released into the air as much as 150 million curies of radiation, much of which settled onto nearby land. Authorities created a 30-kilometer "exclusion zone" around the nuclear plant, evicting more than 135,000 people and limiting access mostly to plant workers, cleanup crews, and scientists. As a result, the exclusion zone has become a unique ecological laboratory in the shadows of the still-operating power plant.

But what little money the Ukrainian government spends for research in the exclusion zone goes mostly to study hazards from the nuclear fuel remaining in the burned-out reactor core and the weakening sarcophagus that covers it (*Science*, 19 April 1996, p. 352). "There are not enough experts in radio ecology" in the zone now, says geologist Valentin Radchuk, who heads the Department of Scientific Programs for Ukraine's Cabinet of Ministers. Foreign ecologists can stay only for short stints, and they often must tailor their research to fit whatever analyses can be done on equipment at Chernobyl or nearby Kiev. The new lab will be able to tackle many problems, including contaminated groundwater and wind-borne radioactive dust.

Recognizing a compelling need for the lab, officials from various Ukrainian Ministries and the U.S. Department of Energy last October began hammering out the details. The $1.3 million agreement, signed at the second meeting of the U.S.–Ukraine Joint Commission in Kiev, calls for Ukraine to house the facility and pay its utility bills, and for the United States to

ROBERT BAKER

Hot research field. Ron Chesser (right) and Ukrainian colleagues sample mice in Chernobyl's forbidden zone.

furnish it with top-of-the-line instruments for separating radionuclides and carrying out other analyses. The lab should also help cut through red tape that stymies work in the most dangerous areas in the exclusion zone. "The greatest contribution of the new lab," says Robert Baker of Texas Tech University in Lubbock, who collaborates with Chesser at Chernobyl, is that "we'll be more likely to get permission to work in areas most in need of research." Scientists from the United States and Ukraine will meet in Chernobyl next month to draw up a list of necessary equipment and discuss their research strategy.

In the meantime, Ukrainian officials are searching for a suitable home for the lab. The leading candidate is an unfinished building intended as a hotel-resort in the ghost town of Pripyat, situated across a lake from the nuclear plant. Such a setting would also serve as a constant reminder of the accident. "It's very sobering," says Chesser. "You never get complacent."

–RICHARD STONE

SCIENCE POLICY

Outside Insider Named to Head EPA Research

FLORIDA INSTITUTE OF TECHNOLOGY

Norine Noonan

The White House this week tapped a veteran Washington insider for the top research post at the Environmental Protection Agency (EPA), a job vacant for over a year. The choice of Norine Noonan, a biologist-turned-bureaucrat without previous ties to EPA, is raising eyebrows. But some observers say Noonan's expertise as a scientist who knows the ropes in Washington—she spent a decade on Capitol Hill and at the White House before becoming vice president for research and dean of the graduate school of Florida Institute of Technology in Melbourne—will stand her in good stead in defending the $500 million research budget at EPA, an agency often accused of giving science short shrift. "I think that's what they need in that job," says Howard University toxicologist Bailus Walker.

The previous chief at EPA's Office of Research and Development, marine ecologist Bob Huggett, presided over a sometimes painful overhaul of EPA science launched in 1994 that includes shifting research dollars from agency staff to outside scientists and forcing EPA researchers and risk managers to work more closely together (*Science*, 21 January 1994, p. 312). Huggett left in June 1997 to become research vice president at Michigan State University in East Lansing.

Noonan earned a Ph.D. at Princeton University in biochemistry and cell biology in 1976 but soon moved on to a congressional science fellowship and then to the White House Office of Management and Budget (OMB), where she oversaw budgets for the National Science Foundation and NASA. "She was very professional, very hard-nosed,

ScienceScope

GREEN LIGHT FOR ANTISENSE DRUG

After a decade of fencing with skeptics, drug developers soon hope to celebrate the launch of the first "antisense" DNA drug to hit the market.

