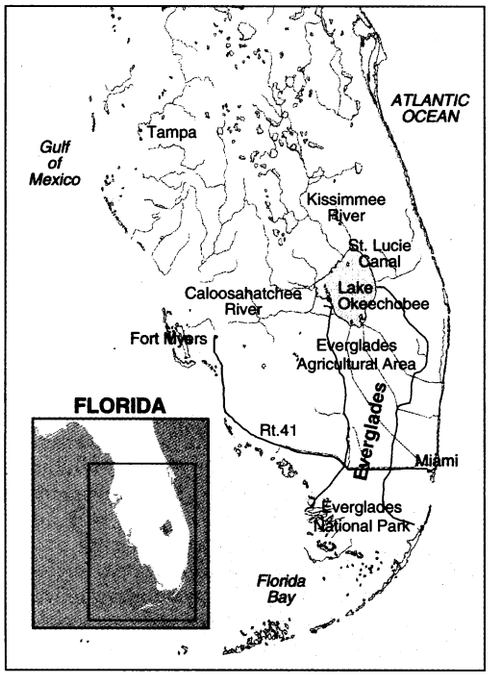
ECOLOGICAL RESTORATION

Plan to Quench the Everglades' Thirst

Vice President Al Gore last week presented Congress with a Herculean challenge: To restore a more natural water flow to the Everglades, the vast wetland in southern Florida, while safeguarding the booming region's water supply. The $7.8 billion project, drawn up by the Army Corps of Engineers, would be the most expensive restoration effort ever undertaken. It calls for a 20-year overhaul of southern Florida's water management system that would, ironically, undo large portions of an equally ambitious plumbing system built by the Corps decades ago.

Often called the "River of Grass," the Everglades once was a 100-kilometer-wide, shallow sheet of water flowing south at a rate imperceptible to the eye from Lake Okeechobee to Florida Bay. It sustained a unique ecosystem including marsh grasses, cypress trees, herons and other birds, alligators, and panthers. Agriculture and mushrooming urban centers have eaten away half the Everglades. But a particularly devastating blow was dealt after a disastrous flood in 1948 prompted the Corps to devise a system to curb flooding and create a dependable water supply: over 1600 kilometers of levees and canals that channel water from the area north of the Everglades to cities and plantations.



Ailing ecosystem. Massive restoration of the Everglades could get under way next year.

The waterworks also dump 6.4 billion liters of freshwater into the Atlantic and the Gulf of Mexico every day. As a result, the Everglades has become drier, and its denizens are suffering. Since the turn of the century, wading bird populations have declined over 90%, and dozens of animals and plant species are near extinction. Meanwhile, the salt balance in the estuaries on both coasts is disturbed by too much freshwater, harming seagrasses and animals. "The irony is that we've made freshwater a pollutant," says David Guggenheim, co-chair of the Everglades Coalition, a group of national and Florida conservation organizations.

Now the Corps hopes to undo its grand mistake. Its plan (www.restudy.org), scheduled to begin next year, calls for stopping the diversion of water and letting it flow naturally. To do this, engineers would remove some 400 kilometers of canals and levees. To prevent flooding during heavy rainfall, the Corps would turn two limestone quarries near Miami into reservoirs and create 16 more reservoirs elsewhere. And in an unprecedented engineering feat, over 300 wells would be drilled around Lake Okeechobee to pump up to 6 billion liters of freshwater per day several hundred meters underground into the Floridian Aquifer. To give the River of Grass unfettered access to Florida Bay, state and federal agencies would buy 24,000 hectares of farmland—and allow it to flood—and build bridges to elevate 30 kilometers of U.S. 41, also known as Tamiami Trail, which connects the Florida coasts.

Most environmental groups applaud the plan. Its size and sophistication make it "a cutting edge project," says Stuart Strahl, vice president of the National Audubon Society. "We're really setting precedents here" for future restorations, he says. Others voice doubts: The Sierra Club, for instance, questions the wisdom of filling the aquifer. Drilling is expensive, and pumping unprecedented amounts of water into the ground could crack the aquifer, says the Sierra Club's Frank Jackalone, who would rather see more water kept in reservoirs. He worries the water may become contaminated if it reaches nearby underground waste pits.

