Mama Grizzly and the polar bears

A recent paper on the matrilineal population history of two sister species, *Ursus maritimus* (polar bears) and *Ursus arctos* (brown bears), based on mtDNA sequence analysis, reveals a comparatively recent introgression. The authors propose that it represents a signature of environmental stress in marginal habitats [1]. In a nutshell, it means that all modern polar bears probably belong to a maternal lineage that arose by opportunistic mating with a female from a line of brown bears from Ireland that later became extinct.

In the same week that the paper was published, I was staying in an enchanting B&B overlooking spectacular Kachemak Bay in southern Alaska. One sunlit evening, my hostess joined me and some other guests on the terrace of her hillside home to sample some of the excellent local microbrew and discuss issues of concern to Alaskans and the wider world. Gazing at the incredible panorama of glaciers, mountains and volcanic islets, the subject turned, perhaps inevitably, to polar bears and climate change.

Our hostess was insistent that the notion of global climate change endangering arctic wildlife was nonsense. Polar bears were not endangered at all, she asserted; in fact, there might already be too many of them. She went on to complain about how the bears have been shamelessly exploited by the 'climate-lobby': a huge conspiracy run by Al Gore to make millions, damaging the Alaskan oil industry in the process.

As her guest, I shrugged politely and changed the subject: a mitochondrial geneticist clearly can't compete with whatever talk-radio show was her preferred source of information on the topic. Earlier on the trip I had already been subjected to a tirade against 'Frankenfish' by another B&B owner, who seemed to want to make quite sure, before renting me a room, that I wasn't visiting her northern paradise in order to sabotage the gene pool of the local salmon.

Later, back in the safety of academia, I decided to check my facts. It is perfectly

true that polar bears are not classed as an endangered species, although their image is widely used by the media as an emblem of the risks to Nature created by humans; in particular by our activities that contribute to global climate change. Technically, they are classified at present only as a 'threatened' species. Recent modelling suggests that their habitat range could be significantly protected by even comparatively modest restrictions on future greenhouse gas emissions [2].

Notwithstanding the fate of *U. maritimus*, a crucial gap remains between scientific data, public perceptions and whatever actual changes in policy need to be implemented. The oil industry and its political allies are quick to seize on any findings that point to uncertainties in prediction models, or that indicate unexpected robustness in the response of biological systems to environmental stress. The polar bear introgression paper is a case in point. By tracing the species back to a single female, the authors provide evidence of a rare event that might have saved the ancestral species from an earlier climactic crisis that threatened its survival. But this has no predictive value as to the likelihood of a comparable rare event or combination of rare events in the future that might save the bear or any other threatened species from depredations of the environment. Rather, it illustrates the vulnerability of highly specialized species to superficially innocuous or gradual changes in the natural geography of their habitat.

Science is not conducted in order to support one side or another in a political argument. Nor is it even conducted to 'prove' a specific scientific hypothesis. It certainly does not deal in certainties. It extrapolates the most reasonable interpretation of data, and offers predictions based on this interpretation. New data can always force us to adopt a different interpretation. Experts can also disagree, about both interpretations and predictions. The media have a duty to explain this principle and report scientific

findings accordingly. Where this is not the case, scientists become exposed to unwarranted challenges that question not only their expertise but also their integrity. The science associated with climate change is just one example, although clearly one of the most emotive.

In the end, this all boils down to the continuing need for a better, more symbiotic and also more transparent relationship between scientists and the media. Scientists should be better trained to communicate with the public, while journalists should be better trained in basic science and in the principles of scientific method. Scientists and journalists both aspire to high ethical principles, although they do not always appear to be fully honoured in practice. However, the main reason for these lapses is not malice or corruption, but simple miscommunication. Journalists who seem to be representing vested interests or fanning the flames of sensationalism are often simply unaware of, or cannot grasp, the arguments of substance buried in research literature and in the ways it is used. Conversely, scientists who, for very sound reasons, genuinely favour one interpretation of their data over others, can find themselves unjustly accused of fraud and manipulation in the popular press.

We have a clear duty to explain ourselves to the world, as well as to challenge erroneous presentations or interpretations of scientific data that appear in the public domain. Perhaps I should have been a little less reticent about engaging my Alaskan hostess on such matters. The Alaskan wilderness is magnificent in its icy desolation: on that, and on the need that it should be there for future generations to appreciate, there would be no disagreement.

REFERENCES

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2. Amstrup SC et al (2010) *Nature* **468**: 955–958

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