Blue
Planet
Prize

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2001 BLUE PLANET PRIZE: ANNOUNCEMENT OF PRIZE WINNERS

Sir Robert M. May (Australia)

For developing mathematical ecology and the fundamental tools for ecological conservation planning.

Dr. Norman Myers (United Kingdom)

For being the first to warn of mass species extinction and for continuing to speak out about environmental problems.

The Asahi Glass Foundation (Chairman Hiromichi Seya) has announced the recipients of the 10th Blue Planet Prize, an international environmental award. The Blue Planet Prize is awarded annually to two individuals or organizations that have made outstanding scientific contributions to global environmental conservation.

The following individuals were selected as the recipients of the Blue Planet Prize for 2001.

Sir Robert M. May established statistical methods for tracking and estimating species populations based on mathematical models, thereby providing the basic tools for planning ecological preservation efforts ranging in scope from the local to the global. He has not limited his approach to animals. His mathematical models are also widely applied in studies of disease transmission caused by microorganisms, such as bacteria.

Dr. Norman Myers works as an independent scientist. He was the first to alert the world to the mass extinction of species underway, and to spell out action responses to both species loss and the associated problem of tropical deforestation. In addition, he has warned of fundamental challenges such as the intertwined issues of environmental conservation and economic development.

The recipients will be awarded certificates of merit, commemorative trophies and supplementary awards of 50 million yen.

The award ceremony will be held on Thursday November 15, 2001, at the Hotel New Ohtani in Tokyo (Chiyoda-ku,) which will be followed the next day by commemorative lectures delivered by the recipients at the United Nations University in Tokyo (Shibuya-ku)

(For further information about the winners, please see the attachment.)

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Attachment

Remarks from the Award Recipients upon Being Notified of Their Selection

Sir Robert M. May

"I am honoured to receive the 2001 Blue Planet Prize. Also, I am very aware that I receive this Prize as a symbolic representative of the large community of scientists who in recent years have greatly advanced our understanding of the causes and consequences of biological diversity, and of growing threats to it.

Properly to understand how today's rich and varied plant and animal life came to be here, we need to answer underlying ecological questions. How does the structure of the web of interactions among species affect communities' ability to recover from disturbance or to resist invasion? What factors determine the observed variety of patterns of species abundance, of commonness and rarity? More generally, what determines species numbers in different places? Above all, what are the various causes of observed extinctions, and to what extent are extinction rates currently accelerating?

I believe these are matters of concern for all of us. But effective action must be based on good scientific understanding of the underlying causes, and likely consequences, of loss of biological diversity. So I am hugely pleased to accept the 2001 Blue Planet Prize which recognizes the vital importance of this general subject."

Dr. Norman Myers

"I am deeply grateful to the Asahi Glass Foundation for awarding me this prestigious prize. I am specially gratified because I pursue environmental science in a way different from most of my colleagues around the world. I work on my own. This has many advantages but also its drawbacks. Your generous award will enable me to carry on with my independent career in a much more productive manner than hitherto. I can now concentrate on what I view as the most important environmental questions of our time. I feel you are setting me free to do more in the next decade than in all my professional life to date.

I am also grateful that you have recognized me for work that spans a range of environmental fields. I specialize in being a generalist, which, like my independent status, is far different from what most scientists do and is rarely recognized through a top rank prize. Your award will send a strong message to start-out scientists who will be encouraged to undertake the kinds of interdisciplinary work that are sorely needed if we are to measure up to our environmental challenges. Your Prize will similarly encourage those same young scientists to take their scientific findings and policy recommendations to political leaders and others in the public arena—where they certainly belong."

Profiles of the 2001 Blue Planet Prize Recipients

Sir Robert M. May

Sir Robert obtained his doctorate in theoretical physics from the University of Sydney at the age of 23 in 1959, researching that field there for the next 13 years until in due course he switched disciplines to population biology at Princeton University in the United States, where he remained a further 15 years. In 1988, he moved to Oxford University in the United Kingdom and solidified his position as a world leader in mathematical biology. Since 1995, he has been Chief Scientific Adviser to the British Government and Head of the Office of Science and Technology, playing an influential role in national scientific affairs.

