

## A Memoir of the Origins and Evolution of the Man and the Biosphere (MAB) Program, and the Value of UNESCO Programs to the World Today

*Chris Groves and Vernon C. (Tom) Gilbert*

### ABSTRACT

In 1945, at the end of the most destructive conflict in human history, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) was established, mindful that “ignorance of each other’s ways and lives has been a common cause, throughout the history of mankind, of that suspicion and mistrust between the peoples of the world through which their differences have all too often broken into war.” In 1968 a vision emerged that conserving the world’s ecological resources, and the genetic material they contain, could fundamentally help to sustain the “defenses of peace.” Here we describe the value that international communication has had for the science and practice of protecting the world’s most precious places, natural and cultural, and the central place of UNESCO in this history. Large portions of the article are presented in the form of a memoir by Tom Gilbert of his involvement with UNESCO’s Man and the Biosphere Program, which goes back more than 50 years. Ideas discussed during the 1968 Paris UNESCO Intergovernmental Conference for Rational Use and Conservation of the Biosphere led to the birth of MAB, establishing “a scientific basis for enhancing the relationship between people and their environments” and a world network of biosphere reserves as a means to keep options open for the future. Nurturing synergy among groups with common goals in the international resource protection and geoh heritage communities is as critical as ever, and in closing we both draw on our own experiences to propose that the United Nations Association of the United States of America (UNA-USA) could bring many groups and individuals together in support of this cause.

### 1. INTRODUCTION

**New perspectives sometimes arise from understanding old ones more deeply.** In November 1945 a group of diplomats met in London in the immediate aftermath of the most destructive conflict in human history. They looked around and wondered about what could encourage a world where nothing like this could ever happen again. What emerged from this meeting was a new organization, the United Nations Educational, Scientific and Cultural Organization (UNESCO). The preamble of its constitution (UNESCO 2025; Figure 1), adopted on November 16, 1945, was by the poet Archibald MacLeish, who wrote that “since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed,” and that “ignorance of each other’s ways and lives has been a common cause, throughout the history of mankind, of that suspicion and mistrust between the peoples of the world through which their differences have all too often broken into war.” UNESCO was created “for the purpose of advancing, through the educational and scientific and cultural relations of the peoples of the world, the objectives of international peace and of the common welfare of

mankind for which the United Nations Organization was established and which its Charter proclaims.”

In this paper we describe our experiences with UNESCO programs—in particular those with a focus on protection and conservation of the world’s most precious natural and cultural resources—and our understanding of their values in the world today. We urge efforts to find synergy among different groups that have common goals in the international conservation and geoh heritage communities, and we propose that the United Nations Association of the United States of America (UNA-USA), in cooperation with the United Nations Foundation, could bring many groups and individuals together in support of this cause.

In this discussion we especially draw on the experience gained by the interactions of Tom Gilbert (hereafter simply “Tom”) with hundreds of scientists and conservation leaders in the planning and development of UNESCO programs and related conservation efforts. There are lessons from these programs that can be useful today.

---

**CORRESPONDING AUTHOR** **Chris Groves**, Western Kentucky University and Mammoth Cave Biosphere Region Advisory Council, Crawford Hydrology Laboratory, Department of Earth, Environmental, and Atmospheric Sciences, Western Kentucky University, Bowling Green, KY 42101; [chris.groves@wku.edu](mailto:chris.groves@wku.edu) • **Vernon C. (Tom) Gilbert**, National Park Service, retired



**FIGURE 1.** UNESCO's first General Conference in Paris, 1946. **UNESCO**

For example, the task group of experts that his colleagues and he convened in Paris in 1974 to design guidelines and criteria for a world network of biosphere reserves thought these sites served as a means to keep options open for the future by conserving genetic materials essential for life and human well-being (UNESCO 1974). This goal cannot be achieved under the current circumstances because of increasing problems, such as international abuses of power, wars, and displacement of people. It should be obvious now that “keeping our options open for the future” through the protection of natural resources and the genetic material they contain cannot be achieved if we fail in promoting peace and security. There are sensible ways to address the threats to precious and sensitive areas and the options for dealing with them.

