

# Earth Day 1980: The 29th Day?

One message ecologists have yet to hammer home effectively is that preserving the environment is a global economic necessity

BY JANET RALOFF



*A lily pond, so the French riddle goes, contains a single leaf. Each day the number of leaves doubles — two leaves the second day, four the third, eight the fourth, and so on. Question: If the pond is completely full on the thirtieth day, when is it half full? Answer: On the twenty-ninth day.*

*The global lily pond in which four billion of us live may already be half full.*

— from *The Twenty Ninth Day* by Lester Brown

Recent Earth Day celebrations commemorated the tenth anniversary of the birth of the environmental movement. Still in its adolescence at best, this movement is growing by leaps and bounds into an influential consciousness-raising and policy-shaping force. But ecologists are afraid that our planet is in such grave trouble that it won't survive the maturing of this ecologically aware populace unless major social and political changes that foster the conservation of living resources begin immediately. In fact, their pleas for action — if not just recognition — of what's happening and what must be done have taken on an almost feverish pitch. It also explains the development and unveiling last month of the World Conservation Strategy.

Billed as an "intellectual framework" and "practical guide" to effective conservation, the strategy is aimed at helping governments:

- understand the severity of humankind's assault on the environment,
- assess which are the priority problems in their jurisdiction and then focus on how best to attack them,
- recognize the severity of postponing actions that could conserve indigenous living resources, and
- initiate policies and projects that are "sustainable" in perpetuity.

Environmental analysts find the strategy notable for several reasons. It is one of

the first major documents to establish how and why resource conservation and economic development of the world's poorer nations are two sides of the same coin. Second, it provides a one-stop shopping list of goals and recommendations for dealing with conservation/development issues. Finally, it has at least the tacit endorsement of most of the world's nations together with the explicit endorsement of most of the leading international environmental agencies and associations, including the International Union for Conservation of Nature and Natural Resources (IUCN) — which drafted the strategy in collaboration with the Food and Agriculture Organization of the United Nations and the United Nations Educational, Scientific and Cultural Organization (UNESCO) — together with the advice, cooperation and financial assistance of the United Nations Environment Program and the World Wildlife Fund (WWF).



*Sahelian mothers await food. Globally, 274 children starve to death daily.*

The theme — that goals of attaining national wealth and environmental health are not mutually exclusive — is a cornerstone of the strategy and represents the culmination of a minor revolution in attitudes toward environmental policy over just the past eight years.

As Thomas Ehrlich, director of the International Development Cooperation Agency, explains, "When the first international conference on the global environment was held in 1972 at Stockholm, the problem that caused the most concern was the perception that the developing countries face a choice between overcoming poverty on the one hand, and protecting the environment on the other." Unfortunately, he says, "this perceived conflict still remains in too many quarters."

Economic and social needs arising from the crippling poverty of one billion starving and impoverished people are the major causes of ecological degradation in developing countries, Ehrlich says. "[T]remendous pressures on the earth's fragile environment and natural-resource base will not be lessened until we deal

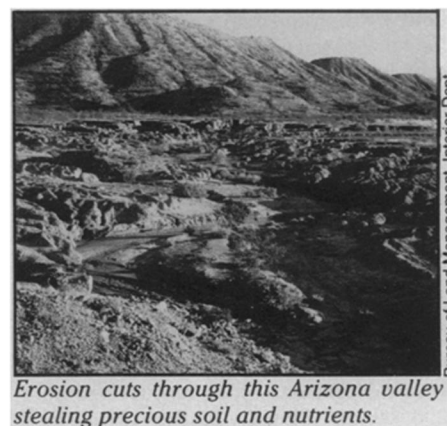
with the principal causes... Elimination of poverty in the Third World is crucial to this task."

Crucial or no, that is one incredibly difficult task. Although billions of dollars have been spent on developing other countries over the past 30 years, "We're farther behind now than when we started," says Lee Talbot, conservation director for WWF's international office. Talbot said that although it upsets "development people" to say this, "even the World Bank admits a higher percentage of the world's population is impoverished and malnourished than when we started [giving foreign aid] after World War II."

The really scary thing, he says, is that nearly half the world's population is below age 15. Even if every family from now on adopts zero-population-growth policies — that is, has no more than two children — there will still be 50 percent more people to feed and support economically by the year 2000. Curbing population growth is an important tenet of the World Conservation Strategy, Talbot says, "but the only time frame where population control can make a difference is 20 to 70 years from now." Until then, he says, the global lily pond must expect to serve a larger family.

Reading from the strategy and support documents, one understands the source of despair that at times overwhelms ecologists like Talbot (SN: 11/17/79, p. 347), whose job it is to chronicle and attempt to stall the accelerating degradation of our planet.

For example, excluding Antarctica, 89 percent of the world's land area suffers from drought, nutritional deficiencies or toxicities, shallow soil, excess water or permafrost. Croplands now occupy 14 million square kilometers. Although that total



*Erosion cuts through this Arizona valley stealing precious soil and nutrients.*

might be doubled with much effort, most of the best land is already under the plow. And if current rates of soil degradation continue, close to one-third of the world's arable land will be destroyed during just

the next 20 years, as illustrated vividly in a 1978 Worldwatch Institute report (SN: 11/4/78, p. 308).

