Local data are vital to worldwide conservation

Sir — Red Data Books and Red Lists of threatened species have drawn attention to species at risk of extinction worldwide[1,2]. As the number of national Red Lists increases, more information becomes available to assess the global status of species. Unfortunately, global assessments coordinated by the World Conservation Union (IUCN) are not making full use of this wealth of local data, often giving a misleading picture of the status of a taxon.

In our study of this problem, we excluded widely distributed threatened species, whose risk of extinction may vary from country to country, and focused on nationally endemic taxa, where national and global Red Lists should be identical. We found that national assessments tend to incorporate data from global assessments, but the reverse is much less frequent. This decreases the efficiency of conservation at the national level, where actions are most likely to have an impact; local organizations have difficulty raising international funds because donors believe, wrongly, that international lists are more accurate.

We compared global and national lists of threatened endemic species for Argentina[3], Bolivia[4], Ecuador[5] and Venezuela[6]. Although most South American countries have national Red Lists[7], only these four use the new IUCN Red List categories used for global assessments[8]. The combined national and global lists cover 173 taxa (Table 1). All taxa should be included in both lists; in fact, only a quarter are. Over half of the taxa listed nationally are not listed globally, while more than three-quarters of the taxa included in the global lists also feature in national lists. Of those taxa included in both lists, the categories they are assigned to in each list are more likely to differ than not ($\chi^2 = 4.22$, d.f. $= 1$, $P < 0.05$). Agreement between national and global lists is best for birds, followed by mammals and reptiles (Table 1).

We suggest that these disparities are due to a lack of communication between national assessments based on geography and global assessments based on taxonomy. National Red Lists are usually produced by local organizations. In contrast, IUCN compiles global Red Lists through its Species Survival Commission (SSC), a network of more than 5,000 volunteer scientists organized into areas of taxonomic interest.

To improve the flow of information between national and global Red Lists, data from geographically based lists must be compiled, cross-referenced, and made available to global assessors. To this end, the SSC should create an interdisciplinary group to administer a website containing the national Red Lists of the world. By standardizing the process of submitting information to the website, a 'virtual' specialist group would be both cost-effective and relatively easy to manage; it would significantly improve the quality of Red Lists at both levels and would make research and conservation more effective.

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Table 1 **Nationally endemic South American animals in national and global Red Lists**

	National lists		Global lists		Both lists	
	Also in global list		*Also in national list*			*Taxa simultaneously*
Taxon	*Number*	*(%)*	*Number*	*(%)*	*Number*	*in both (%)*
Mammals	29	69	27	74	36	56
Birds	66	76	58	86	74	68
Reptiles	4	50	3	67	5	40
Amphibians	9	0	0	0	9	0
Bony fishes	8	0	4	0	12	0
Crustaceans	6	0	1	0	6	0
Insects	31	3	1	100	31	3
All taxa combined	152	46	94	78	173	42

There's a place for the theory of everything

Sir — As the originator of the term 'Theory of Everything' (TOE) to represent the ambition of string theory to describe all the elementary particles and their fundamental interactions (*Nature* **323,** 595; 1986), I was dismayed by the tone of a recent review by my old friend George Ellis of *The Quest for Unity* (*Nature* **401,** 527; 1999) by Etienne Klein and Marc Lachièze-Ray.

My definition of a TOE — a theory to "unify all the fundamental interactions" and "explain the number and couplings of all the elementary particles" — is not different from Ellis's "theory unifying all fundamental forces into one", but I take issue with his (and your headline writer's) assertion that this "is … irrelevant to most physicists".

In addition to the cosmologists cited by Ellis, the TOE ambition of particle physics is relevant to any astrophysicists interested in topics such as black holes, gravitational waves, active galactic nuclei, gamma-ray bursters, dark matter, structure formation, supernovae, high-energy cosmic rays and so on. Moreover, the theoretical tools of quantum field theory, conformal field theory, topological solitons and so on, discovered or developed by particle and string theorists, are central to much of condensed-matter theory, and even of interest to pure mathematicians; witness the Fields medal awarded some years ago to Edward Witten, even before the advent of Seiberg–Witten theory.

Like Ellis, I lament the fact that physics "is becoming ever more fragmented into disparate subjects", but particle physicists are hardly to blame for the richness of the phenomena (relativity, quantum theory and so on) revealed by their predecessors in the quest for unification. Nobody can know what richness may be revealed by the TOE, and the fragmentation it may engender.

And, please, no more citations of the defunct Superconducting Super-Collider: its physics will be covered ably by the Large Hadron Collider (LHC) at a fraction of the cost. Indeed, the LHC, at $2 billion, is not so much more costly than the Spallation Neutron Source in the UnitedStates, at $1.3 billion, or the Japanese Hadron Facility, just to take two examples of current accelerator projects motivated in large part by condensed-matter physics. Where would these, and synchrotron light sources, be if would-be particle unifiers had not developed the necessary accelerator tools?

Finally, I agree with Ellis that "isolationism is a prerequisite for successful physics", and with the authors of the book that it is a challenge for physics to "resist the temptation to project the false self-image of

a religion able to reveal the ultimate truth". However, I disagree with your headline that "there is no ultimate truth in grand unification". There is some of the ultimate truth, though certainly not all.