## 2. THE PERSPECTIVE OF TOM'S EARLY EXPERIENCES PRIOR TO GOING TO UNESCO IN 1973

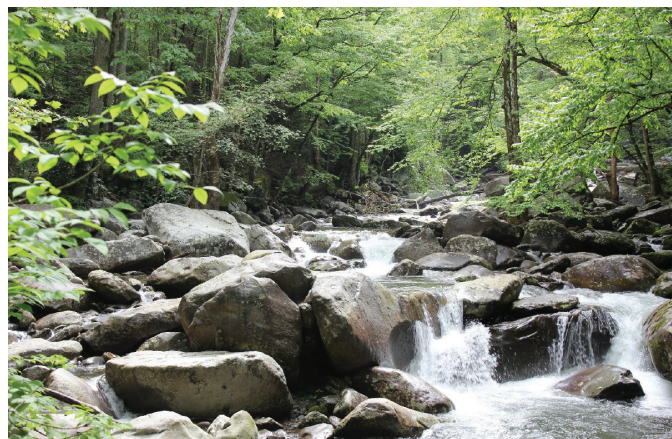
Before joining UNESCO in 1973, Tom had an interesting and varied career that helped prepare him for the work with UNESCO conservation programs. From his earliest memories, Tom, who was born in 1928, had been interested in plants and their uses, so the Great Smoky Mountains (Figure 2) was a great place to live and explore.

Tom's family had a cabin near the national park, which would be established in June 1934. He has clear memories of sitting with his mother on a grassy bank near their home in Knoxville, Tennessee, and waving to a smiling President Franklin D. Roosevelt on his way to officially

dedicate Great Smoky Mountains National Park in 1940. In his speech at Newfound Gap on the Tennessee–North Carolina border, the president warned of the growing dangers of the world, that there were shadows that Tom knew little about. Pearl Harbor, just fifteen months away, and the US entry into World War II changed all that.

Tom's best luck ever was to meet and fall in love with Helen “Patsy” Strong in 1946. She was a wonderful companion and talented artist. They married in San Antonio, Texas, on Christmas Eve in 1950. Tom feels deeply that she, more than anyone else, helped to make his career successful. Their work in the Great Smoky

**FIGURE 2.** Great Smoky Mountains National Park is one of the most botanically rich areas in the temperate zone of the earth. In the early 1970s the park served as an early model for MAB's basis of public–private partnerships. **TOM GILBERT**



Mountains, Everglades National Park, Cape Hatteras National Seashore, and Cape Cod National Seashore helped conservation practitioners to understand the importance of establishing good relationships with local communities. In the Everglades, Tom learned about the fascinating history of plant exploration and breeding of food crops in South Florida, which is important to the United States and the world today.

In Africa, Tom worked on a plan for Kilimanjaro National Park in Tanzania (Figure 3), which involved student participation. The planners achieved a multiplier effect by having students work with teachers at teacher training colleges in Tanzania and Kenya. After returning from Africa, he was able to establish a cooperative agreement between the US National Park Service and the Peace Corps which helped provide expertise in conservation and natural resources management to Peace Corps volunteers working in this field.

### 3. UNESCO, PARIS, 1973–1975

During the 1972 *Second World Conference on National Parks* in Yellowstone and Grand Teton National Parks, where Tom's staff conducted the interpretive program, the director of UNESCO's Ecology and Earth Sciences Division, Michel Batisse noted that the launching by UNESCO of the international research program on Man and the Biosphere (MAB) would constitute another important tool for the establishment and preservation of biological reserves, and, indirectly, of national parks. Batisse requested assistance from the US National Park Service in the form of a seconded position to help get MAB off the ground, and Director George Hartzog agreed to help (Elliott 1972: 417). Tom was selected for this position, which was located at the UNESCO headquarters in Paris. At the Yellowstone conference, Tom had

presented a paper titled "A Widening Horizon—The Role of Parks and Reserves in Education." This was a theme he pursued when he joined UNESCO to ensure that education and training were given high priority (Elliott 1974: 358–373).

