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### ITER

## Stalemate Casts Pall Over Beleaguered Fusion Project

**CAMBRIDGE, U.K.**—For building research facilities, just as for buying property, the three most important things are location, location, and location. This issue is proving so thorny

for the International Thermonuclear Experimental Reactor (ITER)—an effort to prove that nuclear fusion can generate plentiful and cheap power—that the whole \$5 billion

enterprise is deadlocked. Since December the six international partners have been split over whether to build ITER at Cadarache in France or Rokkasho in Japan. In a last-ditch attempt to break the impasse, E.U. officials traveled to Japan last week for face-to-face talks. Fusion researchers across the globe are now waiting to see if this dialogue has sown the seeds of compromise. “I don’t know what can untie this Gordian knot,” says Alex Bradshaw, director of

the Max Planck Institute for Plasma Physics in Garching, Germany.

After more than 15 years of design work and pilot experiments, the ITER partners—China, the European Union (E.U.), Japan, Russia, South Korea, and the United States—were set to make the crucial site decision at a high-level meeting of ministers on 20 December. But Japanese and E.U. officials dug in their heels over which would be the better site for the tokamak (*Science*, 2 January, p. 22). European researchers claim that Rokkasho is at a greater risk of earthquake damage than Cadarache and that it is so inhospitable that staff members will balk at moving there. Japanese scientists, meanwhile, argue that Cadarache is too far from the coast for large components to be transported there safely.

ITER delegations again met in Vienna, Austria, on 12 and 13 March to study further technical reports on the two sites but failed to find common ground. In the meantime, ITER researchers have been exploring the idea of broadening the project, adding extra facilities so that both sites get a piece of the pie (*Science*, 13 February, p. 940). The E.U. and Japan “have come to the negotiating table, and one can’t walk ▶



**Bargaining chip.** A compromise deal could bring Japan’s JT-60 tokamak into the ITER program.

### RESEARCH GRANTS

## NSF Gives Smithsonian Researchers a Green Light

The National Science Foundation (NSF) has agreed to level the playing field for scientists at the Smithsonian Institution. Last week the National Science Board, NSF’s governing body, decided that all 500 Smithsonian researchers should be able to compete equally with academic scientists for NSF grants.

A mainstay of support for nonmedical academic scientists, NSF is loath to fund researchers whose paycheck comes from the U.S. government. But the Smithsonian, founded by a 1836 gift from James Smithson, holds an unusual status in the federal bureaucracy. Its governing board is composed of legislators, prominent citizens, the chief justice of the Supreme Court, and the vice president; about one-third of its \$840 million budget comes from outside the annual appropriations process. “We’re this strange trust instrumentality,” says David Evans, undersecretary for science.

Some Smithsonian scientists now receive NSF funding through an academic

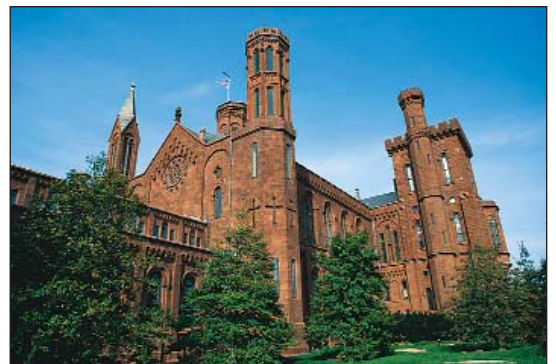
affiliation, and others have been eligible because they are paid through trust funds. But the rest have largely been shut out. “We could apply, but the chances were zero if you were at the Smithsonian,” says James Mead, curator of marine mammals at the National Museum of Natural History, who calls the new policy “great news.”

There is some uncertainty about the impact of the policy, which would standardize practices across the entire foundation. NSF officials estimate that out of 300 newly eligible Smithsonian scientists, only “eight to 10” would win NSF grants each year. But Evans says, “I’d be surprised” if the number were that low, and Mead predicts that his colleagues will flock to NSF, especially given a shrinking pot of institutional research funds.

Before agreeing to the change, science board members warned acting NSF Director Arden Bement

not to raise the hopes of other federally funded organizations that might feel entitled to a similar exception. “I think that the slippery slope is the key issue,” said Ray Bowen, president emeritus of Texas A&M University in College Station. “We need to define the Smithsonian as a unique entity.”