Applying the mathematical concepts nurtured in theoretical physics to the field of biology, in 1973 he authored "Stability and Complexity in Model Ecosystems," a book that used mathematical modeling to investigate the stability and complexity of a community of interacting plants and animals following the foodweb as clue. Contrary to the general understanding that species are motivated toward greater stability in complex ecosystems, he showed in population dynamics models that individual species are liable to greater fluctuations in abundance in such ecosystems when the number of species is increased and species interactions are randomly added. Since the publication of this research, Sir Robert has accumulated a solid record of noteworthy accomplishments in the field of mathematical biology.

Sir Robert was also the first to discover that, first-order nonlinear difference equations can exhibit an astonishing array of dynamical behavior, ranging from stable points to apparently random or "chaotic" fluctuations. Although chaos theory itself was discovered independently by several mathematicians at about the same period of time, it was Sir Robert's research, beginning with his article published in "*Nature*" in 1976, that can be credited with creating the new field of "chaotic dynamics" in biology.

One of Sir Robert's major contributions was to be the first to build a model that includes environmental stochasticity and spatial heterogeneity in studies of population dynamics, and thereby contributing to our ability to formulate environmental policies. He also drew attention to these characteristic changes in populations for the purposes of managing ecosystems. For example, in collaboration with others he has explored the ways fish harvesting affects multispecies ecosystems of the fishing grounds. "*Exploitation of Marine Communities*" reports the results of this work. He has also contributed importantly to understand the cyclic oscillations exhibited in insect parasitoid populations in the wild, demonstrating through mathematical models the relationship between the ecology of predatory parasites, such as parasitic wasps, and population numbers, which matched the actual observations in the wild.

In the last 10 years, Sir Robert, who has continued fundamental research into mathematical biology and sought policies that can be applied to the resolution of environmental problems, has played a leading role in two areas of research in particular. The first combines mathematical and applied techniques to analyze the conditions under which viruses and bacteria affect host populations and their distribution. The results obtained in these studies have been beneficial to a broad spectrum of science in the public health sector, ranging from genetic research into groups of disease carriers to immunology for rubella in the UK and to strategies for dealing with parasites. In addition, he is

investigating the conditions under which AIDS spreads, utilizing a combination of simplified analytical models and computer simulations to provide the data required to predict the spread of this disease.

The second area of concentration is research into the detailed reasons why the biodiversity of tropical regions is so extensive. He is studying the time and geographic factors in changes in biodiversity. The mathematical biology methodology he has developed are being used to measure this diversity, and make it possible to infer changes in that diversity, thereby increasing understanding of the composition and collapsing of biodiversity.

Sir Robert has used his mathematical modeling to explain the current state of biodiversity and warn that the risk of species extinction is currently at an historical high. He continues to strongly advocate the necessity of responding immediately to this crisis. He is presenting proposals and advice to governments and NGOs and making a real contribution toward the formulation of environmental conservation policies. He is also proffering effective proposals for policies to deal with contagious diseases, such as AIDS, based on his mathematical projections of the epidemiology.

His accomplishments have already been widely recognized in the United Kingdom and abroad. In 1995, he was named the Chief Scientific Advisor to the UK Government and was knighted the following year. In 2000, he was appointed President of the Royal Society of London, a position with a rich tradition and one of the most esteemed in the world of science. He is making good use of this elite standing to promote solutions to a wide range of issues, including ecological preservation, other urgent environmental problems such as global warming, and various problems related to medicine and biology.