When Tom arrived in Paris, Batisse asked him to draft a master plan for the project, but funds were very limited. Even so, Tom's colleagues and he were able to convene a Task Force on Criteria and Guidelines for the Choice and Establishment of Biosphere Reserves. When the task force's report (UNESCO 1974) was completed, it included details of the 1972 agreement on environmental protection between the US and the Soviet Union (USSR), which Tom had proposed and which contained commitments from both countries to create a new kind of protected area, to be called "biosphere reserves." This created world-wide attention, including among the media.

UNESCO's Director General René Maheu then wrote to US Secretary of State Henry Kissinger, and the State Department sent a communique to all members of the UNESCO International Coordinating Council (ICC). The communique stated the following:

Desiring to expand cooperation in the field of environmental protection, which is being successfully carried out under the U.S./U.S.S.R. agreement signed on May 23, 1972, and to contribute to the implementation of the "Man and the Biosphere" international program conducted on the initiative of the United Nations, Educational, Scientific and Cultural Organization (UNESCO), both sides agreed to designate in the territories of their respective countries certain natural areas as biosphere reserves for protecting valuable

**FIGURE 3.** Mohamed Ismail, a former student involved in the creation of Kilimanjaro National Park, along with Patsy and Tom Gilbert in Great Smoky Mountain National Park. Mohamed continues to be in touch with Tom on a daily basis through notes and photographs. **COURTESY OF NAHEED ISMAIL**



**FIGURE 4.** College of African Wildlife Management students assist in preparing a plan for the Kilimanjaro National Park in the mid-1960s. **TOM GILBERT**



plant and animal genetic strains and ecosystems, and for conducting scientific research needed for more effective actions concerned with global environmental protection. Appropriate work for the implementation of this undertaking will be conducted in conformity with goals of the UNESCO Program and under the auspices of the previously established U.S./U.S.S.R. joint committee on co-operation in the field of environmental protection.

The US hosted the third ICC meeting in Washington, DC, in the fall of 1974. This brought MAB closer to reality when 38 countries gave wholehearted support for the UNESCO-sponsored program at autumn meetings in Washington and Mexico City. For these efforts, Tom was honored with the Department of Interior “Distinguished Service Award.”

#### 4. BIOTIC PROVINCES: UNESCO AND THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)

The task force of experts who developed the criteria and guidelines for biosphere reserves agreed to adopt a classification scheme that had been developed by Raymond Dasmann entitled *Biotic Provinces of the World* (IUCN 1974). Dasmann, a great ecologist and conservationist and the key person who helped to develop the criteria and guidelines for biosphere reserves, was also the author of the book *Planet in Peril: Man and the Biosphere Today*. In chapter seven he wrote an excellent description about how MAB began:

The establishment of the United Nations in 1945, and of its various specialized agencies in the years that followed, indicated a willingness of government to act in concert in efforts to solve major problems confronting the world. No one would pretend that the United Nations has functioned in all the ways that the founders of this organization had hoped. Many have suggested ways in which the United Nations could be improved. Nearly all would agree, however, that if the United Nations systems were to cease to exist an organization very similar to it would have to replace it immediately. The willingness of nations to work together toward certain common goals is apparent. One goal on which all nations can agree is the need for maintaining and improving the human environment. The United Nations and its specialized agencies represent means by which governments can work together towards this goal.

The Biosphere Conference held in the UNESCO House in Paris in 1968 was a major step forward for the United Nations system. It represented the first major intergovernmental conference directed toward the solution of the problems of the biosphere in its totality.

The principles affecting the rational use and conservation of the resources of the biosphere were brought under critical review. Based on the information presented, the representatives of the nations that were in attendance agreed on a series of recommendations for future action. The problems discussed thus far in this book were generally recognized, and the need for all governments to join in a broad program directed toward their solution was stressed. UNESCO was called upon to take lead in forming a scientific research program that would carry on from where the International Biological Program left off, but with the full support of governments and of the United Nations specialized agencies.

