The Ethics of Deliberate Extinction: Project Summary

Overview

Genome editing technologies provide methods that could be used to alter wild populations of organisms and therefore, in principle, whole species. In principle, too, genome editing technologies could be used to bring about the extinction of a species, and some proposals to achieve extinction (notably, of New World screwworm) are taking shape. To date, however, this possible application of genome editing has received scant attention. There is only a very small, incipient scholarly literature on the idea, and guidance from advisory bodies has not addressed it. Nearly all proposed uses of genome editing in the wild have been described as limiting or avoiding the risk of wiping out the target species in its native range, even if they would involve temporary or geographically limited suppression of a species. We propose a project to examine extinction via genome editing. A multi-authored report, developed through interdisciplinary scholarly workshops, will articulate, so far as possible, consensus-based guidance for policy decisions, and accompanying essays will address complementary issues and diverging perspectives. We believe the prospect of achieving deliberate extinction via genome editing would be inherently troubling to many people, yet that some specific cases might be attractive. We wish to consider whether lines can be found between the troubling and the attractive.

Intellectual Merit

The ethics of proposals to eradicate a species via genome editing depends on the relative ordering and weighting of many values that might vary from case to case but that are also part of a long history of species-control efforts. Our project will begin by examining some possible cases, particularly with agricultural and public health goals, and the history to which they would belong. We will examine the values trade-offs at stake in the cases and, by comparing the cases with the history of species control, some distinctions that would frame the understanding of extinction via genome editing, such as how it would differ morally from other approaches to species control and how limited eradication would differ morally from full eradication. The project will also examine topics in environmental ethics that are relevant to the values trade-offs: the values of species and of biodiversity, the significance of a species' biological complexity, different conceptions of the human moral relationship to nature, and the extent of human responsibilities to alleviate suffering in nonhuman organisms. The project will both draw on and contribute to work on these topics: deliberate extinction serves as a limit case that provides a useful lens for reassessing them. Finally, the project will examine the decision-making guides and processes that would determine whether genome editing is used to achieve extinction—how recommendations in existing regulatory guidance for genome editing of nonhuman organisms might be extended to address extinction, and how publics at both local and wider levels should be engaged in decisions.

Broader Impacts

The project's broader impacts will be accomplished through the research itself. Proposals aimed at using genome editing to achieve deliberate extinction are likely, making recommendations about those uses valuable. Decisions about many other kinds of uses of genome editing on nonhuman organisms will benefit from clarity on key issues that the prospect of deliberate extinction brings to the fore, such as the value of species, of biodiversity, of the preservation of nature generally, and of animal welfare. By studying tradeoffs involving these values and other priorities, such as public health, agricultural, and military goals, the project will foster better decisions about these uses of genome editing. The project might help articulate limits in how these technologies may be used; conversely, it might help clarify the rationales that support their use. By advancing understanding of the implications of removing species from ecosystems—both the values at stake in species extinction and the consequences for delivery of ecosystem goods and services—the project also has broad implications for environmental interventions that do not involve genome editing. It can open up new ways of thinking about fundamental environmental goals and principles and about trade-offs between, for example, public health goals, preservation of nature, and moral responsibilities for animal welfare.