Throughout the food-hungry tropics, home to most of the world's family — humans, plants and animals — soil loss has accelerated greatly. Land there is more susceptible to soil erosion than in the temperate zone because of its topography, geology and rainfall. Much of Haiti is devoid of topsoil and down to bare rock. In India, more than half its 3.3 million km<sup>2</sup> of land suffers some form of soil damage. One 800,000 km<sup>2</sup> region loses an estimated six billion tons of soil annually. With it goes six million tons of nutrients, more than the amount applied as fertilizer. Since even under natural vegetation nature requires 100 to 400 years or more to create 10 millimeters of topsoil, 12,000 years would be needed to develop topsoil 29.5 centimeters (11.6 inches) deep. In the tropics, 50,000 km<sup>2</sup> to 70,000 km<sup>2</sup> of cropland — a region the size of Belgium plus Holland, or West Virginia — is lost annually to soil erosion.

A report documenting stress to tropical forests — one of the world's most fragile and threatened ecosystems — was issued this month by the National Research Council of the National Academy of Sciences. According to the report, *Research Priorities in Tropical Biology*, 90 percent of the total growth in world population over the next 20 years will occur in the tropics. For the poorest and hungriest, many have nowhere to turn for food but their native forests. And the estimated 250 million who farm forests in the tropics "constitute the largest factor in conversion of moist tropical forests," according to Norman Myers, a Nairobi-based ecologist and one of the report's authors. It is believed that forest farmers now use one-fifth of their biome.

Not only are their agricultural techniques — generally a contemporary version of slash-and-burn — primitive and inefficient, but the land is also unsuitable for farming. It has been estimated that even in the "lush Amazon Basin," less than 10 percent of the land can sustain agriculture because of soil properties. The conception that lush tropical forests sit atop prime and fertile topsoil is a gross and dangerous misconception, Myers says.

Lowland tropical forests, the richest in species, have been the most exploited. Once covering a region greater than twice the size of Europe, roughly half has disappeared during the past 150 years. Today an area equivalent in size to Delaware is permanently converted to other forms each week, an area the size of Great Britain is lost annually. In all, alteration of moist, tropical forests to other purposes exceeds 200,000 km<sup>2</sup> annually. At the current rate, all tropical forests worldwide would disappear within the next 50 years. "But the rates are not constant — they are accelerating rapidly," the NRC report says.

Species extinction is also occurring at accelerating rates. "Since in most well-



*Species extinctions threaten ability to breed new crops resistant to blight.*

known groups of organisms there are about twice as many species in the tropics as in temperate regions, one may surmise that there are probably at least 4.5 million ... organisms in the world, of which at least 3 million occur in the tropics," the NRC report states. Data provided in the World Conservation Strategy suggest that by 1999, up to one million species may become extinct. With them go any medicines, dyes, chemicals and new pest-resistant or high-yield crops that these lost species may have contributed.

Similarly, fisheries, grasslands, and other sectors of the environment are being overstressed. Polluted streams, soil and air follow the commercial development of once-pristine regions everywhere. It is to counter the continuing rate of plunder to our life-support system that the World Conservation Strategy is dedicated. While its message comes as less than a big surprise to most environmentalists in the developed world, it is expected to come as an unbelievable surprise to most leaders of developing nations.

And it is the latter that may point to a potential problem with the strategy as it was unveiled in 33 national capitals last month from Peking and Caracas to Wellington and Moscow — not to mention Aman, Lusaka, Santo Domingo and New Delhi. With the rate at which the global lily pond is filling and fouling, there is some urgency in the call to action embodied by the strategy. Yet a number of environmentalists and ecologists familiar with the IUCN document worry that its focus may be far from compelling enough to convince national leaders to commit their constituencies to the potentially big and costly changes suggested in the strategy's recommendations.

Why, asks Norman Myers, should a leader risk reelection by sponsoring a ban on certain farming practices or on the ex-

port of timber that may be a small country's only source of highly valued hard currency? Speak to political and business leaders in terms they know and understand best — economics, he suggests: Tell a political leader why conservation-oriented changes will keep the electorate happy. Provide case studies detailing the economic toll deforestation, desertification, overfishing or other unsustainable practices exact on nations in circumstances potentially similar to their own, he suggests. There are ample examples: India suffers extensive flood damage from monsoon rains every year, a byproduct of deforestation. Siltation is threatening to close the Panama Canal as rainwater gouges denuded forestlands. Look at Haiti's "boat people" fleeing a land virtually denuded and now faltering in its ability to keep its economy alive.

Thomas Stoel of the Natural Resources Defense Council agrees that economic analyses might have made the strategy more compelling, but adds that good, sound numbers and dollar figures don't exist yet. He also laments that few economists in a dollar-based cost-benefit analysis would find any short-term gain to conserving resources. With businesses requiring quick paybacks on their investments, with inflation hurting many regional economies and with multinational companies fearing nationalization of foreign investments, the trend is to optimize short-term profits — often at the expense of the environment. One just can't make a valid argument today on why it pays a political leader to conserve resources over the next 10 years, Stoel says; the payback, if it comes, arrives long after the official is out of office.

Finally, Myers worries that the strategy may never become much more than a well-intentioned document unless ecologists and other environmental supporters become more advocacy oriented. He told SCIENCE NEWS he would like to see a corps "of Ralph Nader-type guys" visiting national leaders, explaining the strategy, asking the government what it plans to do and then returning at three-month intervals to monitor follow-up action. He said this is not a role his colleagues tend to feel comfortable with, but he fears the magnitude of the issues at stake may warrant a rewriting of those roles.

Central to the environmental ethic is concern for the future. Thomas Ehrlich voiced succinctly a problem plaguing the global lily pond: "An impoverished society, still hungry from yesterday, gives little thought to tomorrow."

The challenge facing the environmental movement is to stall indefinitely the dawning of the thirtieth day. While a few nations now on the brink of ecological disaster may fall along the way, most ecologists champion the view that earth's resources can be managed to sustain both economic development and environmental quality throughout the foreseeable future. □