Correspondence

Revived species: how would they survive?

Viewing the revival of extinct species as a laboratory exercise overlooks key behavioural and ecological factors that cannot easily be reproduced (S. Kumar *Nature* **492,** 9; 2012). Hence a recreated dodo might look and feel like one — but it wouldn't quite be a dodo.

Also, re-establishing an extinct species would mean following procedures that are normally used to introduce captive-bred animals to the wild. However, these repopulation attempts have contributed only marginally to biodiversity conservation, largely because the animals do not know how to interact with other members of their species or with their new environment.

Extant species can be trained on the basis of what we have learned from wild individuals, but such information is sparse or non-existent for extinct species. In the absence of their proper ecological niche, 'revived' species reintroduced into the wild would be unlikely to survive.

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Revived species: where will they live?

Subrat Kumar suggests that we should preserve the DNA of vanishing organisms such as tigers so that they can be regenerated later (*Nature* **492,** 9; 2012). But extinctions do not just represent the loss of species — they are the pervasive disintegration and destabilization of ecological networks.

Species are more than the sum of their genes: they are the manifestation of reciprocal interconnectivities between organisms and their environment (C. S. Elton *Animal Ecology* Univ. Chicago Press, 2001). Modern extinctions are an irrefutable symptom of habitat loss and the unravelling of biological processes. If we cannot preserve India's forests and mangrove swamps, for instance, then we cannot save its tigers.

Biotechnology has a role in conservation, but it is not the solution to extinction. Instead, we must protect the integrity of ecosystems and their inherent dynamics. Freezing the tiger's DNA amounts to little more than handing on the responsibility for our actions to the next generation.

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Concern over US nuclear stewardship

Your discussions of the failure to achieve ignition at the US National Ignition Facility (NIF; *Nature* **491,** 159 and *Nature* **491,** 170; 2012) raise an associated concern about the US Stockpile Stewardship Program that we believe deserves the attention of everyone concerned with the effectiveness of the US nuclear deterrent.

Experimental data from the NIF reveal that lasers can compress hydrogen fuel in fusion capsules, but ignition conditions have not been obtained. Deficiencies in the simulations used to design ignition capsules meant that predictions for when fusion would be achieved were wrong. Worryingly, these deficiencies were not brought to light until experimental data from the NIF made their existence undeniable.

Our concern is that something similar could occur in the Stockpile Stewardship Program, which relies heavily on simulations to assess nuclear-weapons performance. As with ignition, an overly optimistic assessment could result from over-confidence in simulations.

The analogy ends there, because the only experimental data that could definitively expose deficiencies in the nuclear-weapons simulations would have to be obtained from nuclear tests, which are prohibited under a moratorium. The potential consequences would be very serious.

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Mauritius threatens its own biodiversity

The unique biodiversity of Mauritius faces a growing threat from an unlikely source: its own government. Last week's meeting of the Intergovernmental Platform on Biodiversity and Ecosystem Services in Bonn, Germany (see go.nature.com/dkyucn), should jolt Mauritius back into honouring its position as the first signatory to the Convention on Biological Diversity.

The Mauritian government is leasing important offshore islet nature reserves for activities that conflict with conservation objectives. This has introduced alien predators and caused the illegal destruction of protected species and habitat, without tangible consequences for those responsible. As a result, two populations of threatened endemic reptiles have already gone extinct from one of the reserves (see go.nature.com/4th4kt).

Under pressure from fruit producers, the government is

also seeking to relax its Wildlife and National Parks Act of 1993 to enable culling of the Mauritian flying fox (*Pteropus niger*), a protected bat species that is classified as endangered by the International Union for Conservation of Nature.

Even some apparently positive actions — such as restoring habitats in the island's national park — are being mismanaged, resulting in rising costs that compromise restoration progress (F. B. V. Florens and C. Baider *Restor. Ecol.* **21,** 1–5; 2013).

