

# Can synthetic biology save wildlife?

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What effects will the rapidly growing field of synthetic biology have on the conservation of nature? The ecological and ethical challenges stemming from this question will require a new dialogue between members of the synthetic biology and biodiversity conservation communities, say Kent Redford of the Wildlife Conservation Society (WCS) and Archipelago Consulting; Bill Adams of the University of Cambridge; and Georgina Mace of University College London (UCL) in a new paper published 2 April in the open access journal *PLOS Biology*.

The field of synthetic biology—a discipline that utilizes chemically synthesized DNA to create organisms that address human needs—is developing rapidly, with billions of dollars being invested every year. Many advocates extol the virtues of synthetic biology as providing potential solutions to human health problems, food security, and energy needs, as well as potential tools for combating climate change and water deficits. However, critics warn that genetically modified organisms could pose a danger to [native species](#) and natural ecosystems. The authors of the new paper assert that, in any scenario, a dialogue on how to use and restrict synthetic biology methods and products must be initiated for the benefit of the world's societies and decision makers.

"At present, the synthetic biology and conservation communities are largely strangers to one another, even though they both share many of the same concerns and goals," said lead author Kent Redford. "An open discussion between the two communities is needed to help identify areas of collaboration on a topic that will likely change the relationship of humans with the natural world."

The authors, along with other scientists and conservationists, will discuss the potential implications that synthetic biology may have on the natural world and conservation at the upcoming Synthetic Biology and Conservation Conference, convening at Clare College in Cambridge, England, on April 9-11.

John Robinson, Chief Conservation Officer at WCS, said, "Synthetic biology is an extremely important and burgeoning field, but its consequences to biodiversity and conservation are currently poorly understood. By bringing together the best thinkers in these two disciplines we hope to gain a better understanding on synthetic biology's opportunities—and potential impacts—to conservation."

"Our strategies for conserving ecosystems, species, and genetic diversity, formulated over the past century, are profoundly challenged by synthetic biology," added co-author Bill Adams. "The implications of this emerging field must be incorporated into conservation theory and practice if efforts to save biodiversity are to be effective."

In the paper, the authors explain the need for new strategies in the conservation community to cope with the challenges of synthetic biology. They highlight five emerging issues requiring discussion and policy decisions by [conservation](#) scientists and practitioners:

- The possibilities of recreating extinct species.
- How synthetic organisms will interact with existing species.
- Our current definition of what "natural" is.
- Using [synthetic biology](#) to produce natural services for humans (e.g. carbon sequestration, pollution control).
- The use of synthetic life for private benefits, such as the applications for industrial processes, agriculture and aquaculture. In particular, how will a balance be struck between private risk

and gain vs. public benefit and safety?

**More information:** Redford KH, Adams W, Mace GM (2013) Synthetic Biology and Conservation of Nature: Wicked Problems and Wicked Solutions. PLoS Biol 11(4): e1001530.  
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