Following the Biosphere Conference, work was begun at UNESCO which led to the drafting of a major, long-term research effort that became known as the Man and the Biosphere program, or MAB. This was done, as all such things must be, through a series of consultations with the member states of UNESCO, with the specialized agencies of the United Nations system, and with concerned nongovernmental, international agencies such as the International Union for Conservation of Nature (IUCN) and the International Council of Scientific Unions (ICSU) (Dasmann 1972).

MAB was focused on natural environments, and upon arriving in Paris in 1973 Tom’s job was to focus on planning MAB Project 8, Conservation of Natural Areas and of the Genetic Material They Contain. Tom was particularly impressed with the ideas that the ecologist and conservationist Stanley Cain and his group had introduced in a session on “Preservation of Natural Areas and Ecosystems, Protection of Rare and Endangered Species” held at UNESCO’s Intergovernmental Conference for Rational Use and Conservation of the Biosphere in 1968. Here Cain described a new vision for a protected area—multidisciplinary, multiagency, and with public-private joint planning on a regional scale. Drawing on this approach, criteria and guidelines were developed that used Great Smoky Mountains National Park in Tennessee and North Carolina as a model of cooperation with public and private partners (UNESCO 1968: 143–154).

Members of the UNESCO Expert Panel on MAB Project 8 convened in Paris in 1973 and concluded that their clear responsibility was, at the very least, “to keep options open for the future” and prevent, to the best of their abilities, the depletion or destruction of the genetic diversity of life.

At that time competition was greater than cooperation among the key international conservation organizations

including UNESCO, IUCN, the UN Environment Program (UNEP), and the Food and Agricultural Organization of the UN (FAO), and so in early 1974 Tom proposed and helped to initiate the Ecosystem Conservation Group (ECG), which was established in 1975 as a mechanism for communication and coordination among these organizations. The US Department of State called it “a major advance in the global drive to improve and maintain the environment” (US Department of State 1975).

## 5. US MAB PROGRAM COORDINATION (1975–1981)

When Tom and Patsy returned from Paris in 1975 after the conclusion of his UNESCO assignment, he became the United States MAB program coordinator. There were 14 project areas and very able directorates overseeing each, with the chairperson a member of the US MAB National Committee. Many of these projects focused on the environmental impacts of increasing human activities on different ecosystems, including tropical and subtropical forests, temperate and Mediterranean landscapes, savannas and grasslands, mountains and tundras, and coastal zones. Processes associated with human impacts were studied, including fertilizer use, urban energy utilization, and environmental pollution. Work continues today that can be traced to the project on “Conservation of Natural Areas and of the Genetic Material They Contain” (McCormick and Kormondy 1981).

Most of these projects were designed to be carried out in biosphere reserves, so the first activity was to hold a series of regional organizational meetings. The first was held in the Great Smoky Mountains region with participants from the southeastern United States. Jerry Olsen, a climate scientist from the Oak Ridge National Laboratory, recommended in the beginning that biosphere reserves should focus on marshalling existing resources of the participating agencies and institutions. For example, there were existing research plots to monitor climate change within vegetation transition zones and in low-lying coastal areas. Effective use of such programs became a priority in each of the following regional meetings.

## 6. A PROPOSAL TO “PUT MAB ON THE MAP”

In early May 1977, Don King, then chair of the US MAB Committee, and Tom were having lunch in the State Department when Don asked about calling their mutual friend, Lee Talbot, the chief scientist at the White House Council on Environmental Quality (CEQ), to ask him if a request for a study of the population and of environmental trends to the year 2000 could be included in President Jimmy Carter’s upcoming message to the Congress. This would be a way to put the MAB program on the map. On May 23, 1977, President Carter did just that, saying, “I am directing the Council on

Environmental Quality and the Department of State, working with other appropriate agencies, to make a one-year study of the probable changes in the world’s population, natural resources, and environment through the end of the century.”

