Support for the Human Cancer Genome Project

IN "AN OPEN LETTER TO CANCER RESEARCHERS" (Letters, 21 Oct., p. 439), S. J. Elledge and G. J. Hannon questioned the wisdom of asking the NIH to undertake the Human Cancer Genome Project (HCGP) (1) recently proposed by a National Cancer Institute Working Group, of which we were members. Elledge and Hannon object to the HCGP on the grounds that the project is unlikely to achieve its goals, that the expenditures would decrease funding available for investigator-initiated projects, and that the funds could be better used to support other work, such as genetic screens for factors required for the growth and survival of cancer cells.

Although we welcome debate about the Working Group’s proposal and do not dispute the value of genetic screens, the Letter misrepresents the HCGP. First, it undervalues the goal of the project, which is to provide as thorough an account as currently possible, now that the human genome has been sequenced, of the genetic damage responsible for many different types of human cancer. Second, it fails to describe the systematic and progressive aspects of the plan: to begin with pilot projects and to link clinical information about tumor samples to the underlying genetic changes in cancer cell DNA. The proposal limits resequencing to the coding exons of 1000 to 2000 genes, not entire genomes, to evaluate the feasibility of resequencing genes on the scale proposed, and giving methods for characterizing cancer genomes, to evaluate the feasibility of resequencing genes on the scale proposed, and to examine the potential for discovery. We think that these are responsible first steps toward the goals of the HCGP.

The National Cancer Institute and the National Human Genome Research Institute have recently endorsed the idea of conducting pilot projects to compare existing methods for characterizing cancer genomes, to evaluate the feasibility of resequencing genes on the scale proposed, and to examine the potential for discovery. We think that these are responsible first steps toward the goals of the HCGP.

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References
3. H. Davies et al., Cancer Res. 65, 7591 (2005).

Attrition of Disaster Losses

IN HIS VIEWPOINT "INSURANCE IN A CLIMATE OF change" (12 Aug., p. 1040), E. Mills suggests that changes in climate have been responsible for some part of the trend in recent decades of increasing damage related to extreme weather. This claim is not supported by the peer-reviewed literature, including the most recent report of the Intergovernmental Panel on Climate Change (IPCC) (1).

Over recent decades, the IPCC found no long-term global trends in extratropical cyclones (i.e., hurricanes or winter storms), in “droughts or wet spells,” or in “tornados, hail, and other severe weather” (2). Logically, in the absence of trends in these weather events, they cannot be responsible for any part of the growing economic toll. The IPCC did find “a widespread increase in heavy and extreme precipitation events in regions where total precipitation has increased, e.g., the mid- and high latitudes of the Northern Hemisphere” (3). But at the same time, the IPCC warned that “an increase (or decrease) in heavy precipitation events may not necessarily translate into annual peak (or low) river levels” (3). Indeed, although the IPCC found some changes in streamflow, it did not identify changes in streamflow extremes (i.e., floods) and concluded on a regional basis, “Even if a trend is identified, it may be difficult to attribute it to global warming because of other changes that are continuing in a catchment” (4). These findings are consistent with research seeking to document a climate signal in a long-term record of flood damage that has concluded that an increase in precipitation contributes to increasing flood damage, but the precise amount of this increase is small and difficult to identify in the context of the much larger effects of policy and the ever-growing societal vulnerability to flood damage (5, 6). A recent study by the International Ad Hoc Detection and Attribution Group concluded that it was unable to detect an anthropogenic signal in global precipitation (7).

Presently, there is simply no scientific basis for claims that the escalating cost of disasters is the result of anything other than increasing societal vulnerability (8).

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Damage to oil storage tanks in Cameron, Louisiana, caused by Hurricane Rita.

and ocean circulation and elevated ocean heat content, as well as sea-level rise and associated coastal erosion, which, in turn, help drive many impacts of concern (5, 6). The recent literature on the socially and economically devastating European heat wave of 2003 attributes a very high (90%) confidence that human activity doubled the probability of the event’s occurrence (7).

It is clear that global economic losses from weather-related events are rising far faster than inflation, economic growth, or population. Thorough attribution analysis must address questions such as:

Why are losses from weather-related events rising faster than those from non-weather events?

What are the offsetting effects of human efforts to curb losses (building codes, early warning systems, fire protection, flood defenses, land-use planning, crop irrigation, etc.)? As noted by Pielke Jr. and co-authors with respect to flood risk ([8], p. 1081), “[s]trengthening defenses, land-use planning, crop irrigation, etc. will be amplified headline-catching catastrophes.”

The Army Corps of Engineers estimates that flood control measures have prevented 80% of U.S. losses that would have otherwise materialized (9).

How do we explain rising economic losses (e.g., losses to crops in the heartland or physical infrastructure built on melting permafrost) that are only weakly linked to oft-cited demographic factors such as populations clustering around coastlines?

