

'Crying wolf on climate change and extinction'



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Science needs to learn how to deal with increasingly sensationalist mass media. In January 2004 the UK print media headlined the claim that one million species are to go extinct within 50 years whereas the essence of the source literature was that depending on the assumptions made a variable proportion of land animals and plants may eventually go extinct as a consequence of the next 50 years of climate change.

Because scientific rationalism is a key tenet of contemporary policy it is crucial that politicians and policy-makers are informed by a balanced assessment of scientific knowledge and not popular perception created by commercially driven media. Departures from rational objectivity risks undermining public trust in natural sciences and could play into the hands of anti-environmentalists. This places responsibilities on both scientists and journalists to ensure fair and accurate reporting of their work.

On the 7th of January 2004, the journal *Nature* published a study that modelled the potential effects of global warming on the extinction of certain taxa of land animals and plants (1). The results of this study suggested that under moderate climate change scenarios between 15% and 37% of the 1103 organisms considered within the study would be "committed to extinction" by 2050 (1). The authors define this term as meaning, an estimate of proportions of species committed to future extinctions as a consequence of climate change over the next 50 years, and "not the number of species that will become extinct during this period" (1). Furthermore they note: "decades may elapse between area reduction... and extinction". In short, the study claims that if the assumptions and predictions of their model are valid then a proportion of the species studied would eventually occupy environmental envelopes incompatible with their long term survival.

We reviewed twenty-nine articles published in UK's national and local newspapers reporting this study and found a systematic pattern of errors in 26 of them. The most significant misrepresentation of the study's findings was the oft-repeated contention that over a million species would go extinct due to global warming by 2050 (21/29 reports). Just two reports explained that only a few species would actually be extinct by 2050; worryingly, two reports suggested that 1/3 of all the world's species would become extinct. No report specified the full range of uncertainty, which was 5.6% to 78.6% of species committed to extinction due to climate change (1).

In seven reports, the study's lead author, Professor Chris Thomas, was quoted as saying "If the projections can be extrapolated globally, and to other groups of land animals and plants, our analyses suggest that well over a million species could be threatened with extinction as a result of climate change". This powerful statement was not qualified with any

information on the basis of the extrapolation, or the great uncertainties concerning global species richness estimates (2, 3). The public were in effect asked to accept this dire prediction at face value. In contrast, natural scientists are aware that at present the number of species described is only in the region of 1.75 million (2) while the number of yet undiscovered species of arthropods is more likely to be in the range of 4-6 million species (3) rather than the oft-quoted value of 31 million (4).

The origins of many of the most crude generalisations and extrapolations can be traced back to the original press releases and agency newswires. The first of these was the press release (7th Jan.) from Leeds University (Thomas' employer), which ran the headline: "Climate Change Threatens a Million Species with Extinction". It is here that Thomas' quote concerning a million species first appears along with the unattributed claim that a quarter of land animals and plants may go extinct. However, the press release does go to some length to explain that the extinctions will occur *eventually* [their emphasis] and not in the next 50 years. The resulting newswires from the big press agencies varied in their veracity. The Dow Jones International News newswire (7th January) was quite cautious in tone: "Hundreds of species of land plants and animals around the globe could vanish or be on the road to extinction over the next 50 years if

global warming continues". However, the Reuters newswire (January 7th) contained many of the mistakes and exaggerations seen in the press the following day when it stated that: "Global warming could wipe out a quarter of all species of plants and animals on earth by 2050".

Politicians and conservationists were quick to publicly support the sensationalist statements. For example Margot Wallstrom, the EU environment commissioner wrote in *The Guardian* that "Many people had a lot to say about the recently published study that suggests global warming could wipe out a third of the planet's species by 2050", the Irish Green Party Leader John Barry publicly threw his support behind an FoE campaign to reduce carbon emissions and stop "the extinction of a quarter of the world's species by 2050". The research was even discussed in the UK House of commons when Margaret Beckett was quoted in Hansard (8th Jan.) as saying that the "study that has been published today indicates that between 15 per cent and 37 per cent of land species in the area that was studied could face extinction **by** 2050 [our emphasis]. However, it is important for the House to understand that the impact of the highest predictions of global warming would have an even more disastrous effect. So it is not an exaggerated report that assumes catastrophe; it refers to the expected impact of climate change". Of course since the animals and plants will not face

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extinction by 2050 then her interpretation, if the not the report itself, could be accused of exaggeration.