But Jackalone and other skeptics say their minds are eased by an Interior Department decision to ask the National Academy of Sciences (NAS) to help organize a review of the project, after a trio of prominent ecologists last February warned of what they viewed as the plan's "deep, systematic" scientific failings. NAS plans to appoint a committee later this month. "We are now confident that the panel will make the necessary fixes," says Jackalone.

The plan also has the backing of Florida politicians, including Governor Jeb Bush and the entire congressional delegation. But it may face hurdles in Congress. In April the General Accounting Office, Congress's independent financial watchdog, concluded that the plan's cost—to be split between the state and the federal government—could rise to $11 billion. It remains to be seen whether legislators from around the country will be willing to channel billions into one state.

However, administration officials and conservationists are confident the project will stay on track. "We're restoring a whole ecosystem instead of a single species," says Audubon president John Flicker. "The whole world is watching." **–MARTIN ENSERINK**

ANIMAL WELFARE

New Indian Rules Disrupt Research

NEW DELHI—Indian scientists have been unable to import animals for research this year because of inaction by a new government committee set up to review such requests. In the meantime, the relationship between biomedical researchers and government regulators has taken a turn for the worse as the Animal Welfare Board last week threatened to close the country's main center for supplying laboratory animals after it failed to follow new registration procedures.

The tensions grow out of a law that went into effect on 15 December 1998 to safeguard an estimated 5 million animals, from mice to primates, used at 5000 labs throughout the country. It gives authority for reviewing import requests to a Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), which has met several times but taken no action on scores of requests. Previously, Indian scientists could obtain animals directly from overseas sources once they obtained approval from their own institutions.

The delay has led some to take extreme steps. Neuroscientist Sumantra Chattarji of the National Center for Biological Sciences in Bangalore headed to Cambridge, Massachusetts, to use genetically engineered mice developed by MIT biologist Susumu Tonegawa for a project on learning and memory in the hippocampus. Immunologist Satyajit Rath of the National Institute of Immunology in New Delhi, awaiting approval to buy knockout mice from the Jackson Laboratory in Bar Harbor, Maine, warns that continued delays "are likely to prove disastrous to Indian science." CPCSEA officials say that they are working through the backlog "as quickly as possible."

Indian researchers can still use animals bred in the country, but the main lab animal

SOURCE: SOUTH FLORIDA WATER MANAGEMENT DISTRICT

supply facility, the National Center for Laboratory Animal Sciences in Hyderabad, fell afoul of another new requirement for labs working with animals that involves submitting registration papers and passing an on-site inspection. Officials at the national center, which each year ships some 40,000 animals to nearly 200 research facilities around the country, believed that paperwork filed last summer was sufficient to meet the new rules. But the Animal Welfare Board said that the center missed a 15 February deadline for compliance, and last week the board notified the center that it would have to close unless officials could demonstrate why it should remain open.

Negotiations have begun to resolve the situation, and scientists are hopeful that the problem will be cleared up. "We will not let this happen," says Nirmal Kumar Ganguly, director-general of the Indian Council of Medical Research. "A national facility just cannot be shut down."

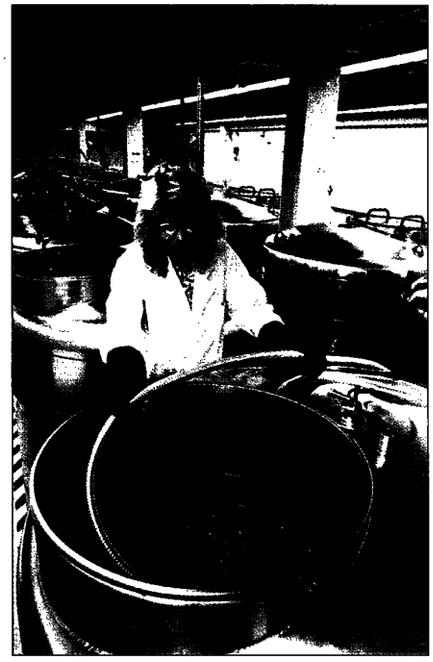
For their part, animal welfare officials say they want to make sure that researchers are taking the new law seriously. They note that some 152 labs, including most major public and private facilities, have complied with the new registration requirements. "The rules are applicable equally to everybody," says one CPCSEA official who requested anonymity. "And if some can comply, why can't the others?" **–PALLAVA BAGLA**

