

Small-minded government

Last week's debacle in New Orleans highlights failings not just in the Bush administration, but in how the United States chooses to govern itself.

The term 'natural disaster' doesn't really do justice to the scenes that unfolded in the southern United States last week. For a start, the main cause of death in the aftermath of Hurricane Katrina will have been drowning as a result of the flooding in New Orleans that sprang from a widely anticipated failure of the city's flood defences. There is an overwhelming sense that the human calamity that befell the city was avoidable and represents a failure of the US government to protect its most vulnerable citizens.

Much of the blame for the painfully slow reaction to the hurricane has fallen on President George W. Bush, and for good reason. His belated and uninspiring personal response to the crisis has invited widespread criticism. The Department of Homeland Security, the newly created government department that fumbled the early rescue efforts, is viewed as Bush's creation and is ineptly staffed by the president's appointees.

Yet as criticism rains down on the administration, it should be pointed out that several contributory factors that led up to this fiasco preceded Bush's arrival in the White House. These include rampant poverty among African-Americans in New Orleans and other US cities; a systematic failure to build public infrastructure commensurate with America's vast wealth; the habitual creation of dysfunctional government agencies by congressional fiat; and the failure of scientists to successfully convey their concerns to policy-makers.

Previous US flood disasters — notably in Johnstown, Pennsylvania, in 1889 and in the New Orleans area in 1927 — prompted major political upheaval. It is not inconceivable that Katrina will force America's leaders to confront poverty and support public investment in infrastructure. But short of such far-reaching change, the disaster should lead to an immediate re-examination of how the federal government is organized, and how it responds to scientific advice.

The Department of Homeland Security was originally conceived in Congress as a response to the terrorist attacks of 11 September 2001. After initially opposing the idea, Bush co-opted it, removed its most potent aspect (the incorporation of the intelligence agencies) and implemented what was basically an amalgamation of existing

government departments, including the once-admired Federal Emergency Management Agency (FEMA).

According to many observers (see page 174), the reorganization has weakened FEMA and focused its attention on such scenarios as bioterror attacks. The public face presented by FEMA has been diminished, and the agency seems to have retreated from its traditional position at the forefront of disaster response. This weakening has left city and state governments in Mississippi and Louisiana bereft of leadership from the federal government at their moment of greatest need. The lesson is that sweeping reorganizations of government agencies in response to particular crises can have severe adverse consequences.

Knowledge of the risk of a storm-induced flood in New Orleans has been widespread in the scientific community for years, and researchers have sought to improve our understanding of it. Much of this work has taken into account stubborn facts such as the propensity of the poor, the elderly and the sick to ignore evacuation orders.

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There seems to be a disconnect, however, between the process that identifies such risks and the people who make the decisions that might manage them. There are indications that many senior politicians — not just President Bush — were simply unaware that the New Orleans flood risk even existed.

River management, meanwhile, has developed into something of a scientific backwater in the United States, some of its practitioners complain. It has also been a subject of bitter political contention — generally between the supporters of the Army Corps of Engineers, which likes to build levees, and environmentalists, who favour marshland conservation and more 'natural' river flow. In the aftermath of Hurricane Katrina, this dialogue-of-the-deaf must end, and the assessment and management of natural risks should be genuinely embraced as a national priority. ■

Proteomics' new order

An international organization is finally bringing discipline to the study of cells' sets of proteins.

The international Human Proteome Organisation (HUPO) was launched in 2001 to much scepticism. After all, the proteome — the complete set of proteins expressed by a cell's genome, and modified following expression — is a moving target. Its constituents change continuously according to the conditions to which

the cell is exposed. A 'human proteome project', in contrast to the Human Genome Project, would be a fuzzy, infinite endeavour. What role could there be for an international organization?

Proteomics was in any case enjoying a mixed reputation. The work of a small number of excellent labs was being diluted by vast data dumps of dubious value. The new techniques developed to identify proteins on a large scale were being snapped up by inexperienced users who pumped out data that often proved hard to reproduce. Even in the best hands, the various techniques had very different outputs, making comparison of results between labs difficult. And it was clear to many that the simple cataloguing of long lists of proteins

was not going to carry biology very far forward. The boom was threatened by a bust.