Education and Academic and Professional Activities

1936	Born on January 8 in Australia
1956	Graduates from Sydney University
1959	Obtains his Doctorate (Theoretical Physics, Sydney University)
1959-1961	Researcher, Harvard University, U.S.A.
1962-1972	Professor, Sydney University (Physics)
1973-1988	Professor, Princeton University (Biology)
1988-1995	Professor, Imperial College and Oxford University, United Kingdom
1995-2000	Chief Scientific Advisor to the Government of the United Kingdom
2000 ~	President, Royal Society of London in December

Major Awards Received

1979	Fellow of The Royal Society of London
1980	Weldon Memorial Prize (Oxford University)
1984	MacArthur Award
1991	The Linnean Society's Linnean Medal
1991	Overseas Member, Australian Academy of Sciences
1992	The Inaugural Christian Marsh Prize
1992	Foreign Member of the US National Academy of Science
1995	Zoological Society Frink Medal
1996	Crafoord Prize in Biosciences (Sweden)
1998	Balzan Prize (awarded by the President of Italy)

Dr. Norman Myers

After graduating from Oxford University in 1958, Dr. Myers spent 12 years researching wildlife in Africa before earning his doctorate in the United States in 1973. He has taught at a number of renowned universities on both sides of the Atlantic, including Oxford and Harvard. He has served as an adviser to many governments, international agencies and academic bodies. One of the chief characteristics of his research is his penchant for raising new questions as well as supplying new answers to established questions. To date, he has pioneered 15 research issues.

In the early 1970s the rate of species extinction was officially considered to be around one species per year. Dr. Myers calculated that it was likely to be as high as one species per day. If the extinction rate were to continue at that pace alone, it would precipitate the wholesale demise of species. Through more detailed research in the late 1980s and as tropical forests disappeared faster than ever—these forests feature the bulk of all species—he increased his extinction estimate to roughly 50 species per day. He also noted that the "natural" extinction rate before humans arrived was roughly one species every 3-5 years. Although his findings were severely criticized at first, most scientists have eventually come to accept them. In the late 1990s he has demonstrated that the current biotic crisis will not only eliminate large numbers of species, but it will destroy several major "powerhouses" of evolution, notably tropical forests and wetlands, these being the principal sources of new species in the wake of mass extinctions in the prehistoric past. The crisis will also deplete certain other basic processes of evolution. All in all, it will leave an impoverished planet for millions of years into the future—unless we take vigorous action forthwith.

Toward the end of the 1970s, Dr. Myers predicted that the rapidly accelerating decline of tropical forests, at approximately 75,000 square kilometers per year, could well double within another decade. Once again there were many critics of this conclusion, but he was ultimately proven correct through latest satellite imagery. In the early 1980s Myers was the first to warn that deforestation in Central America was mainly due to conversion of forests into cattle pastures to supply cheap beef for North America's fast food industry—a destructive process that he labeled the "hamburger connection", showing the international linkages of environmental decline. In similar style he drew attention to tropical forests' influence on climate both locally and globally.

Also in the early 1980s Dr. Myers documented the economic value of species and their genetic resources as start-point materials for pharmaceuticals including anti-cancer drugs, new foods, natural pesticides, and raw materials for industry ranging from oils and gums to plastics and latexes.

In the late 1980s Dr. Myers concluded that a sound way to conserve threatened species was to concentrate on "biodiversity hotspots", being areas where exceptional concentrations of endemic species are undergoing exceptional loss of habitat. In the late 1990s he and colleagues calculated that at least one third of all species are confined to 25 hotspots comprising just 1.4% of earth's land surface. He proposed that if these hotspots were preserved, the mass extinction ahead could be greatly reduced. His original analysis has been adopted by conservation organizations generating $550 million to date, the largest sum ever assigned to a single conservation strategy.

Dr. Myers' expertise in both the natural sciences and the social sciences has enabled him to contribute responses to a broad range of environmental issues, including population pressures, developing country poverty, over-consumption, unsustainable agriculture, climate change and environmental security. In a 2001 book, for example, he has presented a superb quantitative analysis of "perverse"

subsidies, being subsidies that damage both our economies and our environments. These subsidies amount to as much as $2 trillion worldwide each year in sectors such as agriculture, fossil fuels, road transportation, water, forestry, and fisheries. The subsidies are large enough to cause major distortion of our economies and to inflict grandscale injury on our environments. As a response to his policy proposals, several governments are reducing their perverse subsidies.

