stem cells (*Science*, 30 November 2001, p. 1802). Roger Pedersen, now at Cambridge University, used private funding to attempt human nuclear transfer experiments when he was at the University of California, San Francisco, but he too failed to produce blastocysts. And newspapers have reported that scientists in China are attempting human cloning experiments, but peer-reviewed results have not yet emerged.

Wilmut, who was in Berlin to receive the Ernst Schering Prize for his nuclear transfer work, says he expects the licensing process to take about a year. The proposal must undergo rigorous reviews by at least four ethics committees and must be approved by HFEA's scientific and clinical review boards. The oocytes would be collected from women who are planning to undergo reproductive-tract surgery, Wilmut says, and donors would not be compensated.

The team's first goal is to create stem cell lines that could help researchers understand complex genetic maladies such as heart disease, Wilmut says. If cells from a cardiac patient could be cloned and a stem cell line created, for example, researchers could grow those cells into cardiomyocytes and perhaps learn more about what causes sudden heart attacks as well as possible ways to prevent or treat the condition. Wilmut says his team will not use human cells to shed light on the murky mechanisms governing how an adult-cell nucleus can be reprogrammed to direct embryonic development. Such work, he says, can be done in mice and cattle, from which oocytes are much easier to obtain.

Wilmut's research will be supported by Geron Corp. of Menlo Park, California, which funded much of the early work on embryonic stem cells and Pedersen's experiments with human nuclear transfer. Geron, through its acquisition of Roslin's spinoff company, Roslin Bio-Med, owns several patents on the techniques used to create Dolly. The company also claims exclusive commercial rights to several cell types derived from embryonic stem cells, including cardiomyocytes.

Other experts welcome Roslin's plans. "The scientific rigor of what Roslin produces" would give the field a boost, says Robert Lanza, vice president of medical and scientific development at ACT. Gerald Schatten of the University of Pittsburgh, whose efforts to clone rhesus monkeys have been stymied by faulty cell division in the resulting early embryos, predicts that human cloning, at least to the blastocyst stage, will be feasible. "Everything to date suggests that there are hurdles in cloning Old World primates, including humans, but there is no reason to think it will not eventually work," he says.

–GRETCHEN VOGEL

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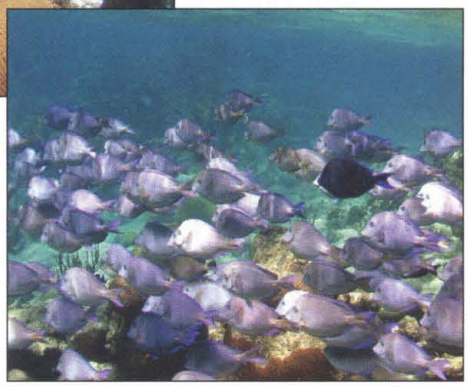
OCEANOGRAPHY

Diagnosis and Rx for U.S. Coral Reefs

For more than a decade marine biologists have bemoaned the decline of coral reefs worldwide, citing global warming, disease, overfishing, and pollution, along with other causes (*Science*, 25 July 1997, p. 491). But good data have been scarce. Last month, a 5-year volunteer census of global reefs revealed more damage than expected (*Science*, 6 September, p. 1622). Now comes the most comprehensive look at U.S. reefs—and it, too, confirms many of the biologists' worst fears.

The report, *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2002*,* substantiates the degradation by various insults. It includes a breakdown of the problems facing 13 regions and some 20,000 square kilometers that come under the purview of the United States, as well as reefs surrounding its former territories Micronesia, the Marshall Islands, and Palau.



Guardians wanted. U.S. policy-makers are pushing for protection of coral reefs (*top*) and their denizens such as blue tang (*right*).

"It is the most sweeping statement of concern by a [U.S.] federal agency about the trajectory of coral reefs to date," says John Ogden, a marine biologist at the Florida Institute of Oceanography in St. Petersburg. Even so, comments Phillip Dustan, a marine biologist at the College of Charleston, South Carolina, "the report doesn't go far enough" in conveying the dire condition of reefs or the need for more research on their problems.

The effort dates back to 2000, when Congress, in the Coral Conservation Act, charged the 2-year-old interagency U.S. Coral Reef Task Force with producing a comprehensive inventory of reefs under U.S. jurisdiction. At the same time, Congress showed its increased concern for reefs by expanding federal support for reef research from $60.9 million in 1999 to $98.5 million in 2001, making such a survey possible.

The National Oceanic and Atmospheric Administration (NOAA), the U.S. Agency for International Development, the Department of the Interior, and about a half-dozen other agencies have now produced summaries of current conditions of reefs, projections for their futures, conservation efforts, and descriptions that focus on each region. As with other reports, this one highlights the rampant destruction of some reefs by disease, overfishing, pollution, storms, and global warming. The report "has brought all this [reef] information together in one place for people to see," says NOAA Administrator Conrad Lautenbacher.

In addition, in the works is an atlas of digital, color-coded maps of undersea habitats such as sea grass and sand as well as reefs. These maps are being made from high-resolution aerial photos.

An accompanying report† to Congress outlines 13 goals based on the new assessment. First on the list are more mapping and monitoring projects. Eight of the goals are concerned with reducing the damage done by people.

Ogden, for one, says these priorities should be reversed: "I believe it should be action first and research second." Lautenbacher is not swayed by this criticism, however. First and foremost, the agencies need the key baseline inventory that only mapping and monitoring can provide, he insists. But he also points out that now that the task force has proposed a unified strategy for protecting coral reefs where once there was none, it can now be debated and changed as needed.

–ELIZABETH PENNISI

* www.nccos.noaa.gov/documents/status_coralreef.pdf

† www.coris.noaa.gov/activities/actionstrategy/action_reef_final.pdf