



The Atlas of Global Conservation

CHANGES, CHALLENGES, AND
OPPORTUNITIES TO MAKE A DIFFERENCE

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Convergent Conservation

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TO A VISITOR from central Chile, the scrublands outside my home in coastal California would look strikingly familiar. So, too, for the visitor from southwestern Australia. Or from South Africa, or the Mediterranean Basin. That my chaparral would evoke their matorral or kwongan, their fynbos or maquis is a happenstance millions of years in the making. What unites these disparate places are climatic conditions not found on the other 98 percent of Earth's land surface: wet mild winters and warm dry summers. Over untold millennia that distinctive "Mediterranean" climate oriented the evolutionary trajectories of the plants and animals that occur there in a common direction, with an extraordinary consequence: the alignment of form and function, structure and strategy of largely unrelated species, occupying opposite sides of the planet.

Ecologists refer to this phenomenon as *convergent evolution*: species exposed to similar environments acquire comparable traits along different evolutionary pathways. Examples abound: marsupials that look and behave like mammals of other continents; distant flowers, similarly shaped, conforming to complementary adaptations of pollinators that in one case may be a bird and in another a moth. Like roots to water, evolutionary lineages seek perfection for persisting in the particular conditions of particular places and among the particular others that co-occur. So assemble the species that comprise the natural communities characteristic of the landscapes in which we live. And where similar environmental conditions occur elsewhere on the planet, those evolutionary tendencies repeat and create patterns in the mosaic that is our natural world: the Earth's biomes, each a collection of correlated communities, each of those a unique assemblage of species. It is these patterns among species that create patterns across places. The natural communities that comprise the world's biomes, although importantly idiosyncratic in detail, are functionally quite similar. And it is

that similarity that connects what is local and familiar with what is distant and otherwise foreign.

Human livelihoods have also been organized by such environmental forces. Our ancestors that lived in the world's deserts, for example, came upon similar behavioral strategies for thriving in the extremity and unpredictability of that biome. Whether we look across societies at the edge of the ice or in the heart of the forests, we see cultural convergence in adaptation to the conditions and resources available in such places. And as humans exploited those resources, we ourselves became a driving environmental force. We converted natural habitat to human land uses and altered to varying degrees the nature that remained. We changed how fires burn, how waters flow, and how species interact. And in cascading consequence, we watched the rare be replaced by the common and the unique disappear.

Similar ecosystems unravel in similar ways. So, the emergent pattern across biomes today is one of alarmingly convergent *extinction*: the tendency to lose the endemic, the wide-ranging, the specialist, the predator, the species of the commons we use as commodity. Today, the fates of deep-rooted evolutionary lineages are being decided by the cumulative consequence of such unspectacular decisions as where we place our homes, how we use water, what we decide to buy. Yet, could it be that in that very mundane similarity of threats to diversity across a biome there is an opportunity to improve our effectiveness as conservationists? After all, if we are all confronting similar challenges, perhaps we might—through more purposefully *collective* effort—sooner and more efficiently find ways of addressing those challenges.

In another corner of the world, I most surely have counterparts working to solve conservation problems that are more similar than not to those I'm working on here in California. Across any biome, a multitude of conservation strategies are being designed and tested. Some will succeed; some will fail. Either way, conservation colleagues from elsewhere would surely benefit from the lessons learned. Communication of

successful innovations (and, just as important, failures) could inform actions in places where the systems and challenges are similar. Indeed, if we were to plan and implement our individual conservation efforts as if they were treatments in a vast collaborative experiment in conservation practice, we might sooner elucidate ways of increasing the return on investment of ever-insufficient conservation resources. Each of our efforts could be informing another's. Each success could be positioned to advance the next.

And from that vantage of looking across our collective efforts we might more readily diagnose gaps in our own local conservation capacities. Where I work, for example, a lack of a particular expertise or regulatory framework or some other factor may be limiting the rate that conservation outcomes can be achieved. Perhaps conservation colleagues from elsewhere have implemented a strategy that, if applied in my region, could overcome those limitations and transform the enabling conditions for conservation—like a market-based incentive that converts a driver of threat into a force for conservation. Let's learn how they did it and apply it as a model.

We need each other's innovations if we are to deliver what biodiversity conservation demands: greater protection of diversity within areas that have explicit protected status, and greater conservation of diversity outside of those areas. We need places for the plants and animals that can persist only where humans mostly are not. While some of those places are already secured, in no biome is the existing network of formally protected areas adequately representative of the diversity of its natural communities. Ensuring that the world's reserve network captures the full complement of its natural systems is a necessity that unites our individual local efforts into a global, collaborative imperative.

But biodiversity conservation cannot rely on formal protected areas alone. Nature is not so tidily bounded in parks or reserves. Not only are too many species found only outside those areas; the processes that maintain the ecological function of reserves and the viability of species occur at far greater



Mark Godfrey/TNC

A California rancher and a Mongolian herder share lessons in grassland conservation.

scales. While protected areas provide an essential foundation, lasting conservation relies on our ability also to protect biodiversity where people live. And how to accomplish that is one of the greatest challenges of our day.

Fortunately, the growing recognition of this necessity is coinciding with a growing awareness of the reliance of human well-being on functional ecosystems. This interdependence—of society on functional ecosystems, of ecosystem functions on native diversity, and, increasingly, of ecosystem functions on human management—should lead us to seek convergent *strategies* that protect biodiversity while meeting other societal goals. Especially in this world of globalizing economies, increasing population, diminishing resources, and accelerating climatic flux, conservation cannot be considered to be an activity separate from our day-to-day affairs. We need human enterprise to be compatible with the protection of ecological function and the persistence of native species. Figuring out how to mainstream conservation into our livelihoods and economies—such that by going about our everyday business we effect conservation—is surely beyond the wherewithal of any of us acting alone. If we are going to increase the

pace, scale, and effectiveness of conservation, we must align efforts.

The enormity and urgency of the conservation imperative requires that we be especially efficient with always limited conservation resources. We cannot afford to reinvent wheels or miss opportunities to scale up the impact of our efforts. Just as we need a global network of formally protected natural areas, we need a networked global community of conservation practitioners. The greater that network, the more audacious can be our conservation goals—because we will be more likely generating new approaches and alliances to achieve them.

Simply sharing what works in one region with those who might use it in another is a good place to start.

This atlas is a guidebook for the convergence of conservation effort. By illustrating similarities in natural communities and socio-ecological challenges, it highlights where there may be especially promising opportunity for collaboration on conservation solutions. Great efficiency and economy of scale might be realized if we communicate with others working on very similar threats in very similar systems. Convergent conservation stems from an explicit understanding of how individual conservation efforts

complement those of others—geographically, ecologically, socially, economically, and strategically. Every once in a while, one of us will hit on a truly transformative strategy. Convergent conservation is the replication—with some local adaptation, of course—of that catalytic conservation concept.

On another side of the planet, I imagine a colleague looking out across a conservation landscape that looks remarkably similar to my own. In a distant future, others will look at these same places and see something perhaps similar—or perhaps something greatly diminished. Which future it will be is largely ours to decide. Yes, those unique evolutionary lineages of the plants and animals that surround us have persisted through the ebbs and flows of eons past. But this moment—today—is where that past and all possible futures converge. That continuity—that convergence—is ours, in partnership, to ensure. No matter where we are in the world or what the origins of our conservation ethic, let us be oriented by that awareness and be accountable to make those connections.

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