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ECT damage is easy to find if you look for it

Sir — The reviewer of Max Fink's *Electroshock: Restoring the Mind*[1] claims that electroconvulsive therapy (ECT) "has proved to be one of the safest procedures in medicine" and that there is a "myth, largely promoted by anti-psychiatrists, that ECT damages … brain functioning".

One can be sympathetic to psychiatry (as I am) and still imagine that passing 150 V between the temples to evoke a grand mal seizure might cause brain damage, especially when you realize that this 'cure' for depression requires this procedure to be repeated 10–20 times over a week or so. And when you talk to a friend who has been so treated and discover that a year later she is still experiencing huge gaps in recall of major life events, you begin to worry. Finally you discover that ECT's benefit is only temporary, so that many psychiatrists administer it chronically. Hmm.

Turn to the design of ECT protocols and you discover that many practitioners now administer ECT only unilaterally to the 'non-dominant' — non-verbal — hemisphere. Why? To avoid damaging the verbal hemisphere. In short, although ECT is completely safe, it is even safer when applied to the non-verbal hemisphere. Of course, equal damage is done to the non-verbal hemisphere, but it tells no tales.

ECT is used as an experimental tool by neuroscientists, as it releases massive quantities of glutamate, whose release following stroke causes significant neuronal death. Indeed, observers describe people who have had many ECT treatments as "punch drunk" — resembling boxers who have sustained chronic brain damage.

One reason psychiatrists are unaware that ECT is causing memory loss is that they do not test for it. Memory loss could be monitored by questioning patients before ECT about early events in their lives and then re-questioning them following each series of ECT. When this was done 50 years ago[2], memory losses were marked and prolonged. However, no effort has been made since to routinely perform this simple test.

It is a good bet that history will view ECT as one of what neuroscientist and author Elliot S. Valenstein calls the "great and desperate cures" — and its promoters as kin to the promotors of lobotomy.

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Full effects of oil rigs on corals are not yet known

Sir — Bell and Smith in their Brief Communication[1] said that the azooxanthellate scleractinian *Lophelia pertusa* (*L.*) had been found on oil platforms in the North Sea. They also state that corals such as those on Brent Spar and those near the Beryl Alpha platform[2] "have been exposed to agreed quality standards of operational discharges, such as oily water, drilling muds and chemicals, and contaminants that may leak from cuttings piles…", suggesting that *L. pertusa* is thus not obviously affected by discharges from oil platforms.

But there is no definitive evidence that these corals have been exposed to any discharges, let alone a specific level of any "quality standard". It is perfectly feasible that their position in the water column precludes such exposure. Current understanding of the environmental sensitivity of deep-water species such as *L. pertusa* is limited by the lack of information on their biology and ecology. Our understanding of coral distribution is incomplete[3]; we know nothing of the reproduction or dispersal of these organisms, or their sensitivity to suspended sediments, or the effect on them of exposure to drilling discharges.

Bell and Smith's conclusion — that by leaving the 'footings' of large platforms with jacket weights of more than 10,000 tonnes in place, existing colonies will be preserved and *L. pertusa* might spread in the North Sea — is naive.

In the long term, we do not understand the ecological implications of leaving such structures in place, let alone whether they will survive to form some form of artificial reef. It is known that *L. pertusa* can settle on to man-made structures. For example, early linear extension rate measurements (*sensu* growth rate as described by Bell and Smith) were estimated from the overall length of corals that had settled on undersea cables[4].

But we are a long way from understanding how any such decommissioning strategy would affect the ecology of the North Sea. An open debate and more effort to understand the underlying science are needed before statements can be made on the environmental sensitivity of any species.

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Cover adds fuel to the fire in evolution battle

Sir — We would very much appreciate an explanation by the editor as to why a part (the hands of God and Adam) of Michelangelo's painting *The Creation of Adam* was chosen for the cover of the 2 December 1999 issue of *Nature*. It was presumably meant to commemorate the elucidation of the first complete human chromosome nucleotide sequence.

However, the use of such Christian religious symbols to mark this event seems difficult to fathom. Does this harken back to the centuries old practice of natural theology[1]? Does the elucidation of the human nucleotide sequence provide us with insights into the work of the Christian God at the creation event? Why not also use the Garden of Eden as the first event in the chronology of events leading to the revelation of the chromosome sequence in Fig. 1 of the News and Views article[2]? We are confident that the editors are well aware of the oft quoted statement by Dobzhansky: "Nothing in biology makes sense except in the light of evolution."

The decision to use this cover makes no sense. It is common knowledge that it continues to be a struggle in many parts of the United States to teach the principles of evolution in high schools. The recent decision by the Kansas Board of Education reveals the problem is not going to go away soon. Many letters to *Nature*, *Science* and other publications reveal the dismay felt within the scientific community regarding this action in Kansas. We are also dismayed by efforts in the United States to weaken the teaching of high-school science, but are also troubled by *Nature*'s willingness to add fuel to the fire.

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Nature* replies — The editorial staff debated this issue before publication and decided, with the enthusiastic agreement of the lead authors, that the image as a whole combined iconic symbolism with the science without implying that the Bible is true or that evolution is not the key to making sense of biology. — Editor, *Nature