ENVIRONMENT

Black Spots Blot German Coastal Flats

BERLIN—Foul-smelling black spots are marring the sandy tidal flats along Germany's North Sea coast, and scientists are struggling to work out why. Since the mid-1980s, these oxygen-starved sediment layers have been appearing here and there in the Wadden Sea, a shallow region between the mainland and a line of barrier islands that is an important wildlife habitat. But in late May and June this year, naturalists in East Frisia were startled to find that this year's outbreak covered a total area of more than 25 square kilometers—about one-tenth of the sand flats' surface area.

SOURCE: COMMON WADDEN SEA SECRETARIAT

Spotty picture. Patches of oxygen-starved sediment cover more than 25 square kilometers of tidal flats.

The cause, scientists agreed at a mid-June workshop in the German village of Dornumersiel, was probably an unfortunate combination of last winter's cold weather and pollution from several sources. Together, these factors caused an unusual buildup of organic matter and then delayed its normal decay in the tidal flats' sediment. But while everyone agrees that long-term efforts to reduce pollutants are necessary, experts have not come up with a short-term prescription for protecting the sand flats from future blemishes. "There are no easy answers," says Jens Enemark, the Danish secretary-general of the three-nation Wadden Sea secretariat.

"Clearly, there is more than one factor at work here," says Thomas Höpner, a biochemist with the University of Oldenburg's Institute for Marine Chemistry and Biology who joined 20 other biologists, chemists, and other scientists from Germany, Denmark, and the Netherlands at the Dornumersiel meeting. Höpner has been studying black spots and the Wadden Sea ecosystem since 1989. During the meeting, he and other scientists visited the tidal flats near the island of Baltrum and found that the spots consist of a blackened, oxygen-starved sediment layer, covered in places by a whitish sulfur film. In many areas, they also noticed dead or dying sea worms.

Those observations confirmed their suspicions that the Wadden Sea ecosystem has been overwhelmed by too much dead organic matter while other factors conspired to deprive the system of the oxygen needed for all that biomass to decay. Höpner says that this year's problem may have started with the winter's severe cold—which covered much of the Wadden Sea with ice from Christmas to the end of March and, he says, "killed a great number of organisms, leading to an unusual accumulation of organic material." Then in May, an unusually large bloom of phytoplankton released an oily film that scientists believe depleted oxygen in the seawater and sediment. Later, when the phytoplankton died, they added to the undecayed organic material.

Such thick algal blooms have become more common in the North Sea because rivers such as the Rhine, Weser, and Ems discharge nitrogen, phosphorus, and other agricultural contaminants that nourish the phytoplankton. And some scientists speculate that a Russian freighter's accidental release of a large quantity of palm oil in May may have added even more nutrients to the brew.

Enemark laments that this picture doesn't point to any simple short-term solutions to the black-spot problem. Germany and other European nations are slowly reducing nitrogen and phosphorus discharges into rivers. But stopping pollution from tankers and other ships is difficult because the East Frisian coast is on one of the world's busiest sea lanes.

Late June's cooler, windy weather shrank some of the spots, but Höpner warns that "hot weather may worsen the situation again." So far, the spots' only apparent effect on wildlife has been the dead worms and a reduced number of birds. But scientists at the June workshop who are concerned about potential long-term effects urged the Wadden Sea secretariat and the German state of Lower Saxony's National Park Administration to support more studies of the spots and their causes.

–Robert Koenig

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1997 BUDGET

Legislators Get Into the Details

Policy wonks and academics may talk about the U.S. science and technology budget as a national research ecosystem. But last week Congress provided a series of rude reminders that each program flourishes or withers according to its own peculiar political microclimate.

Exhibit 1: A Senate spending panel approves a whopping 1000% increase for prostate cancer research after a powerful Senator reads a magazine article about the disease. Exhibit 2: Animal-rights activists join deficit hawks on the House floor to eliminate funding for a joint U.S.–Russian life sciences space experiment involving monkeys, even though the legislation will not reduce the deficit and the monkeys likely will still orbit the Earth. Exhibit 3: The National Science Foundation is threatened with a possible 10% reduction in staff as an influential House member tries to force NSF into downgrading support for social and behavioral sciences, a frequent GOP target.

These and other decisions about 1997 federal science funding came as Congress rushed to recess for the Fourth of July holiday. None of these measures is final, but they all provide clues to the shape of the budget package likely to emerge this fall.

The potential $93 million windfall for prostate cancer researchers comes courtesy of Senator Mark Hatfield (R–OR), chair of the Senate Appropriations Committee, who felt that the $7 million put into the Army budget for such research by its defense subcommittee wasn't enough. A staffer explains that Hatfield had been moved by an article in *Fortune* by Andrew Grove, the CEO of the Intel Corp., describing his experience with prostate cancer and the inadequacy of diagnostic tests for the disease. Hatfield also sought gender equity with a $150 million Army-based program for basic and clinical studies of breast cancer.

The news was grimmer for advocates of NASA's Bion project, which aims to increase knowledge about the biological effects of microgravity. The House ordered the agency not to spend any money on the program, which animal-rights activists claim is cruel to monkeys and which budget cutters argue is a waste of money. But NASA officials say the Russians intend to go ahead with the September launch regardless, and that the money would go to other NASA programs rather than deficit reduction. However, the decision—if upheld in the Senate—could force NASA to cancel its plans to participate in a second flight planned for 1998.

The House also approved a cut that could trim NSF's 1200-person staff by as much as 10% next year. Representative Robert Walker (R–PA), chair of the House Science Committee, won approval to shift $9 million from NSF's salary and expenses line into its