ISIS PHARMACEUTICALS

Retina with fungus

Called fomivirsen, the compound deploys a mirror-image copy of viral DNA to block replication of cytomegalovirus. The virus causes retinitis, an eye infection leading to blindness that mainly afflicts AIDS patients. The drug won a thumbs-up last week from a Food and Drug Administration advisory committee, and the way is now clear for FDA approval. Although fomivirsen (or Vitravene) must be injected directly into the eye, its developer, Isis Pharmaceuticals of Carlsbad, California, says it has a big advantage over some antiviral drugs: Targeted locally, it causes only mild side effects such as increased pressure and inflammation.

Even antisense critic Arthur Krieg of the University of Iowa, Iowa City, calls the FDA panel vote "a landmark event." Five years ago, "the conventional wisdom was that antisense was a fraud," he says. "Isis deserves a tremendous amount of credit for bringing sense to the antisense field."

REFORM FOR ITALIAN CONCORSI

Observers are eager to see how Italian universities adapt to new rules for recruiting professors that eliminate a notorious system widely viewed as not only inefficient but rife with cronyism and nepotism.

Under the old "megaconcorsi," thousands of applications for academic posts landed at the Science Ministry in Rome every few years, taking years to process. The system "represented the Kafkaesque culmination of the triumph of bureaucracy," says astronomer Margherita Hack of Rome's Accademia dei Lincei.

Under the measure approved by the Senate on 1 July, each university will run its own concorsi. Critics say the reform is far from ideal: Although university panels must be dominated by outsiders, their selection "remains fully exposed to systematic manipulation by the academic superpower groups," asserts Aldo Massullo, a member of the Senate's Education Commission. Massullo notes that the reform also fails to address an underlying problem: An Italian academic post means tenure for life, with no standards for quality or productivity.

asked all the right questions," a House staffer says. "I would rather have had a really strong scientist again," admits Linda Birnbaum, a dioxin researcher at EPA's health effects lab in Research Triangle Park, North Carolina. But she and others say they're relieved a nominee has finally been chosen.

Noonan must now be confirmed by the Senate. Her "first order of business," she says, "is to get to know the organization." EPA watchers and Noonan both agree she has a lot to learn. Her selection, she says, "is as interesting a choice for me as it is for them."

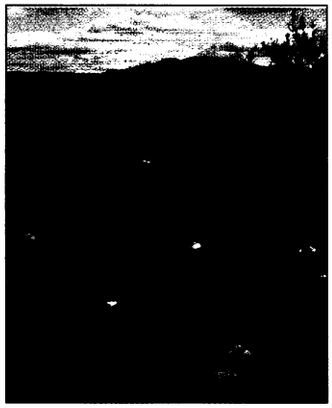
–JOCELYN KAISER

ECOLOGY

Vanishing Pools Taking Species With Them

Near the end of Noble Drive in San Diego, past a row of condos, the city has erected a chain-link fence to protect a patch of dried mud. To understand why, one must look beneath the surface—or wait a few months. Come winter, the rainy season, this sun-baked plot turns into a pond teeming with fairy shrimp and plants, some of which are on the federal endangered species list.

These unusual species spring to life in rainwater ponds, called vernal pools, that linger until late spring or summer every year before evaporating. But strategies to save these ecosystems are falling short, according to new data presented last month at a joint meeting of the Ecological Society of America and the American Society of Limnology and Oceanography in St. Louis. Surveys suggest that up to a third of vernal-pool crustaceans thought to have existed in California in the mid-1800s have gone extinct. "It's death by 1000 small wounds," warns ecologist Gordon Orians of the University of Washington, Seattle. "If we were to lose just one pond or one species, would it matter? Probably not. But the first one goes. Then, the next. And the next. Finally, the cumulative effect on biodiversity is devastating."



Going, going ... Ecologists hope to save this vernal pool at Miramar and *L. packardi* shrimp *(top)*.