When the *Global 2000* report (Barney 1980) was published it was rejected by the Reagan Administration, but there were significant efforts that tried to keep its recommendations alive. One was the publication of a report entitled *Global Future: Time To Act* in January 1981. The preface stated:

The Global 2000 Report to the President, issued July 24, 1980, after a three-year interagency study, was the U.S. government’s analysis of probable changes in world population, resources, and environment through the end of the century and concluded that unless nations of the world take prompt, decisive action, to alter the trends, the next twenty years may see a decline in the earth’s capacity to support life while rapid population growth continues; a steady loss of croplands, fisheries, forests, and plant and animal species.

If the US government had acted on these recommendations at the time, the world would be better off today!

## 7. THE US JOINS UNESCO’S MAB PROGRAM

On March 9, 1979, J.T. MacIntyre, Director of the US Office of Management and Budget (OMB), and Frank Press, Director of the Office of Science and Technology Policy, signed a “Memorandum for Heads of Certain Departments and Agencies” that called for participation in UNESCO’s MAB programs and the development of a national plan for the program. After several planning workshops involving MAB partners, and extreme difficulties during the transition from the Carter to Reagan administrations, a MAB plan was signed by the assistant secretaries of the Departments of State, Agriculture, and Interior plus the chairman of the USMAB Program, all of whom endorsed the MAB plan’s proposed recommendations. For nearly 10 years, MAB had been developing a complex range of research, management, training, and planning programs to deal with the difficult problems that would soon be described in the *Global 2000* report to the president, and in a similar report organized by IUCN, the World Conservation Strategy.

The recommendations noted that the MAB Program had:

- 1) Fostered cooperative programs among US government agencies, academic institutions, non-governmental organizations, and other countries to provide information needed to solve practical problems on resource management;



**FIGURE 5.** State Department Conference room, early 1970s. Pictured from left to right: Robert Ferris(?) (US Forest Service staffer), John McGuire (chief, US Forest Service), Dr. Donald King (chair, US MAB Committee, Department of State), Warren Dolittle (associate deputy chief, US Forest Service), Oscar Olsen (MAB executive director), William Briggie (deputy director, National Park Service), Tom Gilbert (US MAB Program coordinator). COURTESY OF TOM GILBERT

- 2) Encouraged interdisciplinary and cross-sectoral research that has actively involved both natural and social scientists; and
- 3) Had a significant catalytic effect.

With an expenditure of approximately \$1.3 million in fiscal year 1980, the US MAB Program had generated research projects and other programs involving more than \$10 million. The US MAB Program had grown into being an integral part of UNESCO's international MAB program that had approximately 1,000 field projects in 78 countries.

The 1979 memorandum stated that it was time to formally recognize this endorsement by the agencies and to make funding more predictable through line-item appropriations. This was taken forward through a request to OMB for a two-year budget of \$6,562,000. Tom carried the plan directly to OMB Director MacIntyre, who replied that there would be no opportunities under the Reagan administration to approve new line-item appropriations, but that the agencies would have the authority to use existing funds for MAB if they chose to do so.

## 8. AFRICAN ENVIRONMENTAL TRAINING AND MANAGEMENT AND COOPERATIVE DEMONSTRATION PROJECTS

Tom retired from NPS in 1980 because of the collapse of support for these programs by the Reagan administration: rejection of MAB and the *Global 2000* study recommendations, the pending withdrawal from UNESCO, and the lack of support to initiate the cooperative regional demonstration projects. However, in 1982 he became field director of the Environmental Training and Management Project in Africa (ETMA), where he was able to initiate cooperative regional projects in several countries. ETMA was supported by the US Agency for International Development (USAID): part of a legacy that is now, unfortunately, purely historic, as USAID was dismantled in 2025 by President Trump in the early days of his second administration.

