

Endangered but not on the list?

The Red List, the high-profile record of threatened species, may be misdirecting conservation efforts

Rachel Nowak

IT IS probably the most influential barometer of extinction risk, yet the Red List is unscientific and frequently wrong. So claim a growing number of conservation scientists, including several who help compile it. While no one wants to see an end to the Red List, which covers 45,000 species, many fear that the sometimes shaky methods behind the creation of the listings are downplayed, meaning time, money and effort can be misdirected trying to save "safe" species while others creep towards extinction.

The Red List – flagship of the International Union for Conservation of Nature (IUCN) – not only raises awareness and millions in conservation dollars, it provides data for environmental impact studies, and is used as a lobbying tool for new policies and to encourage governments to stick to international agreements. Its influence is continually

IUCN Red List categories

Criteria include population size, rate of decline and various measures of geographic range

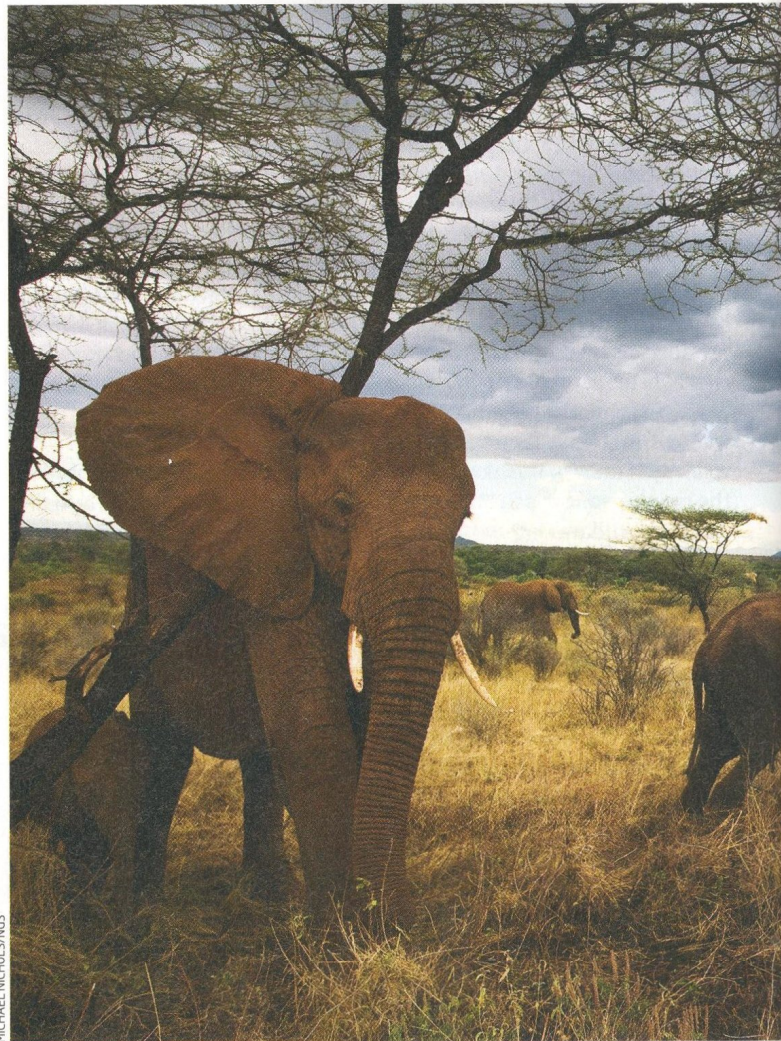
| |
|-----------------------|
| Extinct |
| Extinct in the wild |
| Critically endangered |
| Endangered |
| Vulnerable |
| Near threatened |
| Least concern |
| Data deficient |
| Not evaluated |

expanding. Next year, the Convention on Biological Diversity will invoke the list to help gauge how close it is to its goal of reducing biodiversity loss.

Yet many are now questioning the list's quality. "The Red List wants to be a high standard, scientifically based, transparent system, but in reality it hasn't been," says Matthew Godfrey of the North Carolina Wildlife Resources Commission in Beaufort, who serves on one of the specialist groups that compiles the list. Criticism recently came to a head in a series of articles in the journal *Endangered Species Research*.

Red List information is collated by around 7500 volunteers, usually linked with conservation organisations or universities, using anything from museum maps to records of the sale of animal by-products. From this, extinction risks are calculated according to IUCN criteria, such as whether the rate of decline in species numbers has passed certain thresholds.

These criteria can throw up oddball results. The green turtle, for example, is listed as endangered despite a global population of over 2 million. "Green turtles are not going to disappear," says Brendan Godley of the University of Exeter, UK, and the Marine Turtle Specialist Group. That doesn't mean we should ignore them – some populations are at serious risk from egg harvesting, for instance. "It's just not the same level of risk as a population of 50 parrots living on a small island that is being deforested."



