Norman Myers (1934–2019)

Conservationist who changed how we think about threats to biodiversity.

Norman Myers died on 20 October 2019, aged 85, after a long illness. His most enduring legacy will surely be his paper, ‘Biodiversity hotspots for conservation priorities,’¹ published with colleagues in *Nature* in 2000. It ranks as one of the most highly cited papers both in general ecology and in conservation science. That impact was because it incorporated biogeography, recognizing that plant and animal species are curiously distributed, such that places with the greatest local numbers of species are often not the places with concentrations of species that have small geographical ranges. The latter species are more prone to extinction. Norman’s paper touched land-use change too: unfortunately, concentrations of such species are often where human-caused destruction of habitats is exceptionally severe. The combination of high endemism and high destruction defined a ‘biodiversity hotspot’. It begged economic and social questions of why we destroy ecosystems — and some more than others. Above all, it suggested ways to prioritize effective conservation actions.

Connecting these disparate threads was uniquely Norman. His science did not fit into any established pigeonhole, nor did his methods. He never held a regular academic appointment. To our knowledge, the only celebration of his election as a foreign member of the US National Academy of Sciences in his hometown of Oxford was at the Trout pub with Pimm and his wife then visiting. Yet his ability to identify emerging environmental trends was without precedent. He was among the very first to notice pervasive, high species extinction rates, beginning in the late 1960s². Commissioned to evaluate the rate of loss of tropical forests, he produced a stunning report³ for the National Research Council in 1980, at a time when that rate had not been well documented.

Aside from the evident exploitation of these forests for lumber and space to grow crops, Norman also connected their deterioration to changing climate⁴ in a report to the Food and Agriculture Organization (FAO). Subsequently, he documented the ubiquity of perverse economic subsidies that harm both economies and the environment⁵ and the consequences of environmental degradation for political stability⁶ and refugees⁷.

Norman Myers (1934–2019).

Norman was born in Lancashire, United Kingdom, did his then compulsory national service with the Royal Artillery, and went on to earn a degree in modern languages at Oxford. In 1958, he joined the Colonial Service and was posted to Kenya. Although Kenya became independent in 1963, Norman stayed on for a few years as a teacher and then a wildlife photographer. He then enrolled at the University of California, Berkeley, continuing his studies of cheetah and leopard populations in Kenya, and earned a PhD in 1973. Subsequently, he returned to what became his home for the rest of his life, in Oxford.

Norman’s influential hotspot paper⁸ is an inspirational tale that every good professor should teach academic sons and daughters. He first tried to publish the idea in mainstream ecology journals, and its rejection there stung him. In 1988, he finally succeeded in publishing it. He expanded his ideas further in 1990, but while his was by an order of magnitude the most cited paper ever published there, the idea still languished. A decade later, Norman produced an even more comprehensive account and submitted it to a weekly science journal for which Pimm served as an editorial advisor. That journal disregarded Pimm’s enthusiastic recommendation, whereupon Norman submitted his paper to

Nature. When it was published, we wrote the accompanying News & Views article⁹.

The paper’s impacts have been many and varied. Our colleague, Dan Martin, formerly of the MacArthur Foundation, wrote: “Norman’s invention of the biodiversity hotspots achieved substantial impact and momentum when they were adopted by the MacArthur Foundation as the focal points for the Foundation’s nature conservation program in its formative stage. We were attracted by the explicit and consistent criteria Norman advanced. This allowed us to gain internal agreement about supporting biodiversity conservation, to concentrate our spending coherently, to avoid the largely aesthetic judgments that shaped many international conservation programs, and to explain our actions objectively.” (D. Martin, personal communication.)

Directing what were perhaps billions of dollars to practical conservation actions is an impressive achievement. His scientific legacy cannot be overstated either. First, Norman defined so many present concerns. Species extinction, deforestation and the interplay of social, economic and environmental factors are all now major areas of investigation. His legacy is of fields of scientific endeavour for which many will not remember that he was the first by far to raise the alarm.

For instance, in an era where one can see tropical deforestation daily from satellite imagery, it is not always easy to understand how hard it was for Norman to conduct a comprehensive study of the rates of tropical forest loss. His methods were to assemble data from a wide range of publications, many of them obscure, often agency reports, and tedious to parse. From them, he and his long-time research assistant, Jennifer Kent, would distil data that have well stood the test of time. The sources of data for the hotspot paper, for example, comprised dozens of pages of citations of regional studies listing which plant and animal species occur where. Two decades of very much improved data on species distributions have not seriously altered the conclusions. Much the same can be said about deforestation and species extinction rates. Time has silenced vituperative criticisms of his estimates — they have been broadly and sometimes extraordinarily on the mark.

Simply, Norman had a unique way of being a scientist. Too often, scientists

follow the paths of analysing incrementally improving data with tried-and-true methods. Norman used his first-hand experiences to ask ineluctably important questions that demanded entirely new approaches. Those experiences established fields that are now major areas of scientific exploration.

He was a cherished colleague and we very much enjoyed our visits with him over the years. His passion, his concern for our planet, and the breadth of his knowledge made him a fascinating lecturer. That, and a sense of humour. Norman was an impressive long-distance runner and found himself in a race with Robert May (Baron May of

Oxford), his junior. May expressed concerns that the older man might struggle with the race. As Norman told it, after the start, he left May well behind. May — famously competitive — never failed to mention Norman's athletic abilities after that.

Norman's science made many academics unhappy, but in identifying the problems of the modern world, he left many of them well behind too.

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