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Sustain the future by doing more with less

The term sustainability — originally conceived to mean doing more with less — is now used to describe development that meets current needs without compromising those of future generations (World Commission on Environment and Development *Our Common Future*, 1987). As food shortages increase and the global population expands, it is time to revisit the original concept of sustainability.

In accepting the idea of sustainable development as politically correct and all-encompassing, scientists and policy-makers have created a world in which 'sustainability' can be used both to defend and to attack environmental policy. Sustainability needs to be rebranded, for example by shifting consumer focus from greenness to payback and efficiency, and by differentiating between the private costs of policy implementation and the social cost of non-implementation (M. Csutora and Á. Zsóka *J. Consum. Policy* **34,** 67–90; 2011).

The world has changed since 1987, and that 'future generation' has been born. Policies that promote sustainability should aim to provide the best life for as many people as possible — by doing more with less.

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Dead language still alive for botanists

I disagree with Frank Udovicic's contention that there is no scientific merit in using Latin, rather than English, for botanical descriptions and diagnoses (*Nature* **492,** 356; 2012). The meaning of descriptive terms in Latin will not change, precisely because it is a dead language. Living languages alter over time and can lead to subtle shifts in interpretation.

For example, the English word 'lavender' can describe either the colour of *Lavandula angustifolia* flowers or a shade of pale purple, whereas the botanical Latin term, *caesius*, has the standardized meaning 'pale blue, with a slight mixture of grey' (W. T. Stearn *Botanical Latin*, 1966).

Both Latin and English diagnoses are permitted under the International Code of Nomenclature for algae, fungi and plants. The International Botanical Congress has refused to make diagnoses in English compulsory. Botanists should therefore be free to use either or both languages.

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Transmission studies resume for avian flu

In January 2012, influenza virus researchers from around the world announced a voluntary pause of 60 days on any research involving highly pathogenic avian influenza H5N1 viruses leading to the generation of viruses that are more transmissible in mammals[1]. We declared a pause to this important research to provide time to explain the public-health benefits of this work, to describe the measures in place to minimize possible risks, and to enable organizations and governments around the world to review their policies (for example, on biosafety, biosecurity, oversight and communication) regarding these experiments.

During the past year, the benefits of this important research have been explained clearly in publications[2–7] and meetings[8–10]. Measures to mitigate the possible risks of the work have been detailed[11–13]. The World Health Organization has released recommendations on laboratory biosafety for those conducting this research[14], and relevant authorities in several countries have reviewed the biosafety, biosecurity and funding conditions under which further research would be conducted on the laboratory-modified H5N1 viruses[10,15–17]. Thus, acknowledging that the aims of the voluntary moratorium have been met in some countries and are close to being met in others, we declare an end to the voluntary moratorium on avian-flu transmission studies.

The controversy surrounding H5N1 virus-transmission research has highlighted the need for a global approach to dealing with dual-use research of concern. Developing comprehensive solutions to resolve all the issues will take time. Meanwhile, H5N1 viruses continue to evolve in nature.

Because H5N1 virus-transmission studies are essential for pandemic preparedness and understanding the adaptation of influenza viruses to mammals, researchers who have approval from their governments and institutions to conduct this research safely, under appropriate biosafety and biosecurity conditions, have a public-health responsibility to resume this important work. Scientists should not restart their work in countries where, as yet, no decision has been reached on the conditions for H5N1 virus transmission research. At this time, this includes the United States and US-funded research conducted in other countries. Scientists should never conduct this type of research without the appropriate facilities, oversight and all necessary approvals.

We consider biosafety level 3 conditions with the considerable enhancements (BSL-3+) as outlined in the referenced publications[11–13] to be appropriate for this type of work, but recognize that some countries may require BSL-4 conditions in accordance with applicable standards (such as Canada). We fully acknowledge that this research — as with any work on infectious agents — is not without risks. However, because the risk exists in nature that an H5N1 virus capable of transmission in mammals may emerge, the benefits of this work outweigh the risks.

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