From the conservation lobby many of the largest and best-known NGO's produced press releases or ran news stories on their websites. WWF-UK went a step further and used the research in its funding efforts: on the 12th of January it mailed its membership with a 'conservation emergency!' with the opening line "you've no doubt seen the recent press and television headlines – by 2050 global warming could wipe out one million species of animals and plants".

We suggest three possible reasons for this widespread misrepresentation of the facts. First, newspaper science editors and journalists may lack a grasp of the theoretical models, assumptions and extrapolations that characterise scientific attempts to link climate change and biodiversity. The perceived need to present stories as sound-bites further promotes oversimplification and hyperbole.

Second, science reporters could have been negligent by relying on second-hand press reports and press releases rather than checking their facts or going back to the original study, despite its easy accessibility. Faced with tight-deadline many may place unwarranted degrees of trust in the press releases they receive.

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Third, it might serve the interests of particular actors in the chain to 'sex-up' the story by linking climate change with the imminent threat of massive extinctions, and jump on the resulting bank-wagon. By this means proprietors sell papers, journals generate citations, scientists gain profile and research funding, conservation charities generate

donations, and politicians gain an agenda that may attract votes and enhance careers.

Lest the raising of this third suggestion may suggest otherwise, we emphasise that we recognise the real and considerable threat to global biodiversity from multiple processes, including climate change and as environmentalists understand and empathise with the need to galvanise public and political for mitigation efforts. However, this should not be at the cost of woeful misrepresentation of the underlying science.

Scientific honesty and clarity is vital to maintaining the independence and integrity of public policy. If the public lose trust in scientists then policy risks being set by vested interests. Over-stating the implications of preliminary research opens environmental science to damning critiques by the anti-environmental lobby. This could increase public cynicism and complacency about climate change and biodiversity loss; in much the same way that 'over-egging' intelligence reports on weapons of mass destruction has affected public attitudes concerning politician's motives for the Iraq war.

We urge the scientific and conservation community to take a responsible attitude towards disclosure of research findings on climate change until the degree of uncertainty is reduced. Practical steps might be for scientists to direct media communication on this topic towards journalists with whom they have an established intellectual relationship; for high profile journals to restrict news-wires on climate-change to research papers that present clear and unequivocal findings; and for scientists to write to newspaper editors, trustees of

major charities and politicians with clarifications on misleading media articles.

Links

Biodiversity Research Group, School of Geography and Environment <http://www.geog.ox.ac.uk/research/biodiversity/index.html>
Conservation Practice Programme, Environmental Change Institute <http://www.eci.ox.ac.uk/cpp.html>

References

- (1) C.D.Thomas, A. Cameron, R.E. Green, M. Bakkenes, L.J. Beaumont, Y.C. Collingham, B.F.N. Erasmus, M.F. de Siquiera, A. Grainger, L. Hannah, L. Hughes, B. Huntley, A.S. van Jaarsveld, G.F. Midgley, L. Miles, M.A. Ortega-Huerta, A. Townsend Peterson, O.L. Phillips, S.E. Williams, *Nature* 427, 145-148 (2004)
- (2) B.Groombridge, M.D. Jenkins, *Global Biodiversity: Earth's living resources in the 21st Century*. World Conservation Press (2000)
- (3) V. Novotny, Y. Basset, S.E. Miller, G.B. Weiblen, B. Bremer, L. Cizek, P. Drozd, *Nature* 416, 841-844 (2002).
- (4) T.L. Erwin, *Coleopterist's Bull.* 36, 74-75 (1982).

