on solutions. Our aim is that these collections will help a new generation of conservationists to operate at the front line, their feet firmly based on sound theory, their eyes scanning the horizon for innovation and opportunity, and their hands busily at work delivering practical outcomes. This is a vibrant field, and one in which *Key Topics* are bursting on to the world stage with energizing insight and determined to make a difference. These are the subjects of this new crop of essays: ideas, technologies, frameworks for thinking and for action that are

beacons of hope amongst the gloom (and peril) of biodiversity loss.

A journey that was already well advanced when *Key Topics 1* was written traced the route through interdisciplinarity, leaving far behind a perception of isolationist conservation that prioritized wildlife over people, in the quest to combine the interests of wildlife and people, reversing biodiversity loss and alleviating poverty. In the 5 years that have passed since its publication, new voices have joined this irresistible mantra of alignment. But facing the facts can be uncomfortable – the interests of biodiversity conservation and development are often at odds, values are often measured in incommensurable currencies, some problems defy easy solution and some alternative priorities are not easily reconciled – so conservation biologists have become not only more ingenious but also more worldly and pragmatic. As conservation biologists take their seats alongside politicians, economists, medics, industrialists, agriculturalists and philosophers to chart a future for the environment and nature, they become expert in trade-offs; they realize that one model does not fit all for biodiversity conservation and that, as we discuss in the concluding essay to this collection (Chapter 25), there are some very hefty ‘elephants in the room’ whenever the reconciliation of people and wildlife is being discussed.

It is the flushing from cover of metaphorical elephants, along with any bluster, hypocrisy or delusion that conceals them, that explains the philosophy and *modus operandi* behind the structure of this book. As indelicately confided in the Preface to *Key Topics 1*, the working title had been ‘Conservation Without Crap’, and each of the essays in that volume, and now in this one, cuts to the unvarnished essence of the key topic that it probes. To achieve this, we assembled teams of critical authorities – almost always including people who had not previously collaborated, who had different perspectives and generally came from different parts of the world. This alchemy made things much tougher for the editors (we have herded these scholarly

cats relentlessly, even when their claws were unsheathed) and for the authors (whom we thank for tolerating our demands and rising to the challenge). We hope these essays will fascinate, inform and entertain a wide readership from the loftiest authority to the aspirant high school sixth former, from interested layman to policy maker to naturalist. Of this spectrum, our imagined modal reader might well be a Master’s student, whose career and world-view may be shaped by these essays – a weighty responsibility with which we repeatedly flogged our authors, and which they have shouldered unstintingly. We thank them, confident that our readers will appreciate the effort.

In the Preface to *Key Topics 1*, we concluded that each essay in the collection was intended to stand alone but that the collection as a whole was more than the sum of its parts, together introducing the nature of the problem, the framework in which it can be understood, some tools that could be used in the quest for solutions and various of the issues that are topical. As such, neither that volume nor this one has pretensions to compendiousness or balance. Thus in 2007, we wrote ‘there are many more than 18 key topics in wildlife conservation’ – and now, in *Key Topics 2*, we present 25 more of them. This new selection of 25 more key topics was not chosen on a whim. We scanned the landscape, and the researchers navigating it, for emerging ideas and innovative thinkers – in particular, this led to chapters that push the borders of interdisciplinarity, capture the sophistication of finance and culture, and reveal the astonishing potency of new technologies. While the purpose of the essays is unchanged, we have also taken an additional step in grouping them, having in mind the strengthened perspective of viewing a landscape from more than one hilltop. Thus, the first nine chapters explore that landscape, identifying conservation priorities, the levels at which they can fruitfully be approached and paradigms for engagement with society. Next, the essays tackle financial mechanisms to encourage nature conservation, and to prevent unsustainable trade, before

exploring theological and cultural dimensions (the latter with respect to conflict between people and carnivores). Still with a societal perspective, two concluding chapters of the framework complete this setting of the scene by tackling the role of citizen science and the capacity of nature to deliver an unsung ecosystem service, namely health and well-being.

Following this framework, next we shuffle the pack in two ways. First, we select four habitats (oceans, fresh water, islands and tropical forests) and then four taxa (butterflies and moths, birds, plants and large mammals – the latter originally intended as two sibling chapters on predators and prey, eventually fused into a bumper chapter on the two together). Having created the framework and then introduced a selection of the actors, we turn to seven chapters that dwell on safeguarding the future, by monitoring, understanding human behaviour, designing solutions, creating biological corridors and the twin aspirations of reintroduction and rewilding. This section concludes with a perspective on intervening to manage wildlife disease. Finally, the book ends with our perspective on a synthesis that encompasses human population, development, sustainability and biodiversity.

