tions, says Bowles, who will participate in the marine mammal studies in Hawaii.

ATOC's sound source is expected to be much less intrusive than what was used for Heard Island. The loudness will be reduced 100-fold, from 214 to 195 decibels, and the sound will be broadcast at depths of 900 meters instead of 175 meters, where fewer animals are likely to swim. ATOC's slightly higher frequency—spread between 60 and 90 Hz, rather than at 60 Hz—should still be inaudible to most marine mammals. And the volume will be turned up gradually to give animals time to move away from the noise. Still, ATOC has the potential to affect many more animals and species than did Heard Island because the California site is located within the Monterey Bay National Marine Sanctuary, home to seals, otters, and toothed and baleen whales. ATOC leaders say they are prepared to turn off the transmitters if they appear to be harming the mammals.

Ironically, the dearth of data on the effects of noise on marine mammals has resulted in part from the policies of the NMFS, according to the NRC report. The Marine Mammal Protection Act prohibits the "harassment" of marine mammals, and the NMFS has used that clause to establish a Byzantine application process for scientific research permits that can take as long as a year. Revisions to the law now pending before Congress could shorten that wait, says an aide to Representative Gerry Studds (D–MA), chairman of the House Merchant Marine and Fisheries Committee, by requiring less information and a shorter turnaround time.

The irony of the government delaying ATOC because of scientific uncertainty while at the same time erecting obstacles to research that might clear up some of those questions was not lost on members of the NRC panel. "What worried me and other members of the committee," says panel member Peter Tyack of Woods Hole (Massachusetts) Oceanographic Institution, "is that we have such a profound ignorance of the impact of noise on marine mammals and the current regulations are actually impeding our understanding."

–Karen Schmidt

WOMEN IN SCIENCE

Disparities Detailed in NCI Division

Immunologist Sandra Smith-Gill had "a sense that something was amiss" in the way lab space, budgets, and personnel are divided among male and female investigators in her division of the National Cancer Institute (NCI). So 2 years ago, with the support of the division's scientific director Alan Rabson, she began examining how these resources are distributed and whether discrepancies in budget and personnel by gender have an impact on productivity. Smith-Gill's vague sense that something was amiss turned out to be depressingly correct.

Smith-Gill, with the help of Rabson's planning officers, surveyed the resources allocated to tenured researchers in the Division of Cancer Biology, Diagnosis, and Centers (DCBDC) for fiscal years 1991 and 1992. Her findings, detailed in an unreleased draft report now being circulated at NCI, are startling: Individual women researchers in the division, on average, received less than two-thirds the budgets allocated to their male counterparts at the same level of seniority.

The discrepancy at the top end of the scale is even greater: The largest budget allocated to a female researcher was less than half that of the man with the highest budget, even though the two have roughly the same length of experience. The report focused on 55 nonclinical senior investigators (11 women and 44 men) who are not laboratory or branch chiefs and plotted resources versus years since obtaining their Ph.D.s. Similar patterns of gender discrepancy show up in the allocation of research staff, with women receiving 63% of the personnel allocated to male researchers.

The report also found that in spite of recent concern about the status of women in science, these discrepancies haven't been declining. In fact, just the opposite is true: "During periods of budget growth," the report states, "the budgets of men have expanded proportionally more than those of women, widening the budget gaps between the genders; i.e., the rich got richer."

This skewed distribution of resources cannot be explained by differences in experience between male and female investigators. Women generally received fewer resources than men with the same level of experience. The budgets of women investigators, in fact, tend to cluster around $300,000, regardless of experience (see chart), while those of the men varied widely. "What surprised me is that the envelope for [the budget for] women is so much smaller than it is for men. There just isn't much scatter," says Smith-Gill.

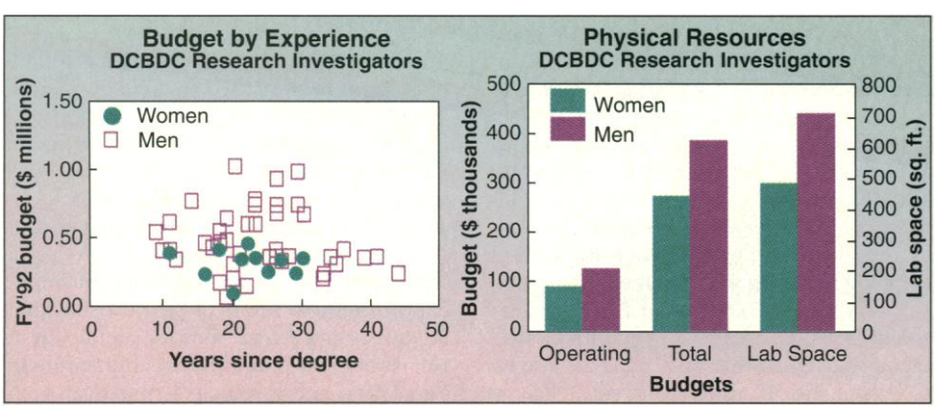
As for productivity, women investigators in the DCBDC published on average 54% as much as men. But that disparity disappeared when Smith-Gill divided researchers' total publications by the number of research personnel assigned to them. In other words, given the same resources, women will perform at least as well as men. The implication, says Smith-Gill, is that "women scientists are an underutilized resource at the National Cancer Institute."

Although still in draft form and offering few recommendations, the report is already having an impact in the DCBDC. Rabson, who says he "was a little surprised" by the findings, met with the division's laboratory chiefs and three of the division's senior women on 21 March to discuss the report. He says he expects to start addressing the resource discrepancy during the annual spring program review, which should start in a few weeks. "This year because of Sandy Smith-Gill's data we will be paying special attention to the status of women in the division," he says.

Smith-Gill is pleased that Rabson and the lab chiefs seem willing to address the problem, but she recognizes that the changes "will happen in small increments, not all at once." In the meantime, the women in the division are taking action on another front to improve their career prospects. They are organizing a mentoring system among the female researchers. "Women have to learn how to network," says Smith-Gill. "The responsibility is on us to do this."

Smith-Gill, who doubts that the disparities she identified are limited to the DCBDC, says she hopes other divisions and institutes will perform similar evaluations. That's one task women scientists will be eager to perform—if they are given the resources to do it.

–Lisa Seachrist



Glass ceiling. Women researchers get fewer resources, on average, compared with men *(right)*, and their budgets show little correlation with experience *(left)*.