Supplementary Material

Newspaper Reports

1. M. Prigg, *The Evening Standard* (London), p7, January 7th (2004)
2. Anon, *Birmingham Evening Mail* (Birmingham), January 7th (2004)
3. C. Thomas, A. Cameron, *The Guardian* (London), Guardian Home Pages p1, January 8th (2004).
4. A. Macdermid, *The Herald* (Glasgow), p13, January 8th (2004).
5. P. Brown, *The Guardian* (London), Guardian Home Pages p1, January 8th (2004).
6. R. Prince, *The Mirror* (London), p7, January 8th (2004).
7. Anon, *Western Daily Press* (Bristol), p8, January 8th (2004).
8. M. Henderson, *The Times* (London), p14, January 8th (2004).
9. J. Reynolds, *The Scotsman* (Edinburgh), p6, January 8th (2004).
10. S. Connor, *The Independent* (London), p1, January 8th (2004).
11. T. Utton, *Daily Mail* (London), p40, January 8th (2004)
12. Anon. *The Gloucester Citizen* (Gloucester), January 9th (2004).
13. J. Moul, *The Sun* (London), p8, January 8th (2004).
14. S. Winter, *Sunday Express* (London), p45, January 11th (2004).
15. A.A. Gill, *Sunday Times* (London), News Review 5, January 11th (2004).
16. T. Radford, *The Guardian* (London), p6, January 12th (2004).
17. T. Henderson, *The Journal* (Newcastle), p14, January 21st (2004)
18. G. Brough, *The Mirror* (London), p14, January 29th (2004).
19. G. Brough, *Daily Record* (Edinburgh), p30, January 29th (2004).
20. Anon. *The Daily Telegraph* (London), p33, January 31st (2004).
21. M. Wallstrom, *The Guardian* (London), p12, January 21st (2004).
22. Anon, *Irish News* (Belfast), p8, January 10th (2004).
23. J. Purvis, *The Independent* (London), p19, (2004).
24. Anon, *The Independent* (London), p16, January 8th (2004)
25. Anon, *The Guardian* (London), p25, January 8th (2004)
26. J. Ingham, *The Express* (London), p25, January 8th (2004)
27. Anon, *The Express* (London), p7, January 8th (2004)
28. Anon, *Daily Post* (Liverpool), p16, January 8th (2004)
29. S. Jenkins, *The Times* (London), p30, January 9th (2004)

Table 1: Survey of Newspaper Reports*

	Primary reports	Secondary Reports
Claims		
> 1 Million species extinct	14	7
Species extinct by 2050	10	3
¼ all life forms extinct	1	2
¼ land animals/plants extinct	7	1
1/3 all species extinct	2	0
1/3 land animals/plants extinct	1	0
Qualifications		
Based on millions of unknown species	0	0
Only few actually extinct by 2050	2	0
Phrase “committed to extinction” used	1	0

*Full list of sources available on request

Notes about the Authors

Dr. Richard Ladle coordinates and teaches upon the MSc Biodiversity, Conservation & Management in the School of Geography and the Environment at Oxford University, which he joined in April 2003. He studied for his D.Phil. in evolutionary ecology in the Zoology Department of Oxford University and has since held lectureships at several UK Universities. His current research interests include attitudes to conservation ecoenterprise and the ecology of invasive species.

Dr. Paul Jepson is the senior research fellow and leader of the Conservation Practice Programme at Oxford University’s Environmental Change Institute. He hosted the ‘Green Power: Green Responsibility’ lecture series in early 2004, tackling the subject of accountability in conservation NGOs. He started his career in the vibrant UK urban conservation movement before moving into international conservation in 1991. He established and managed the BirdLife International Indonesia Programme (1991-1997) and gained his doctorate in conservation policy in 2001. His research and teaching interests include the history, values and structure of international conservation, and protected area planning and management.

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Dr. Robert J. Whittaker is a reader in biogeography and founder of the Biodiversity Research Group in the School of Geography and the Environment at Oxford University. Dr Whittaker is the Editor of *Global Ecology and Biogeography*, an international peer review journal published by Blackwell Science, and deputy editor of the sister journals *Diversity and Distributions* and the *Journal of Biogeography*. He is also the author of a book on *Island Biogeography*, published in 1998.