

## Climate did in giant Mongolian mammals

Mammals romping around Mongolia 40 million years ago could put to shame the stars of modern zoos. During the Eocene epoch, early relatives of rhinoceroses reached four and a half times the weight of an adult elephant, placing them among the largest land mammals ever. These great creatures flourished in warm, wet woodlands but disappeared because the climate went sour, according to a comprehensive study of Mongolia's ancient inhabitants.

The new analysis, involving 454 fossil species, was carried out by Jin Meng of the University of Massachusetts at Amherst and Malcolm C. McKenna of the American Museum of Natural History in New York. The mammal community, they report in the July 23 *NATURE*, changed markedly 33.5 million years ago, just after the end of the Eocene epoch. A world dominated by rhinolike creatures and many medium-size mammals gave way to one ruled by rodents and rabbits. At the same time, the global climate cooled by 13°C, and the Mongolian forests turned into dry, open grasslands where smaller mammals had the advantage, says Meng.

Meng and McKenna compare the major evolutionary shift, which they name the Mongolian remodeling, to a roughly contemporaneous event in Europe. In both places, cool grasslands replaced warm forests, large herbivores disappeared, and smaller plant-eaters rose to dominance.

Past studies have yielded some contradictory conclusions on whether climate shifts at the end of the Eocene influenced the extinction and evolution of mammals.

John Alroy of the National Museum of Natural History in Washington, D.C., is not convinced by the new report. "It's possible [that the cooling caused a major change in Mongolian communities], but I don't think their data are robust enough to tell." In his study of North American mammals, published in the May 1 *SCIENCE*, Alroy found that medium-size tree climbing mammals disappeared in the middle of the Eocene, not at the end of this epoch. —R.M.

## Attacking an enigma with engineering

One of the biggest headaches in paleontology is the so-called Ediacaran fauna—a group of squishy, bathmat-shape beings that filled the oceans half a billion years ago. Some of these sheetlike creatures are recognized as the first known animals. Others have resisted categorization, leading some researchers to suggest that these organisms weren't animals at all but belonged to some extinct kingdom. Two paleontologists have delved into this debate with a simple engineering test designed to explore what these life-forms were made of.

Kenneth M. Schopf of Harvard University and Tomasz K. Baumiller of the University of Michigan in Ann Arbor studied a fossil of the organism called *Dickinsonia*, which had a rippled oval body. Some paleontologists have classified *Dickinsonia* as the earliest known worm, while others have envisioned it a member of a separate kingdom—giant unicells filled with multiple nuclei and protoplasm.

Schopf and Baumiller fashioned two types of *Dickinsonia* models, one using latex molds and the other employing plastic bags filled with solutions of Karo syrup. They varied the densities of the models from a value equal to that of water to a much meatier substance. Then they observed how each model fared when placed in a tank with a moving current of water.

Models with densities resembling those of worms and of protoplasm were so light that they got pushed by the current, the scientists report in the summer issue of *LETHAIA*. The results suggest either that *Dickinsonia*, which lived on the seafloor, was denser than paleontologists previously suspected or that the organism was held down by the mats of microbes that covered the ocean bottom at the time. —R.M.

## Wetlands accounting—all wet?

Nine years ago, President George Bush established a national policy of "no net loss of wetlands." Though federal agencies now spend some \$790 million a year on wetlands protection and development, a study released July 1 by the U.S. General Accounting Office finds no agreement on how to evaluate the success of these activities in curbing wetlands loss. The reason, according to this congressionally commissioned study, is that there is no single reliable national reckoning of wetlands status.

For instance, the two major wetlands inventories provide contradictory tallies. While the total area identified as wetlands by the two surveys varies by only about 10 percent—11 million acres—the studies depict very different trends.

One of them finds a gross gain in wetlands of 2.1 million acres between 1985 and 1995, while the other finds only a 770,000 acre gain over roughly the same 10 years. And the former identifies a 3.4 million-acre gross decade-long loss—more than twice the second's estimate of loss. Finally, while losses that the surveys attribute to agriculture vary by a factor of four, those ascribed to land development differ 11-fold.

Changes in assessment do appear to be in the offing, however. The new report notes that a federal task force in May drafted a formal plan to improve and consolidate the wetlands tallies into a single national inventory by the year 2000. —J.R.

## U.N. calls for action on climate change

With scientific data emerging to show that 1998 may well be the hottest year on record (*SN*: 7/25/98, p. 52), the United Nations Environment Program issued a statement in July calling on policymakers to immediately enact new programs to cut emissions of carbon dioxide and other greenhouse gases.

"Significant emissions cuts" cannot be delayed for the time it will take for the Kyoto Protocol on climate change to enter into force (*SN*: 12/20&27/97, p. 388), according to Klaus Toepfer, who directs the agency, based in Nairobi, Kenya. Conceding that uncertainties remain as to how climate change will play out regionally, he argued that "we have more than enough credible evidence to know that global climate change poses tremendous risks. We must take out insurance now . . . by urgently adopting energy efficiency and other win-win measures."

The latter measures—such as increased use of solar and other renewable energy sources, expanded low-cost public transit, tradable emissions permits, and a phasing out of subsidies that foster fossil-fuel use—could all be justified even in the absence of climate change, he maintains. —J.R.

## Job jeopardy may imperil health

Job insecurity is enough to make one sick, finds a new study. Rumors—which turned out to be accurate—that their department was to be sold to the private sector began circulating among a group of people who were participating in a survey of London-based government workers. The group of 666 men and women is part of the Whitehall II Study, which is examining long-term health of some 10,000 British civil servants.

Over the roughly 4-year period from the first rumors to completion of the privatization, the health of the department's employees declined as assessed by many measures, Jane E. Ferrie of University College London Medical School and her colleagues report in the July *AMERICAN JOURNAL OF PUBLIC HEALTH*. Other study participants, whose job security had not been threatened, did not show similar declines. Initially, there had been no difference in the health of these two groups.

Among the people who faced job insecurity, rates of ischemic heart disease became 40 to 60 percent higher and blood cholesterol concentrations tended to climb. These workers also proved far more likely to forgo exercise, gain weight, sleep more than 9 hours, and divorce or separate from a spouse. —J.R.