—JEFFREY MERVIS



**Castle rules.** Smithsonian’s unique status earns it a shot at NSF funding.

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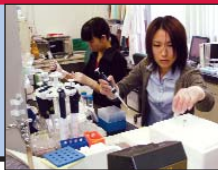
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Keeping bad memories at bay



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Physics from Montreal



away with all the marbles,” says former ITER deputy director Ron Parker of the Massachusetts Institute of Technology in Cambridge. With both sides unwilling to renounce their claim to the tokamak itself, the E.U. delegation in Tokyo last week suggested that the two protagonists put the siting decision to one side for the time being and focus on defining a broad fusion research program “without prerequisites,” says Achilleas Mitsos, E.U. director general of research and chief negotiator. “This is not about winners or losers,” he says, “but it must take place very rapidly. We cannot postpone much longer.” The E.U. is now waiting to hear whether Japan will accept its invitation to continue the di-

ologue in Brussels in the next few weeks. Says Paul Vandenplas of Belgium’s Royal Military Academy, “Everything is hanging in the air now.”

The continuing uncertainty has left researchers wondering what to do next. Because much of the technical planning for ITER depends on the site—what sort of seismic isolation will be needed, for instance, and where the cooling water will come from—progress is slow, says Yasuo Shimomura, ITER’s international director in Garching, Germany. Teams of engineers who worked on the ITER design between 1992 and 2001 have been “idling” for the past 3 years, says Satoru Ohtake, director of Japan’s Office of Fusion Energy. The

longer the delay, the harder it will be to reassemble the teams, he says. “Without a site, you can’t do a cost distribution; without a distribution, you can’t make an ITER legal body. Everything hinges on picking a site, and we don’t have a site,” says Gerry Navratil of Columbia University in New York City.

If the latest attempt at dialogue fails, Mitsos says he will go to the E.U. Council of Ministers and put the remaining options, none of which would be pretty, on the table. “One or both parties will have to act unilaterally,” he says. “What other possibilities exist?”

—DANIEL CLERY

With reporting by Dennis Normile in Tokyo and Charles Seife in Washington, D.C.

## INVERTEBRATE CONSERVATION

# Respect for Things That Flutter, Creep, and Crawl

Bugs get little respect, but a group of biologists and conservationists wants to upgrade their status before it’s too late. The public should know that more than just a few butterflies are at risk of extinction, says Sacha Spector, an entomologist at the American Museum of Natural History in New York City. Last week, he and about 25 colleagues formed a working group to begin building a constituency for endangered insects, mollusks, and other invertebrates. In addition to planning a Web site to link pertinent databases and resources, the new group, called the Expanding the Ark Coalition, is preparing a white paper arguing the case for more attention to what Harvard sociobiologist E. O. Wilson calls life’s “little things.”

Although invertebrates make up about 80% of known species, they account for a mere 38% of about 500 species now under the protection of the Endangered Species Act, Gary Frazer of the U.S. Fish and Wildlife Service reported at a meeting of several hundred invertebrate experts held in New York City last week. A conservation group called NatureServe has argued that more than 1800 invertebrate species need protection. Until now, says Spector, “we haven’t asked [conservationists] to take care of invertebrates like [they do] verte-



**Endangered.** The Delhi Sands flower-loving fly has been protected, despite a lack of popular appeal.

brates and plants.”

Frazer, Spector, and others stressed that invertebrates are vital links in the food chain. They are particularly important for pollination, water quality, and nutrient turnover, but their contributions to the environment are often overlooked. To remedy this neglect, Spector says, researchers need much more knowledge about what species are out there—millions may still be undescribed—and how they interact with local ecosystems. Even more important, says Tim New, an entomologist at La Trobe University in Australia, advocates of particular groups such as butterflies need to work together

to save all invertebrates at risk: “We need to start acting with a [cohesive] voice,” he notes.

The road ahead looks rough. “Many of the people we want to convert know very little about invertebrates and have very little sympathy for them,” says New. For example, Jim Bartel of the U.S. Fish and Wildlife Service in Carlsbad, California, has had a terrible time getting community support to protect the Delhi Sands flower-loving fly, an insect that lives in Southern California. Public officials, community members, and the media belittled the effort; some even brought fly swatters to public meetings.

But the response isn’t always negative, says Bartel. The Riverside County, California, community has adopted the Quino checkerspot butterfly and is working to pull it back from the brink. And Gary Davis, visiting chief scientist at the U.S. National Park Service, and his colleagues have been quite successful setting up marine reserves to protect Florida’s spiny lobster. Spector is hopeful that this new coalition will lead to more success stories. Davis agrees: “We’re moving the ship in the right direction,” he says. “We may not be moving fast enough, but I am optimistic that we can make a difference.”

—ELIZABETH PENNISI