Lasty, why would rising numbers of events (10) not translate into rising costs?

Assuming that only socioeconomic factors—rather than rising emissions— influence losses may yield ill-founded policy recommendations that focus exclusively on adapting to climate change while dismissing energy policy as a legitimate part of the toolkit for responding (11). As an indication of the potential value of emissions reductions, the Association of British Insurers, in collaboration with U.S. catastrophe models, estimated that U.S. hurricane or Japanese typhoon losses would vary by a factor of five for scenarios of 40% and 116% increase in pre-industrial atmospheric CO2 concentrations (12). Others have projected a fourfold increase in mid-Atlantic U.S. flood loss costs under climate change (13).

In a narrow sense, it would be a relief to learn that the only cause of rising losses is that people are moving more into harm’s way. That conclusion would, however, be premature and scientifically indefensible given the paucity of data, limitations of available analyses, and consistency between observed impacts and those expected under climate change. Nor should we make the opposite mistake of attributing the observed growth in losses solely to climate change. Rather than “proof” by vigorous assertion, the constructive approach is to better understand the compounding roles of increasing vulnerability and climate change, and take affordable precautionary steps to reduce greenhouse gas emissions and adapt to the changes rather than waiting for unaffordable consequences.

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References and Notes
1 International Ad Hoc Detection and Attribution Group, J. Clim. 18, 1291 (2005).
10 Per EM-DAT database, Center for Research on the Epidemiology of Disasters at the Université-Catholique de Louvain in Brussels.
emphasis on reducing human-induced mortality of right whales. The species, though, is not restricted to U.S. waters; it ranges from Florida to the Canadian Maritimes. It is listed as Endangered under both the U.S. Endangered Species Act and the Canadian Species at Risk Act.

U.S. and Canadian protection and recovery policies for North Atlantic right whales, administered respectively by NOAA and Fisheries and Oceans Canada (DFO), are not precisely the same. Although the current U.S. and Canadian plans both make reducing mortality due to ship strike and net entrapment a higher priority than reducing habitat degradation, the Canadian plan does not address direct human lethal take (1, 2). Bilaterally agreed-upon management policy is essential for the protection of globally endangered migratory species that cross political boundaries. A precedent was set by the bilateral recovery efforts in aid of the whooping crane. Some level of cooperation between the two countries has been achieved regarding the right whale, but it is insufficient to call only for changes to NOAA management policy when coordinated, bilateral management; regular joint meetings; and cooperative actions are needed. The new U.S. recovery plan calls for bilateral cooperative efforts to maximize protection for right whales. Canadian recovery planning should follow suit and both jurisdictions should work together.

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References

Response
We agree with Sayles and Green. Migratory transboundary species like the right whale require bilateral efforts at many levels. For example, the U.S. National Marine Fisheries Services’ Advanced Notice of Proposed Rulemaking (1) does require the U.S. government to work with Canada to develop bilateral agreements related to shipping. Further, most co-authors on the Policy Forum have benefited from close working relationships with both researchers and managers within Fisheries and Oceans Canada (DFO).

Several breakthroughs in right whale conservation have already been made in Canada, including relocation of the internationally adopted shipping lanes in the Bay of Fundy to reduce ship kills, as well as the official recognition of two Conservation Areas where right whales aggregate. The Bay of Fundy shipping lane changes resulted from efforts by Irving Oil, Transport Canada, DFO, the International Maritime Organization, fishing organizations, whale watching groups, and right whale conservationists. Such multilateral partnerships are especially important in conserving transboundary species.

However, we are aware that DFO’s ability to really make a difference to right whale conservation is dependent on funding for their initiatives, and support for recovery plan implementation has been limited. We encourage both the Canadian government and nongovernmental organizations to support increased funding for right whale conservation in Canada and welcome additional collaboration with our Canadian colleagues, particularly in the development...
of bilateral measures to ensure the protection of right whales throughout their range.

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Reference
1. Department of Commerce, National Oceanic and Atmospheric Administration, 50 CFR Part 224

CORRECTIONS AND CLARIFICATIONS

Reference
1. Department of Commerce, National Oceanic and Atmospheric Administration, 50 CFR Part 224

RESPONSE TO COMMENT ON “How Science Survived: Medieval Manuscripts’ ‘Demography’ and Classic Texts’ Extinction”

John L. Cisne

 Declercq’s rejection of an otherwise well-supported model is based on demonstrably too narrow an interpretation of the use of Bede’s De Temporum Ratione and on questionable appreciation of predictive modeling as a complementary alternative to traditional deductive methods. Additional evidence on library holdings further supports the original conclusions regarding the survival of manuscripts.

Full text at www.sciencemag.org/cgi/content/full/310/5754/1618c

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