

# RANDOM SAMPLES

edited by RICHARD STONE

## A Lesson In Biodiversity Economics...

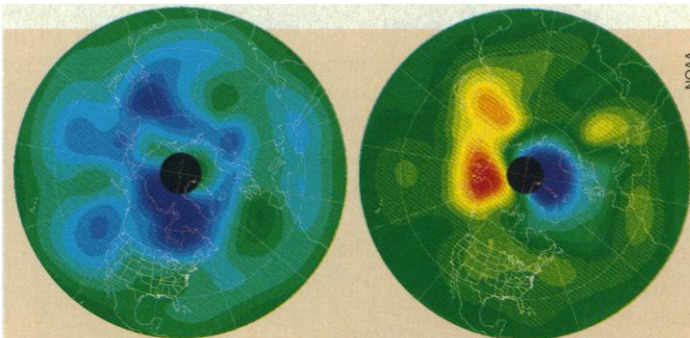
The showdowns between greedy developers and eco-imperialists over biodiversity preservation needn't continue forever. A plan released last week by the Wilderness Society, a Washington, D.C.-based conservation organization, offers a strategy to soothe both extremes: Acquire and preserve some private lands for their biological value, but use financial sweeteners to appease landowners.

The society's plan, dubbed "Lifelands," calls for establishing a protected network of connected public and private lands to preserve ecosystems. The concept of setting aside vast tracts of biologically unique or important land isn't new: Last year, a group of conservation biologists proposed the "Wildlands Project" to do just that (*Science*, 25 June 1993, p. 1868).

But Lifelands picks up where Wildlands left off—on the economic side of the biodiversity equation, argues plan architect Mark Shaffer, vice president for resource planning and economics at the Wilderness Society. Lifelands calls for changes in federal regulations, such as credits for property and estate taxes on land managed "in the interest of biodiversity," or tax penalties for developing land in a habitat-degrading way. The Wilderness Society stopped short of putting a price tag on its proposal. Nevertheless, says Harvard biologist Edward O. Wilson, Lifelands is "a potentially revolutionary idea."

Legislators who go to bat for Lifelands, however, may want to brace for some knockdown pitches. The nascent National Biological Survey—the Department of Interior's effort to inventory the nation's biota—has run into stiff opposition from some members of Congress who assert that the survey's data could be used to stymie development. Lifelands might run afoul of those same legislators, says a House staffer who's monitoring the survey bill.

Shaffer acknowledges that the society will have to woo key law-



The ozone blues. Mt. Pinatubo's blast led to sharp drops in ozone levels by spring 1993 (left); by this spring, the ozone had rebounded.

## Ozone Has Recovered From Pinatubo's Jolt

The ozone layer is slowly eroding again, and researchers are much relieved. It's not that scientists are truly happy to lose stratospheric ozone, Earth's shield against cancer-causing ultraviolet radiation, but they are pleased that the erosion is occurring much more gradually this year than it did in early 1993. The thickness of the ozone layer, as seen from space this spring, is easing health concerns and comforting researchers whose models predicted the sluggish pace.

Things looked a lot worse last spring, when ozone concentrations over the mid-latitudes of the Northern Hemisphere had plunged to a record low of 9% below normal (*Science*, 23 April 1993, p. 490). Many atmospheric chemists tentatively linked these losses to debris from the June 1991 eruption of the Philippines' Mount Pinatubo. The volcano's debris, they theorized, might have accelerated ongoing ozone destruction by the chlorine of synthetic chlorofluorocarbons (CFCs).

Now the chemists are even more confident. It "looks like a major part of the reduction was due to Pinatubo," says atmospheric chemist David Hofmann of the National Oceanic and Atmospheric Administration in Boulder. The debris' distribution can explain both the onset of the ozone loss and its unusual persistence, says Guy Brasseur of the National Center for Atmospheric Research in Boulder, who has modeled Pinatubo's effects.

The slower burn may be reassuring, but atmospheric chlorine will continue to increase until controls on CFC emissions take hold late in this decade. Pinatubo or no, things will get worse.

makers. But, he says, "if the science is right, then we need a network of protected areas." If the country wants biodiversity, the issue then becomes how to pay for it.

## ...Versus a Lesson in Biodiversity Law

Taking an ecosystems approach to land management may be on the cutting edge of conservation biology, but it has made little impression on the U.S. Forest Service and a U.S. District Court judge. Earlier this year, the judge ruled against a group of Wisconsin botanists and environmentalists who had sued the Service in

1990, alleging it ignored these advances and thus mismanaged Wisconsin's Nicolet and Chequamegon national forests. Now the botanists plan to appeal.