MICHAEL NICHOLS/INGES

Similar doubts hang over the listings for many other species, including the sperm whale and five other species of sea turtle, which are categorised as at risk of extinction. Their assessment is based on "decline" criteria, yet while total numbers may have plummeted, global populations remain large and viable.

This is a fundamental weakness of the Red List, says Grahame Webb of Charles Darwin University in Darwin, Australia, who suggests an additional "critically declined" category, which would act as an alert without making judgements about extinction risk.

Another problem is that the Red List criteria are difficult to apply to some species. "Thresholds are geared towards mammals," says Atte Komonen of the Swedish

University of Agricultural Sciences in Uppsala. "A thousand elephants might well be viable, but 1000 beetles is very unlikely to be, not least because they might occupy a single tree that could go up in smoke." The solution would be to tailor risk to specific taxonomic groups, Komonen suggests, in this case measuring the number of occupied trees rather than individuals.

On these points, the IUCN is standing its ground, however. "We know there are some problems that at the moment have no solution, but that's because we're working at the cutting edge of conservation science," says Craig Hilton-Taylor of the IUCN Red List Unit in Cambridge, UK. "No one has been able to come up with an alternative system that can be applied to all

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African elephants recently came off the high-risk list

taxonomic groups," he points out. One argument against tailoring methods to individual species is that it would make it difficult to compare relative extinction risks.

But the problems may run deeper. Some scientists claim that a tendency to abide by the

scientific principles or precautionary conservation principles," says Webb.

Good field data can also be hard to come by, and the fact that the list is "cobbled together" by volunteers only exacerbates this problem, says Adrian Newton of the Centre for Conservation Ecology and Environmental Change at Bournemouth University in Poole, UK. For many species, a lack of data means no assessment at all or relegation to the "data deficient" category. The Amazon river dolphin, for example, recently shifted from "vulnerable" to "data deficient". The IUCN emphasises that this does not mean a species is in the clear, but the listing might not be helpful. "Data deficient species tend to be neglected in terms of

"The Red List wants to be a high standard, scientific, transparent system, but in reality it hasn't been"

"precautionary principle" – encouraged by Red List guidelines – means that specialist groups end up demanding higher levels of proof for an increase in numbers than a decrease, ultimately exaggerating extinction risks. "There's a tension between following

DECIDING WHAT TO SAVE

The Red List is often used to decide how best to spend conservation dollars, but is there a better way?

Previous attempts to make such decisions more rational, by using a scoring system, for example, have all failed to take two vital factors adequately into account, says Hugh Possingham of the University of Queensland in St Lucia, Australia. These are the likelihood of success and the limiting role of money.

To get around that, Possingham and his team developed what they call the Project Prioritization Protocol, which works in the same way as a business cost-effectiveness analysis (*Conservation Biology*, DOI:

10.1111/j.1523-1739.2008.01124.x).

The team tested the PPP on 32 threatened species, with a fixed budget. When species were classified only by their evolutionary uniqueness, or "worth", there was money to save 11 species. When they were prioritised according to worth, cost of saving, probability of success and expected benefit, 16 could be saved. "The formula allows you to rationally trade off different factors and mathematically optimise the allocation of funds," says Possingham.

In the last two years, New Zealand's Department of Conservation has used the PPP to prioritise which of its 649 most-threatened species to save.

conservation management," says Steven Garnett, also at Charles Darwin University in Darwin.

For an untold number, though, gaps are filled in myriad ways, including extrapolation and using guesstimates. Take the African elephant, which was moved off the high-risk list last year. Though elephants are well studied, and far more information is available to assess their extinction risk than for most species, much of it is poor quality. Yet if only the robust data had been used, "we would have recorded a massive and spurious increase" says Julian Blanc, former manager of the African elephant database, who is based in Nairobi, Kenya. Instead, he and his colleagues opted to pool all the data they had no matter how shaky.

Those who run and helped design the Red List do not see this as a problem, pointing out that the system is designed to gauge extinction risk quickly. "There's a perception that lots of guesstimates are going on. That may be true, but it's not unreasonable," says Georgina Mace of Imperial College London, who defined the methodology with Russell Lande, also at Imperial. The list "does what a triage nurse does – look for

symptoms that there is a problem. The next cut is to look and see whether you need to do anything."

In reality, "the best thing that can happen to a species is to be listed. People pay attention, and the species does better," says Jon Paul Rodriguez at the Venezuelan Institute of Scientific Investigations in Caracas, who is deputy chair of the IUCN Species Survival Commission.

Yet even though the IUCN frequently points out that the Red List should not be used alone to set conservation priorities, it often is, and this means money can be wasted on species that could be better spent elsewhere (see "Deciding what to save"). "The Red List is a framework to make the best guess you can. The process is supposed to capture that uncertainty, but the uncertainty is not transmitted when the results are published, or used to inform policy," says Newton, who argues that the Red List should not be used to judge the success of the 2010 goal of the Convention on Biological Diversity next year.

"The Red List is an unbelievably powerful, innovative conservation tool that has captured the world's imagination," says Webb. "But it needs to continue to improve, to become more accurate." ■