RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Chile's Mackerel Crisis

Unbridled fishing for horse mackerel off the coast of Chile may have led to a population crash that is forcing the government for the first time to consider setting limits on the take.

The mackerel fishery in the southeastern Pacific has, over the past decade, become one of the most productive fisheries in the world, according to fisheries biologist Nelson Ehrhardt of the University of Miami's Rosenstiel School of Marine and Atmospheric Science. That's thanks to the warm waters from El Niño, whose cycles have neatly matched the fish's 4- to 6-year breeding cycles. "This population explosion was one of the most phenomenal biological impacts we have ever experienced in any ocean over such a short time," says Ehrhardt.

But that increase has led to overexploitation by fishers from Chile, who outfit entire fleets just to catch the fish, which are mainly used for fish meal. The annual haul has been running at about 4 million metric tons. But this year, about a month into the mackerel season, catches are falling far short. And particularly ominous is that the adult mackerel population is nowhere to be found. Scientists don't know what happened, but some suspect a mass mortality.

In an effort to head off a full-scale collapse of the mackerel fishery, the Chilean government last month hosted meetings among fishery scientists from government, universities, and private industry. Ehrhardt has now been asked to make sense of the data from the meeting in an effort to determine how much fishers will be able to take. "Chile must consider quotas for the juveniles for the first time," he says.

In any case, many mackerel fishers may have to retool. "Since the mackerel stock is depleted, [fishers] will have to go back to the sardine and anchovy fisheries," which themselves have only recently begun to recover from earlier overfishing, says Ehrhardt. Ruben Alberto Pinochet Pollastri of the Chilean Fisheries Department is optimistic. "We think the industry has the economic capability to surmount [this population crash]," but it will be difficult for some, he adds. If stocks are to hold up, there may have to be fewer Chilean fishermen.

CNRS Links Up With Georgia Tech

The first joint venture between France's largest national research organization and a U.S. university will be launched on 16 June. CNRS and the 8-year-old Georgia Tech Lorraine—a branch of Atlanta's Georgia Institute of Technology located in Metz, France—will jointly operate a new lab for basic research on telecommunications.

The Centre GTL-CNRS-Telecom, as it's called, will be housed in Georgia Tech facilities and directed by Jean-Pierre Goedgebuer of the University of Franche-Comté in Besançon. Goedgebuer says the new lab is part of a major thrust by CNRS to get more involved in international exchanges. (The agency established a Tokyo laboratory in 1995.)

Wedded bliss. Spanking-new home for French–U.S. project.

The laboratory's two dozen researchers will focus on advanced applications of optical techniques in communications, an area that "was attractive to both [institutions] because we both have strong programs in optics and telecommunications," says William Rhodes, scientific director of Georgia Tech Lorraine.

One of the key projects is the use of chaos for encrypting optical signals. Other research subjects are quantum encryption, which makes use of the uncertainty principle of quantum mechanics to encode data securely; the use of solitons—extremely short wave packets of light—for transmitting data through optical fibers; and multispectral lasers.

Start-up funding—about $1 million for 1998—comes from the local government of Lorraine in addition to CNRS and Georgia Tech. The goal is for the lab to become in large part reliant on research contracts with industry.

High-Protein Crunch

A massive new push to predict the three-dimensional (3D) structure of proteins based on their amino acid sequences was launched last week by a coalition of European labs and bioinformatics groups.

With the aid of a high-performance Cray computer at Silicon Graphics and newly developed software, the group plans to analyze all the 200,000 protein sequences available in public databases and model as many as possible, predicting how they fold up into their final 3D form by comparing sequences with those of the 5000 known protein structures. "We hope we'll get some information for up to 65,000 proteins," says team member Manuel Peitsch at Glaxo Wellcome's research center in Geneva. "Structural features of sequences showing high levels of similarity to sequences of known protein structures can be predicted, but we want to move to the prediction of structures showing lower levels of similarity," says another participant, biologist Michael Sternberg at the Imperial Cancer Research Fund labs in London.

The $50,000 project, dubbed the 3D Crunch, will put its raw results out on the World Wide Web. Then it will be up to protein crystallographers and nuclear magnetic resonance analysts to see how close the computer was able to come to reality. "Matching their work against our predictions should help us determine which parts of our strategy are effective," says Sternberg.

Bioimmersion. New York's American Museum of Natural History is doing its bit to battle the forces of species extinction with a new permanent Hall of Biodiversity, to open on 30 May. At right is a segment of one of its star attractions: a walk-in diorama of a rainforest in the Central African Republic which features, in addition to more than 160 species of animals and plants, some 500,000 hand-painted plastic leaves, bird sounds, shifting light, and even periodic wafts of jungle scents. The biodiversity exhibit represents a "fundamental departure" from the usual museum displays, says curator Niles Eldredge, because it shows life on the move—both through evolution and through climate change and human intrusion. One part of the 1020-square-meter exhibit, for example, features videos of different ecosystems as they change from pristine to degraded habitat.

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