AGRICULTURAL RESEARCH

Report Tells USDA to Narrow Its Focus

The research program of the U.S. Department of Agriculture (USDA) needs a major overhaul, building stronger ties to the outside research community and focusing more sharply on fewer research priorities, according to a federally appointed task force that laid out a blueprint for such reforms. In a draft report obtained by *Science*, the panel urges that USDA build fewer new labs, shut down many existing research stations, and increase partnerships with academic and corporate labs. "We need to spend the money on science and not facilities," says the panel's chair, Bruce Andrews, until recently the director of agriculture for the state of Oregon. USDA's in-house labs, the report says, should concentrate on work that can best—or only—be done by the federal government.

This sort of advice has been offered before, but it may pack an additional wallop this time, because the report was done at the request of Congress, which approved much of the overbuilt research enterprise that the report decries. The 14 members of the task force include cattle and soybean producers, farmers, and a state agricultural official as well as university scientists. "I think they're on target," says Lou Sherman, chair of biology at Purdue University in West Lafayette, Indiana, who has seen the report's conclusions. But task force members haven't yet signed off on the final report, which is due out in a few weeks.



Rock-solid research. The National Seed Storage Laboratory in Fort Collins, Colorado, freezes seeds to preserve germplasm, work seen as a "uniquely federal" role.

The task force was created by the 1996 Farm Bill, which calls for a 10-year strategic plan for federally funded agricultural research facilities "to ensure that a comprehensive research capacity is maintained." Congress and other observers want to make the most of a $1.6 billion USDA research budget that hasn't risen in recent years. The task force notes that this money must be stretched across some 370 labs—the bulk of them within the Agricultural Research Service (ARS) but also the Forest Service and land grant university labs—leaving many badly in need of repair and short of money for doing science. A big problem is the steady flow of new facilities, such as cranberry research in New Jersey and a swine center in Iowa, "dictated by politics" and stuffed into USDA's budget as a favor to individual legislators.

Andrews, who is now head of marketing for the Port of Portland, says the panel considered options from the status quo to a system looking outward—"the NIH [National Institutes of Health] model." It chose "a middle road," he says. Under its plan, USDA would classify programs as "uniquely federal," "appropriately federal," or neither. Uniquely federal projects, such as storing genetic materials, studying highly infectious foreign animal diseases, and work relating to national security issues (such as bioterrorism), represent, perhaps, one-fourth of what USDA does, Andrews says. Only this work should continue in federal facilities. Labs for "appropriately federal" work, such as climate change and biodiversity, should be done by universities or the private sector whenever possible. Andrews anticipates that USDA will do "less and less [of this research]" over the next decade.

While the task force asked USDA to finish this classification by July 2000, it went ahead and identified about 23 labs that should be closed or consolidated. It even suggests that USDA's flagship facility in Beltsville, Maryland, should consider relocating, because its once-rural setting is now valuable suburban real estate.

Andrews says he knows the report will ruffle feathers. "Any system that's been in lock step for the last 10 or 20 years I'm sure will view this as an attack." Already, he adds, the task force's ideas have "created some hostility" from the ARS and Congress. ARS associate administrator Ed Knipling declined to comment until the report is officially released, but noted that "the department does recognize it as somewhat controversial." Sherman agrees. "It's going to take a lot of political will on the part of the executive branch and Congress" to turn its recommendations into reality, he says.

–JOCELYN KAISER

SCIENTIFIC COMMUNITY

Tragedy Devastates Radio Astronomers

PARIS—Scientists and staff at the Institute of Millimetric Radioastronomy (IRAM), one of the world's leading radioastronomy research centers, were in shock last week after a cable-car accident on 1 July killed 20 people, all workers employed by IRAM and its subcontractors. The cable car, which was ferrying the workers to IRAM's facility 2552 meters atop the Bure plateau in the

Cut off. The millimeter-wave array on the Bure plateau, scene of last week's cable-car disaster.

CREDITS: (TOP) USDA; (BOTTOM) IRAM