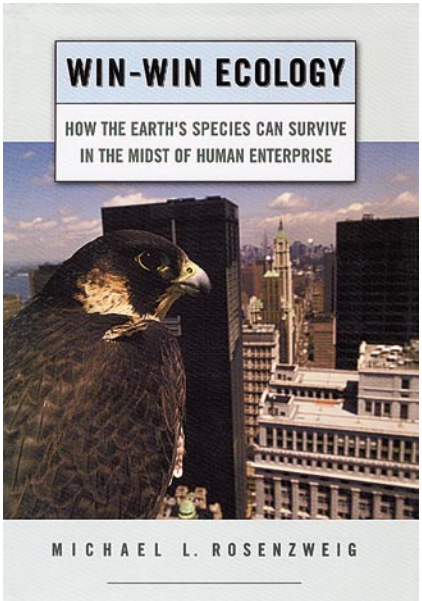
Rose-Tinted Ecology

Thomas Brooks



This important book relates much the most optimistic treatise on conservation that I have ever read: many would say naively optimistic. I should say from the outset that I genuinely fear that Michael Rosenzweig's theories and examples are less broadly applicable than he argues. And yet I want to believe that he is right. If he is right, the conservation of biodiversity, and ultimately of humanity, may be easier—much easier—than many of us worry.

Win-Win Ecology is a splendid read, interspersing excellent science with engaging erudition and humour. It's structured in an unusual fashion, which is unsurprising, because it is an unusual book. Rosenzweig spends his first seven chapters winning the reader over with examples of what he terms "reconciliation ecology":—"sharing our habitats deliberately with other species." These are delightfully eclectic, ranging across species and space from coral reef gardening in the Red Sea to the red-cockaded woodpeckers (*Picoides borealis*) on Florida's Eglin Air Force Base—although the exciting news that Bachman's warblers (*Vermivora bachmanii*) persist on Eglin (p. 30) is, sadly, extremely unlikely. However, the examples are also selective. They are all very small scale: the evidence that they can be generalized across the landscape to deliver us a reconciled planet is slim. Chapter 5, the one chapter which addresses broad-scale issues—economically and environmentally perverse subsidies—does so from a "what-if" perspective, rather than by reporting actual successes. Even more worryingly, they are heavily Americocentric: Rosenzweig occasionally ventures outside the United States to Europe and Israel, but beyond that, his examples are sparse and shaky.

The remaining five chapters of the book go from the specifics to the generalities; they address the science behind reconciliation ecology. Rosenzweig's argument is a simple one, founded on a huge quantity of empirical and theoretical evidence. Human-driven habitat loss, he demonstrates, is leading inexorably to species loss; if those species are to survive, we must therefore allow them access to those portions of the planet that we have appropriated. This logic is undeniable, even if, in a bizarre reversal of the general mood of the book, this science actually veers towards pessimism. Rosenzweig's claim that, over evolutionary time, there is a linear relationship between the number of species in an area and the size of that area is dubious (most ecologists would argue that this relationship is a power function, implying that relatively few species are lost until most habitat has been lost). And his estimate of the extent of the planet already co-opted by people—95%—is high (of course, none of the planet is pristine any longer, but numerous studies suggest that half of the planet's natural habitat

Thomas Brooks is at the Center for Applied Biodiversity Science, Conservation International, Washington, District of Columbia, United States of America. E-mail: t.brooks@conservation.org

DOI: 10.1371/journal/pbio.0000073

and productivity still remain wild). These issues notwithstanding, the fundamentals of Rosenzweig's science are rock-solid.

"Degrading our environment causes us to expect less of it. But improving our environment will cause us to expect more."

Rosenzweig concludes by outlining some unresolved questions. He is ambivalent about the role of governments, generally leaning towards the kind of fine-scale reconciliation ecology that characterizes the examples of the first half of the book, but admitting that state intervention will sometimes also be necessary. His view of traditional conservation interventions (labeled with alliterative cunning as "reservation ecology" and "restoration ecology") is more certain: they are, he justifiably argues, necessary, but not sufficient. More novel is his suggestion that such traditional conservation should be tightly targeted at the rarest species—he calls them "*kulturmeiders*"—those least likely to survive no matter how amenable we make human-dominated landscapes. Rosenzweig's parting shot presents a clever twist of Daniel Pauly's "shifting baselines" syndrome: "… degrading our environment causes us to expect less of it. But improving our environment will cause us to expect more." What a wonderfully upbeat finish!

At risk of spoiling the picture, I should point out what I fear is the Achilles' heel of reconciliation ecology. Simply put, our world is highly variable, both biologically and culturally. This has three implications for Rosenzweig's arguments. First, biodiversity is not evenly spread over the planet, but is massively concentrated into tropical "hotspots," such as the Mata Atlantica (p. 130) and the Cape Fynbos (p. 170) that Rosenzweig discusses. Unhappily, human appropriation of the planet is disproportionately concentrated in these areas of high biodiversity. This misfortune is worsened by a second implication of heterogeneity. Species in these tropical hotspots are highly specialized "*kulturmeiders*." The contrast with those of the temperate regions from where Rosenzweig draws his examples—which have evolved as generalists in the face of the rapid glaciations of the Pleistocene—is dramatic. But what may be the final nail in reconciliation ecology's coffin is that the distribution of human wealth and well-being is also highly skewed. Those hotspots of the planet richest in biodiversity also harbour the world's most terrible poverty, inequality, and civil conflict. How can we expect the planet's poorest people to cover the opportunity costs of reconciliation ecology?

Yet just maybe, in spite of these malevolent flies in Rosenzweig's ointment, reconciliation ecology can be extended globally. My hope is that his concluding suggestions show us the way. Those hotspot "*kulturmeiders*" are exactly the species for which Rosenzweig's argument that we should focus the efforts of reservation ecology is strongest, with reconciliation ecology only coming into play when we're happy that we've bought some time for conservation in these megadiverse tropics. Maybe it's possible to stretch his position on the role of governments in reconciliation ecology to the scale of the global community. Maybe the world's bilateral and multilateral organizations will be able to take up the gauntlet laid down by private investment to foot the bill for the conservation of such tropical biodiversity hotspots. Even now, we can provide Rosenzweig with examples of such tropical reconciliation ecology. The call of the Colombian clergy to substitute cut wax palm (*Ceroxylum quindiuense*) fronds for seedlings of the same species—for planting as habitat for the Critically Endangered yellow-eared parrot (*Ognorhynchus icterotis*)—in the annual Semana Santa processions (see www.proaves.org) is a particularly good one. If the global community can be similarly creative, maybe reconciliation ecology does indeed show us the path to a sustainable future. I, for one, truly hope so. ■

Book Reviewed

Rosenzweig ML (2003) Win-win ecology: How the earth's species can survive in the midst of human enterprise. Oxford, United Kingdom: Oxford University Press. 224 pp. ISBN (hardcover) 0-951-56048-X. US$27.00.