NATIONAL SCIENCE FOUNDATION

Original Grants Only, Please

The National Science Foundation (NSF) is worried it is getting a reputation as a "safety net" for biologists unable to get a grant elsewhere—though by objective standards that net is a porous one, since the agency turns down three out of every four biology grant applications it receives. But to make sure NSF does not get tagged as a backup funding source, officials in the Directorate for Biological Sciences have just announced a controversial and tough new policy: Starting 1 June, the directorate will no longer accept grant proposals that are also being considered by other federal agencies.

Directorate head Mary Clutter says the move will allow NSF to concentrate its funds on research projects that lie outside the interests of the more mission-oriented science agencies, such as the National Institutes of Health (NIH) and the U.S. Department of Agriculture (USDA). But now that success rates at both NIH and USDA are running low, scientists scrambling for support worry that the new NSF policy will leave them out in the cold.

Clutter says that the policy change, announced in the May edition of the NSF *Bulletin*, was recommended by a task force she convened in 1990 to examine NSF's support for biological, behavioral, and social sciences. The panel urged her to make the change because it said NSF should be supporting fundamental research that doesn't simply mirror what the other agencies are funding. Clutter says she found that for certain programs, such as neuroscience, the overlap between grants submitted simultaneously to her directorate and NIH was as high as 80%. Since the average NIH grant is more than twice the size of a typical NSF grant, biological researchers often submit proposals primarily to NIH and send a second submission to NSF as a backup, Clutter says. But she would rather have the agency support researchers who have nowhere else to turn.

Under the new policy, NSF will only consider proposals that are "distinctly different from those submitted to other agencies." There is one exemption, however—for "beginning investigators who need to explore all opportunities for launching support for their research careers."

The NSF's "no duplicates" policy would be unique among the major biology funders. Neither USDA nor NIH currently has such a rule, although both insist that scientists disclose all their pending and awarded grants when applying for money. (No agency allows a scientist to "double dip"—accept money twice for exactly the same project.)

Plant biologists are particularly upset by NSF's move. Carl McDaniel of Rensselaer Polytechnic Institute in Troy, New York, who studies the regulation of flowering, says he has received support from NSF for 10 years. But he regularly submits identical proposals to NSF and USDA because both agencies have low success rates, and he knows that by the luck of the draw, some day NSF will turn him down. If he didn't apply simultaneously, he could be out of money for a year or more, since USDA accepts grant proposals only once per year. McDaniel says a lot of his colleagues are in the same boat. "[NSF] is taking us who hang by several thin threads, and giving us one thin thread."

USDA officials say they are aware that the new policy is causing anxiety in the plant community, but Arthur Kelman, chief scientist for USDA's competitive research grants program, says he hopes that something can be worked out with NSF to alleviate the scientists' concerns.

–Joseph Palca

ENTOMOLOGY

The Case of the Missing Monarchs

The entomology community is aflutter with concern over that most remarkable of butterflies, the monarch. Every year these insects provide a spectacular example of migratory behavior, as the East Coast population wings its way southward from eastern North America to settle on a handful of sites in Mexico for the winter months. A smaller western population descends on coastal California for the winter. But this year, entomologists fear that millions of monarchs were felled by unusually cold and wet Mexican weather.

"I've been going down there for 15 years and never seen anything like it," says Lincoln P. Brower of the University of Florida in Gainesville. Brower visited five of the nine Mexican winter colonies in late January and early February. "Four of the five colonies we visited were practically wiped out. The fifth one wasn't, although we don't know why," he says.

At one mountain site, Brower and colleagues took a sample of 86 butterflies and found that 48% were dead; another 35% were badly damaged. Only 17% could fly normally. At the lone colony where the monarchs appeared to be thriving, they exhibited an unusual behavior: On the first clear day after the storms, a cloud of butterflies emerged from the protection of the forest and hovered in the sunshine, apparently drying out their waterlogged bodies.

Already, anecdotal reports of missing monarchs are beginning to trickle in from areas that the insects usually cross in the spring, as they make the transcontinental trek in reverse. Entomologist Orley Taylor of the University of Kansas says the butterflies were absent from his field area in northern Mexico. "Last year they came through my field area in the millions in the first week of April. But I only saw about 10 or 20 individuals in 3 weeks this year," says Taylor, who studies Africanized bees in Mexico every spring and last year began a side project on monarchs.

In Louisiana, monarchs "usually hit around the 13th or 14th of March—you can set your watch by them," says entomologist Thomas Riley of Louisiana State University in Baton Rouge. But the monarchs didn't show this year, at least as far as Riley could tell. Whether these anecdotes really are indications of massive mortality this winter won't be known until entomologists estimate monarch numbers in northern states this summer, says Brower.

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Golden veil. Millions of monarch butterflies fly out on a sunny day after 3 unusually cold, wet weeks.

Nobody is suggesting that the monarch, one of the most common butterflies in North America, is in danger of extinction. The western population was not hit by bad winter weather, nor were local populations in Florida and the tropics. But Brower believes that the grand eastern migration is an endangered phenomenon. Although several of the Mexican sites are protected by presidential decree, others face pressure from logging. To Brower, the patchy colony survival this year emphasizes a classic lesson in ecology: Don't put all your butterflies in one basket.

–Elizabeth Culotta