No longer. As last week's fourth annual HUPO meeting in Munich demonstrated, the proteomics community is finally putting its house in order. And HUPO itself is playing an indispensable role. Formally established with a permanent secretariat in Montreal and supported in part by the Canadian government, it has set up committees whose members — the scientific heavyweights of proteomics — select initiatives to come under HUPO's wing. Such projects will now be required to maintain HUPO's standards, and will be supported by HUPO's training and education programmes.

Seven initiatives have already been chosen, including proteome projects in the brain, liver and plasma. Crucially, a major focus will be HUPO's Proteomics Standards Initiative, which is developing standards for data generation and presentation, including standardized formats for databases of the full range of proteomics measurements.

For example, protein-protein interaction data have been generated using both the 'yeast two-hybrid' system and mass spectroscopy, and held in different databases. The initiative has agreed on a common database format that sends users to information in both databases when asked which other proteins a specified protein interacts with.

For mass spectroscopy data, the initiative is developing a list of information that a researcher must provide to accompany a claim that a protein has been identified, including the names of fragments and their individual masses. HUPO may eventually decide that the spectra themselves must be provided.

Endangered act

Efforts to reform the Endangered Species Act could harm America's most important conservation law.

For three decades, one piece of legislation has been responsible more than any other for protecting land that serves as a habitat for threatened species of plants and animals in the United States. The 1973 Endangered Species Act sought to help ensure the survival of diminishing species by preserving their habitat and aiding the development of science-based 'recovery plans' for their survival. Since its enactment, the act has created and maintained unprecedented natural laboratories for ecologists, and has become a widely admired model for conservation laws worldwide.

As Congress convenes this week, an effort will be made, under the guise of 'reform', to weaken the act. In the final two years of George Bush's presidency, with Republican majorities in the House and Senate, parties that have sought for years to weaken the act — including the mining, oil and logging industries, and property developers — see this as their best chance.

Drafts have been circulating of a proposed revision to the act that would give political appointees in the Department of the Interior far more discretion than they currently enjoy over how the act is exercised. Republican supporters of the bill seek to have it introduced by a Democrat so that the measure will appear bipartisan. But what

Two related activities represent important new resources. One is a proteomics database called PRIDE (www.ebi.ac.uk/pride), developed jointly by the European Bioinformatics Institute at Hinxton near Cambridge, UK, and Ghent University in Belgium, which will use the HUPO standardized formats.

The second reflects HUPO's commitment to a broader definition of proteomics in the context of systems biology — using proteomic techniques to follow particular proteins in a biological pathway. Five major protein-interaction databases have agreed to share curating efforts and provide information in a HUPO standardized format, in a consortium called the International Molecular Exchange (IMEX).

Without the umbrella of HUPO, hopes for standardization in proteomics would have been bleak, with researchers being more inclined to use their rivals' toothbrushes than their protocols. HUPO is involving the entire international community in its discussions to ensure consensus, and has already brokered a surprising number of agreements, with journals ready to assist in enforcing standards.

Even as HUPO brings order to chaos, researchers are proving the value that proteomics is bringing to biology, not just in identifying biomarkers useful in medicine, but also in understanding how relatively simple genomic information is transformed into the wonder that is the functioning cell. At the end of the day, proteins, not genes, are the business end of biology. ■

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is really needed is a show of bipartisan support for the existing law.

Scientific societies and universities need to become involved in this debate now, before the progress that has been made in conservation biology under the act is itself endangered.

The recent apparent rediscovery of the ivory-billed woodpecker in remnants of an old hardwood forest in Arkansas (see page 188) has amply demonstrated the value of the current law. As much as sixty years ago, ecologists were urging the protection of a forest in Louisiana, where what were thought to be the last of the statuesque woodpeckers were known to survive. But the calls were ignored, the forest was chopped, and the ivory-billed woodpeckers disappeared. Such an event would probably have been prevented by the Endangered Species Act. If the ivory-billed woodpecker has indeed re-emerged, it has done so in large part because the act protected the habitat of other threatened species.

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Everyone loves a rare exotic bird, and the Bush administration has directed some \$10 million specifically towards the habitat and recovery of the ivory-billed woodpecker. But the best way of ensuring the survival of threatened species is through the solid legislative framework that the Endangered Species Act provides, not through single-species projects generated at the whim of politicians. The best outcome for ecology is that the current law be left alone. ■