Under ETMA, from 1982 to 1984 Tom and his colleagues established cooperative activities on conservation of plant communities in East Africa (Figure 6), which they called "Endangered Resources for Development." Kenya's President, Daniel Arap Moi, endorsed this program, stating in the foreword to ETMA's 1984 report that "Historically



**FIGURE 6.** Forests such as this one on Mount Kilimanjaro were often cut before knowing what species of plants and animals they contained. These valuable forests were often replaced by pine plantations. **TOM GILBERT**

our natural environment has provided the people of Kenya with food, fuel, building materials, and often medicine. . . . It is still vital today and it will remain so in the future. It is the duty of us all to take action now, while there is still time, to halt the destruction of plant and animal species, to conserve special areas of vegetation, and to enforce a proper balance in the utilization of these natural resources” (USAID 1984).

Another cooperative demonstration program was conducted in the Virunga Volcanoes Mountains of northwestern Rwanda (Figure 7), which had been designated as a biosphere reserve. This was the country’s most important watershed as well as the home of the mountain gorilla. Farmers had encroached on the reserve, clearing forests and causing extensive erosion and mudslides, and so a cooperative project was established to help farmers control erosion, sustain their farms, and protect the home of the mountain gorilla, which was considered a resource for the world.

Yet another cooperative project that illustrated a sound, scientific approach to the planning of land management was the “Integrated Project on Arid Lands in the Mount

**FIGURE 7.** Mountain gorilla in the Virunga Volcanoes of Rwanda. Under the USAID-funded Environmental Training and Management program in Africa, Tom and his colleagues established a project to assist communities bordering the mountain gorilla reserve in the Virunga Volcanoes Mountains, which was established as a biosphere reserve. This is Rwanda’s most important watershed as well as the home of the mountain gorilla, which is a resource of worldwide importance. **TOM GILBERT**



Kulal Region of Northern Kenya,” which later became a biosphere reserve. This project dealt with the prospects for desertification and to develop plans to reverse the trends. Emphasis was placed on participatory education, training of pastoralists, and demonstration of alternative practices. In 1983 at the First Biosphere Reserve Congress in Minsk, Byelorussia/USSR, Tom presented a paper entitled “Cooperative Regional Demonstration Projects: Environmental Education in Practice.” This recommended support to UNESCO for establishing biosphere reserves and assisting countries in the selection and development of such projects by making available necessary technical experts to MAB.

## 9. THE SOUTHERN APPALACHIAN MAN AND BIOSPHERE (SAMAB) PROGRAM

Patsy and Tom came back from Africa in 1984 and began to build their home in Pittman Center, Tennessee. Soon after the Southern Appalachian Man and Biosphere (SAMAB) program was established in 1988. In time, the CEQ would give special recognition to SAMAB—significant because CEQ had major responsibility for advancing environmental priorities of the United States. In those days, the priorities included climate change, conserving lands and waters, and ensuring implementation of the National Environmental Policy Act (NEPA). SAMAB demonstrated how public and private land and water managers could share joint decision-making on a regional scale.

SAMAB was the first regional organization of its kind in the US, and it served as a model for programs in other countries. Today, with 37 years of experience to build on, the administrative leadership of SAMAB is, as of this writing, being re-established under the joint aegis of Oak Ridge National Laboratory and the University of Tennessee. Tom will be donating his personal collection of materials resulting from these activities for inclusion in the Special Collections Library at the University of Tennessee.

## 10. SOVEREIGNTY INTERNATIONAL, THE US CONGRESS, AND MAB—“FINDING COMMON GROUND”

UNESCO, in its introduction to the *Statutory Framework of the World Network of Biosphere Reserves* (UNESCO 2020), explained that it had been formulated with the objective of “enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication, and co-operation at the regional and international levels.” The framework also stated that “States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.” Unfortunately for the United States, in discussions with the public this provision has not

received the emphasis that it deserves; if it had, it might have helped allay a widespread misconception in certain quarters that biosphere reserves are a “UN takeover” infringing on national sovereignty. Instead, most of the emphasis by UN critics has been placed on Article 4 of the framework, which states that biosphere reserves should include the following functions through appropriate zonation that recognizes:

- a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;
- a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place; and
- an outer transition area where sustainable resources management practices are promoted and developed.

