Fifth Framework research program. Individual countries have also strongly backed the program. "I don't believe there will be problems in meeting the new commitments," says Bernard Bigot, director-general in the former French government's research secretariat. But not every country is feeling as generous. This year, Canada reduced its $720,000 contribution by half as part of a general belt tightening, and government officials say it may be difficult to maintain even that level unless the economic picture improves.

Whatever the program's budget, there is a consensus that the money is supporting top-notch science. "The people are really first-rate, and its reliance on peer review is seen as a model for how to do international collaborations," says Baldwin. That lofty reputation has generated formal applications for membership from Australia and Israel and spawned informal discussions with South Korea. The latest EU expansion also brought in countries such as Sweden, which also wanted to join the program. "For small countries with expertise in these fields, the collaborations offered by HFSP are invaluable," says Patrick Piffaretti, a Swiss government official.

Member countries have agreed to meet again in 2001, following another review of the scientific agenda. In the interim, officials at the program's headquarters in Strasbourg, France, will study the best way to beef up the grants portfolio without damaging support for fellowships.

–Nigel Williams

With additional reporting by Jeffrey Mervis in Washington, D.C., and Dennis Normile in Tokyo.

MARINE ECOLOGY

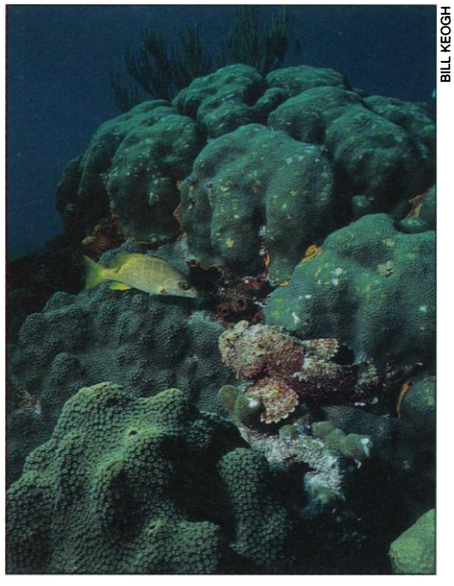
Scientists Launch Survey of Reef Health

Starting on 14 June, about 500 recreational scuba divers will become scientists for a day. Armed with measuring tapes and underwater writing slates, they will take to the shallow waters at tropical reefs around the world for the first of what many hope will be an annual event—a rapid assessment of reef health.

Kicking off on Kauai, Hawaii, the event, called Reef Check 1997, will be among the broadest ecological surveys ever undertaken. Over 100 reef scientists have agreed to train and supervise this volunteer army. Organizers acknowledge that the resulting data will not be detailed enough to provide a clear picture of the health of any one reef. But by providing a global snapshot, the survey should help scientists unravel what may be causing the decline of reefs, says Robert Ginsburg, a marine geologist at the University of Miami's Rosenstiel School of Marine and Atmospheric Science. Ginsburg is chair of the International Year of the Reef, which is sponsoring the survey. "We can think of the [volunteers] as scouts," he says. "If they turn up reefs that are in serious decline, then it will be up to us, the reef scientists, to go in and follow up."

The need for a global survey became obvious at a coral reef meeting in 1993 at the University of Miami in Florida, says coordinator Gregor Hodgson, a marine ecologist at the Hong Kong University of Science and Technology's Institute for the Environment and Sustainable Development Research Centre: "Here we had over 100 of the world's top reef scientists, and the best we could say was that reefs near population centers are not doing very well, whereas ones farther away are doing OK. That's a pretty lousy answer after about 30 years of work." The researchers agreed that many reefs surrounding Caribbean and Southeast Asian nations were in deep trouble: Runaway development has silted coastal waters already polluted by raw sewage. Dynamite fishing and overfishing also have taken a toll. But the scientists could not reach a consensus about the overall status of reefs worldwide.

Researchers have long wanted to get a global snapshot of reef conditions, but they have lacked the necessary funds and people power. So, Hodgson and several of his colleagues decided to put together an economy-class survey with scuba enthusiasts. Their approach is simple: In a 1-hour training session with a reef scientist, volunteers learn a basic surveying method and how to identify common species such as groupers and conchs. Then, the scientist escorts a small group out to a reef for a one-time survey. In addition to counting living things along transects, surveyors note the dead and dying—including bleached and diseased coral.



BILL KEOGH

Signs of sickening. This head of coral is beset by white plague disease.

In turning to volunteers, the Reef Check team is drawing on a long history of ecological surveying with citizen-scientists. Volunteers have helped conduct bird surveys in Europe for over 100 years. The U.S. Geological Survey's Biological Resources Division (BRD), once the National Biological Survey, marshals more than 2200 people for its annual breeding-bird survey. The economic advantage of enlisting volunteers is indisputable, says Sam Droege, a biologist with the BRD's Inventory Monitoring Program: "Collecting data on plants and animals is a time-intensive thing. If you paid someone to do that, you'd break the bank for most of the federal, state, or private groups." Droege further contends that when organizers put in place a rigorous system of data quality checks, and "where training is easy to accomplish, [volunteer] data often are indistinguishable from the professional."

Others, however, are less certain. William Allison, a research adviser with Sea Explorers Association in the Maldives, says even trained scientists don't always come up with similar tallies when surveying the same reef tract. Part of the problem is that scientists have not yet agreed on the best way to assess reef health, or standardized their surveying methods—such as whether to hold a transect line taut or drape it across the coral. "This does not bode well for the results of amateurs working under expert supervision," he cautions.

Hodgson says he has worked with other reef scientists to build error checking into every stage of the survey. For instance, he says, right after divers get out of the water, scientists will check the data to ensure that divers haven't double counted fish or misidentified species. Even so, "No doubt we're going to do some things wrong the first year," he adds.

But as John Ogden, director of the Florida Institute of Oceanography in St. Petersburg, says, no one is suggesting that these data be used to "rearrange the global furniture." Indeed, this seems to be the consensus of reef scientists. Says Ginsburg, "Scientists can shoot this thing full of holes. But because it's asking a simple question, it can still point the way."

–Barbie Bischof

Barbie Bischof is a science writer in New York City.