As conservation biology matures, at least three different models are now emerging: the first is the original 'protectionist model' where biodiversity conservation takes place in protected areas, sometimes behind a fence and heavily guarded. While the pendulum swung strongly against protectionism throughout the latter years of the 20th century, in recent years it may be swinging back. Nonetheless, protected areas encompass only about 12% of the earth's terrestrial surface and less than 1% of the oceans, and insofar as the protectionist model can apply only in protected areas, it is never going to be enough. Further, within protected areas, how are priorities to be devised amongst species or habitats, or landscapes and corridors? These subjects are amongst those tackled in Chapters 2, 5, 10, 11 and 20.

The second model for biodiversity conservation is community based. The antithesis of the

protectionist approach, this model has it that the best people to carry out conservation are the communities that live within biodiverse landscapes. Here, the focus is on participation, not building fences but rather bridges along the road to working with the local communities – once again to find pragmatic solutions. As Chapters 3 and 6 demonstrate, these bridges can involve acknowledging the religious dimension provided by biodiverse landscapes, groves and species, an approach that is based on the premise that those things people value and respect the most, they will conserve. Community conservation highlights the need to understand human behaviour (Chapter 3, 19) associated with, for example, the bush meat trade or addressing conflict with large carnivores (Chapter 7).

The third emphasis, and one that has been rapidly rising up the political agenda in the past decade, is one that values and conserves biodiversity because of the ecosystem services that it provides to human well-being. This is not so much a different way to implement conservation (in the sense that the protected area and community-based approaches are strategically different) but rather an added rationale for conserving biodiversity. This is a complex issue (Chapters 5 and 6) that revolves around the challenging task of valuing the ecosystem services provided by biodiversity (Chapter 4). An acknowledged political reality is that the contribution that biodiversity makes to humankind – be it through direct benefits to health and well-being (Chapter 9), clean water, soil erosion protection, regulation of carbon or maintaining genetic diversity of food stocks – is critical and possibly invaluable. Ideas of this genre, expressed in terms of the agendas of earth security and planetary boundaries, aim at conserving specific ecosystem services that benefit humanity and dominated the agenda at the recent Rio +20 conference. Many biodiversity conservationists are learning the language of economists, and their fluency offers huge potential for delivering conservation. However, not everything can be monetized and much

(perhaps most) that is beautiful in nature cannot pay its way but is nonetheless priceless.

Finally, and in a vocabulary where compromise is not a dirty word, another emerging model is that of sustainable landscape and seascape management. This approach, taking some of the working parts from the ethos of each of protectionist and community-based conservation, seeks to fashion a new machinery for nature amidst mankind by managing wildlife sustainably in a matrix landscape.

So where is the future agenda in biodiversity conservation? Is one of these models more promising than the others? Nobody's crystal ball is sufficiently clear to answer definitively. Without societal engagement with wildlife and the wider environment, the battle is lost, which is why citizen science is a key topic (Chapter 8). With the dramatic emergence of technologies from the internet to the smartphone, the gadgetry of engagement is revolutionized, as it is for researchers. New ways of managing and restoring nature are also emerging, less focused on static baselines but rather on restoring ecosystem process and the important role of large herbivores as ecosystem engineers (Chapter 23). Whilst the economic model is currently favoured by research councils and

governments alike, as we write this chapter the current UK Minister for the Environment has reputedly forbidden his officials from using the phrase 'ecosystem services' on the grounds that it is too jargon laden. Similarly, there is endless carping that the very word 'biodiversity' is too technical and off-putting, yet in news bulletins every day a vast public speedily absorbs much more obscure notions because they appreciate their relevance (it didn't take citizens long to grasp the term 'subprime mortgages' when they realized they might have one!). Leeriness of the, actually rather intuitive, vocabulary of the environment is merely a symptom of not taking the topic seriously. The essays in this book are excitingly diverse but one theme unites them all: everybody should take the environment seriously: it is *the* Key Topic.

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*With public sentiment, nothing can fail; without
it, nothing can succeed.*

(Abraham Lincoln)