The botanists had argued that federal laws require the Forest Service to manage its lands using the latest scientific thinking on ecosystems, rather than focus on protecting a handful of species—such as the Northern spotted owl—that may or may not reflect the health of a forest (*Science*, 18 September 1992, p. 1618). To make their case, the botanists solicited testimony from a dozen top guns, including Missouri Botanical

Garden Director Peter Raven.

But in court the Forest Service practices prevailed. "The court's unwillingness to impose upon the Service a particular scientific theory reflects...the more general idea that in areas of scientific uncertainty, the agency's choice of methodology is entitled to considerable deference," wrote Judge John W. Reynolds of the U.S. District Court in Milwaukee, who handed down decisions on each forest in February and March. The Service "did not act irrationally" in its approach, he found, and so dismissed the cases.

The botanists haven't thrown in the towel: They were expected to file appeals this month with the 7th U.S. Circuit Court of Appeals in Chicago. Says plaintiff Donald M. Waller, a University of Wisconsin botanist, "We were concerned that letting the decisions stand would create problems down the line in terms of having the best science incorporated into land management."

## NSF Gives Urban Schools a Hand

The National Science Foundation (NSF) has launched a \$375-million program to narrow the huge gap in math and science skills between mostly white suburban students and their predominantly poor, minority urban peers.

The challenge is a daunting one: 75% of white eighth graders meet or exceed minimum math standards, for example, as compared with 37% of Latino and 26% of African-American students. But NSF officials say they won't be satisfied with anything less than classroom success. "The goal is to change student performance," says Joe Danek, head of NSF's systemic reform programs. "If the gap hasn't narrowed, then the program is a failure."

The program, called the Urban Systemic Initiative, is intended to give up to \$15 million over 5 years to the 25 biggest, poorest, and most heavily minority school districts in the United States. The schools have promised to use the money to enhance



existing efforts to improve science and math programs in grades K through 12 by adding courses, improving teacher skills, and working with local universities and community and business groups. The program dovetails with NSF's 3-year-old Statewide Systemic Initiative, which gives 26 states up to \$10 million over 5 years but doesn't target poorly performing local districts.

Senator Barbara Mikulski (D-MD), an early program backer and chair of the appropriations subcommittee that funds NSF, has promised to allocate as much as \$25 million a year to keep the program alive. But Luther Williams, assistant NSF director for education and human resources, says his office will need closer to \$65 million a year for the next 5 years to fully fund the 25 cities eligible for the initiative. Williams says the initiative is so important that he's prepared to redirect funds from other educational programs if Congress fails to deliver.

The first round of \$2-million awards, announced last week, went to the following school districts: Baltimore, Chicago, Cincinnati, Dallas, Detroit, El Paso, New York City, Miami, and Phoenix.

## DOE Lab Lives PR Nightmare

During the Cold War, government research labs such as Livermore and Los Alamos had to live with somewhat sinister reputations because of their weapons work. Now it's Brookhaven National Laboratory's turn. The mild-mannered research outfit on Long Island is fully open to the public and does no defense research or other secret work. But that hasn't stopped the press, activists, and even a couple of scientists from accusing it of everything from contributing to Long Island's high breast cancer rate to keeping aliens in captivity.

This year's blitz of bad press started in February, when the Fox TV network broadcast a documentary publicizing allegations by a group known as the Long

Island UFO Network. Seems that Brookhaven has a history of maltreating aliens. In 1990, the UFO Network claimed that Brookhaven scientists used a Star Wars laser to "scramble the propulsion drive" of a UFO, crashing it and killing its 18-member alien crew. The UFO Network didn't blame the lab for the crash of a second UFO 2 years later, but it claims that the lab's fire trucks quickly arrived and spirited aliens and wreckage away for study.

Things have degenerated, if possible, since then. On 31 March, a fire at a Brookhaven research reactor released 10 microcuries of radioactive gas into the building it's housed in. The lab insists the amount was barely detectable and caused no apparent harm, but that didn't stop the *New York Times* and other papers from linking the radiation release to an unpublished study from retired University of Pittsburgh professor Ernest Sternglass, who calculated that the Brookhaven area has the highest breast-cancer rate in the county.