LARRY SERPA

ELLEN BAUDER

The crustaceans are dwindling because the pools themselves are a vanishing breed. It is hard to track the ephemeral habitats, formed when rainwater collects in depressions lined with thick clay. But historical soil surveys in California's Central Valley suggest that a century ago, vernal pools occurred on 1.64 million hectares in this region alone, says Bob Holland, an ecologist who contracts for state agencies. Now, the pools return to less than 400,000 hectares in the valley, he says. Fueling the decline are development and agriculture, says Ellen Bauder, an ecologist at San Diego State University. In San Diego, she says, over 90% of vernal pools spotted in aerial photos 70 years ago no longer come back.

For years, hardly anyone noticed the pools were disappearing—until scientists started counting species. Bauder first documented the decline of vernal pool plants, 13 of which are now endangered. Then in 1992 and 1994, a team led by biologist Marie Simovich of the University of San Diego sampled vernal pools in San Diego and throughout the Central Valley. They tallied 80 crustacean species, many existing in only a few pools. Losing these crustaceans could have ramifications up the food chain, says Simovich. Fairy shrimp, for example, are eaten by mallards and other migratory birds that winter in California.

Plugging vernal pool loss and Simovich's numbers on species range into a computer model that forecasts extinctions, Jamie King of the Environmental Protection Agency in Annapolis, Maryland, has estimated that up to a third of the crustaceans that lived in the Central Valley's pools 150 years ago have since gone extinct. "Given that most crustacean species occur only in a few pools, you don't have to lose much habitat before you lose a lot of diversity," King says.

Hoping to thwart further losses, the U.S. Fish and Wildlife Service in the past year has bought two San Diego tracts with vernal pools and says it plans to buy more. The city itself is guarding some pools, including the one on Noble Drive. And Miramar, the Marine Corps Air Station just outside San Diego, has hired contractors to restore 116 vernal pools on its 9300-hectare base—an anticipated 5-year, $1 million project that will involve, among other things, sculpting depressions and stocking them with fairy shrimp, plants, and other vernal species.

But conservation strategies on private lands—which aim to create an equal amount of vernal pool habitat for that destroyed—are bogged down in disputes. Some landowners complain about regulators spying on private property in the hopes of catching citizens filling in mere puddles. "It's a nightmare," says Bruce Blodgett, director of national affairs for the California Farm Bureau Federation in Sacramento, who worries that farmers could lose cropland to restored vernal pools. Scientists decry the strategy for another reason: "This 'no net loss' approach ignores the fact that some fairy shrimp species live in one pool but not in another," says Simovich, who wants to see pools with rare species conserved, not re-created. "The conflict," adds Bauder, "is getting worse."

–KATHRYN S. BROWN

Kathryn S. Brown is a science writer in Columbia, Missouri.

ORIGIN OF LIFE

Did Twisty Starlight Set Stage for Life?

In their quest to trace the origins of life on Earth, scientists keep confronting a puzzle: How did vital molecules get their distinct twists? Nearly all the amino acids in proteins are "left-handed" (L), a designation for one of two mirror-image configurations of atoms around a carbon center. On the other hand, the sugar backbones of DNA and RNA always spiral to the right. This uniform handedness, or homochirality, could have arisen in the course of evolution, either by chance or because such shapes somehow aid DNA replication or protein synthesis. Or it may have preceded life: Some researchers argue that our infant solar system was seeded with L amino acids formed in cool interstellar clouds, which then rode to Earth aboard comets, meteorites, and dust.

That scenario receives a boost this week with a report on page 672 describing the first evidence of a possible space-borne mechanism. A team led by Jeremy Bailey of the Anglo-Australian Observatory near Sydney has spotted circularly polarized infrared light—in which the electromagnetic wave rotates steadily—streaming from a region of intense star birth in the Orion Nebula. Ultraviolet (UV) light polarized this way can selectively destroy either left- or right-handed (D) amino acids, depending on the direction of spin. If similar radiation bathed the dust around our newborn sun 5 billion years ago, says team member James Hough of the University of Hertfordshire in Hatfield, England, "it could have created the necessary precursors to life's [handedness]. This process would produce a much higher excess [of L amino acids] than anything that could occur on Earth."

The findings are "quite exciting," adds organic geochemist John Cronin of Arizona State University in Tempe, who has found a surplus of L amino acids in two meteorites