In addition, Dr. Myers has been a senior advisor to organizations such as the United Nations, the World Bank, the White House, scientific academies in a dozen countries, and numerous Japanese corporations. This testifies to the high regard accorded to his innovative research. He has raised the awareness of influential politicians (including six prime ministers and presidents), leading policy makers, and business chiefs worldwide, notably with respect to the many linkages between environmental conservation and economic development.

Dr. Myers has publicized his work in more than 250 scholarly papers, plus 300 popular articles and 17 books (sales of these books, over one million copies). His efforts to raise an extended series of pioneering questions, together with proposals for integrating environmental imperatives into nation-wide policies, will help us to advance toward a sustainable future for both our earth and our world.

Education and Academic and Professional Activities

1934	Born on August 24 in the United Kingdom.
1958	Graduated with bachelor's degree, Oxford University
1958-1965	District Officer in the Kenya Administration, and High School Teacher in Kenya
1963	Master's Degree, Oxford University
1966-1969	Freelance writer, photographer and lecturer on African wildlife
1970-1972	Attended the University of California, Berkeley
1973	Earned doctorate from the University of California, Berkeley
1972-present	Research projects for the U.S. National Academy of Sciences and its National Research Council, the Royal Society in the United Kingdom, the Soviet Academy of Sciences, the U.S. Department of State, NASA, the World Bank, United Nations agencies, the OECD, The European Commission, the World Wide Fund for Nature, the World Resources Institute, and many other bodies. Honorary Visiting Fellow of Green College, Oxford University.

Major Awards Received

1983	Gold Medal, World Wildlife Fund
1986	Gold Medal, New York Zoological Society
1987	Special Achievement Award, the Sierra Club
1987	Distinguished Achievement Award, the Society for Conservation Biology
1989	Fellow, World Academy of Art and Sciences
1992	Volvo Environment Prize
1994	Member, U.S. National Academy of Sciences
1995	Sasakawa Prize, United Nations Environment Programme
1997	Appointed by Queen Elizabeth to The Order of St. Michael and St. George "For Services to The Global Environment."
2000	Ambassador for the World Wide Fund for Nature/UK

Report on the Selection Process (10th Annual Prize, 2001)

A total of 1,100 nominators from Japan and 1,500 nominators from other countries recommended 136 candidates. The fields represented by the candidates, in order of numbers, were atmospheric and earth sciences (40), ecology (27), complex fields (14), and environmental ethics and philosophy, and restoration of environmental destruction (13).

The candidates were drawn from 29 countries, with those from developing countries numbering 23, or 17% of the total.

At a meeting of the Foundation's Board of Directors and Councillors, the Board formally resolved to award the Prize to Sir Robert M. May and Dr. Norman Myers after numerous screenings by the Selection Committee under consultation with the Presentation Committee, a subcommittee of the Board.

The contents of this press release may also be viewed at the Asahi Glass Foundation's Internet web site. Please visit us on-line at:

http://www.af-info.or.jp

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Message to the Japanese Public

Sir Robert M. May

The previous century has seen more advance in our understanding of the natural world than has all previous human history. We have applied this scientific understanding to improve lives, in both developed and developing countries. We are, however, now beginning to realise some of the unintended adverse consequences of well-intentioned actions: for example, climate change and diminishing biological diversity. What happens to our world, and to us, in the future depends on the actions we take now. As a new century dawns, our greatest challenge remains to ensure that necessary increases in global productivity are achieved in a sustainable and environmentally friendly way.

Dr. Norman Myers

We live at an altogether unprecedented time in human history. Entire segments of our planetary ecosystem face terminal threat through mass extinction of species, tropical deforestation, global warming and a host of other environmental problems. These are economic problems as well since our economies are ultimately dependent on the environmental resource base that supports all human activities. By safeguarding our environments we are safeguarding our daily wellbeing too. Are we not a privileged generation to live at a stage in human history when we have opportunity to save both our earth and our world? We shall surely earn the thanks of numerous generations into the future.