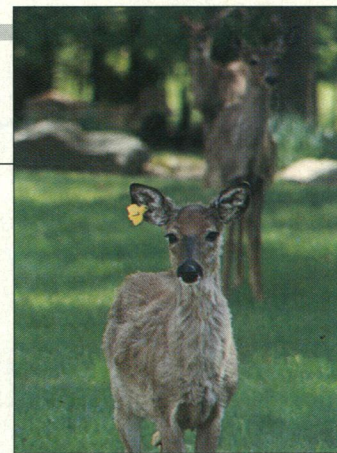
The *Times* article finally roused Brookhaven officials to

fight back. On 21 April, deputy director Martin Blume fired a letter to the *Times* deploring the "irresponsible" allegation. Blume noted that, among other flaws in the study, Sternglass had placed Brookhaven in the wrong part of the county: The lab, Blume wrote, is actually in the region with the lowest cancer incidence.

In any case, the *Times* missed the real story. A Long Island newspaper—*The Tide*—reported last month that anonymous tipsters have revealed that the fire broke out when Brookhaven researchers tried to analyze the most recent UFO debris.

## Heavy Artillery for a Deer Dilemma

A U.S. lab is under siege. So far the human casualties have been kept to an absolute minimum, but nerves are getting frayed. Hunters are poaching the numerous deer on the National Institute of Standards and Technology (NIST) campus, and the idea that people are shooting guns on campus "scares us to death," admits John Kennedy, an NIST program analyst. Therefore, the



**Deer prudence.** Federal lab will try birth control on whitetails.

fed at the Gaithersburg, Maryland, facility decided to negotiate a cease-fire. Not with the hunters, mind you—the NIST gang is taking aim at the deer. They're going to shoot the beasts up with birth control.

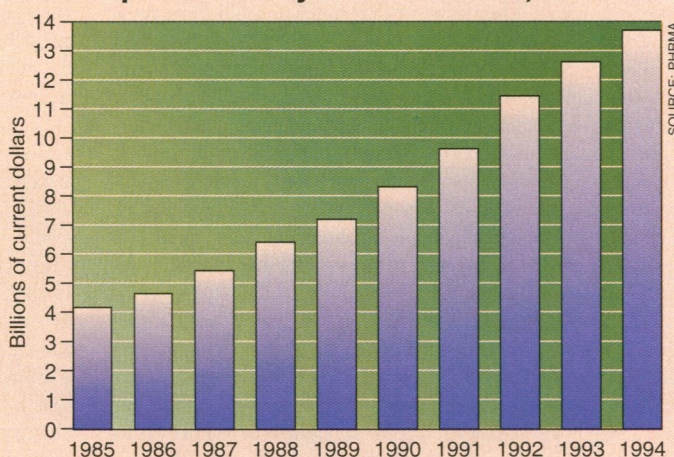
The 570-acre NIST compound is home to about 250 white-tailed deer, nearly 10 times the number that ecologists say should be there. The deer have become quite a nuisance—eating federal shruberies, leaping through closed windows, and luring poachers.

NIST officials don't advocate violence; they simply want their campus back. So the agency sought help from the Humane Society, which referred them to Jay Kirkpatrick, a wildlife biologist at Eastern Montana College who had developed a contraceptive vaccine for the wild horses of Maryland's Assateague Island. The vaccine, it turns out, works on horses, lions, monkeys...and deer.

Once injected by dart gun into a target animal, the vaccine—made from sperm-receptor proteins from pig eggs—incites the animal's immune system to make antibodies that react to proteins on its own eggs. Sperm can't dock to the antibody-covered egg. All it takes is two inoculations and yearly boosters to protect animals from pregnancy, Kirkpatrick says. Immunocontraception is reversible, requires little handling of animals, and doesn't introduce hormones into the food chain, he notes.

Operation Inoculation, as the campaign could be called, will begin in late summer, after the fawning season, if the Maryland Department of Natural Resources approves the plan.

## R&D Expenditures by PMA Members, 1985-94



**Girding for battle.** The Pharmaceutical Manufacturers Association, attempting to better position itself for the health-care reform wars ahead, is giving itself a more scientific-sounding name: the Pharmaceutical Research and Manufacturers of America (PhRMA).

PhRMA explains that the purpose of the name change is "to emphasize the expanding role of research and innovation among its members." Indeed, despite the widespread downsizing and retrenching that's going on in industrial research, R&D expenditures by PhRMA members have climbed steadily—from \$200 million in 1958 to an estimated \$13.8 billion this year.