In addition, it states “provision should be made for”:

- mechanisms to manage human use and activities in the buffer zone or zones,
- a management policy or plan for the area as a biosphere reserve, and
- a designated authority or mechanism to implement this policy or plan.

In a severe blow to years of progress moving the biosphere reserve concept forward in the United States, in 1981 Henry Lamb, chair of Sovereignty International, a non-profit, property rights organization that focused “on threats to national sovereignty in public policies, international treaties and agreements, and in educational and cultural trends,” testified before Congress that US sovereignty was being violated by the biosphere reserve program, quoting Article 4 of the Constitution that only Congress has the power to “Dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States.” Jeane Kirkpatrick, the US ambassador to the United Nations, agreed, and the House Resources Committee began an investigation into MAB for alleged violations of US sovereignty and property rights (Gilbert 1997). As a result of this testimony, Congress cut funding for the US MAB Program. Tom subsequently had the opportunity to meet with Lamb over a period of several years. They eventually co-wrote and signed an agreement that said that biosphere reserves could serve the interest of private property owners if they participated voluntarily, and the program was approved by local elected officials. In this way they ended up finding common ground and becoming friends. Lamb later wrote to Tom, saying that he felt “that

we had climbed a mountain and the view on the other side was better than he could have imagined it could be.” As a result of their success understanding one another, the congressional investigation ceased.

## 11. PLANT GENETIC RESOURCES AND INTERNATIONAL CONSERVATION EXAMPLES

The international MAB program has long had a special focus on the on-site (*in situ*) conservation of genetic resources—especially those associated with wild relatives of cultivated and domesticated crop species—as one function of protected areas. In 1998 Tom prepared a booklet entitled “Plant Genetic Resources: Their Conservation In Situ for Human Use,” and Patsy illustrated a separate brochure about *in situ* genetic conservation. This work was possible because in 1983 at the 22nd FAO conference in Rome, there had been an international undertaking on plant genetic resources that aimed to ensure plant genetic resources of economic and social interest would be studied, conserved, evaluated, and made available for plant breeding and scientific purposes.

The booklet concluded that “The stress on renewable natural resources is already undermining the ability of land in many areas of the world to produce the goods and services necessary for human well-being; and making it more prone to drought, erosion, and desertification. Unless this stress is curtailed, it will impose severe limits on economic growth and development in the future.” Furthermore, “The remaining years of this century are of critical importance for the conservation of genetic resources, especially in the tropics; time to act is rapidly running out. It is essential that the challenge facing us is vigorously confronted, to ensure the well-being of present and future generations. The financial resources and expertise must urgently be mobilized, as the IUCN and (World Wildlife Fund) WWF plant campaign puts it, to ‘save the plants that save us.’”

Sad to say, the state of the world’s naturally occurring genetic resources remains perilous today. There still is, in some aspects, an appalling lack of care about the world’s major food crops and what it takes to sustain them. Some of our most important introduced food vegetable species include corn (maize), wheat, rice, potatoes, tomatoes, and soybeans, and many fruits, including apples, oranges, bananas, mangoes, and avocados. From a US perspective, all of these are originally from other parts of the world, and all of them still rely on genetic resources from natural areas to sustain global food production. How

many of the over 1 billion people who drink coffee every day, for example, know that Arabica coffee originated in the Ethiopian region of Africa and that two biosphere reserves have been established to conserve and restore the remaining wild coffee forest? How many know about the turmoil that Ethiopia has gone through for decades? Several of Tom’s students and friends from Ethiopia who became important conservation officials had to flee during wars and went into exile in other countries.

Using biosphere reserves to conserve genetic diversity (especially *in situ* conservation of genetic resources, including wild relatives of cultivated and domesticated species), considering use of the reserves as rehabilitation/re-introduction sites, and linking them as appropriate with *ex situ* conservation and use programs, are linked responses to the challenges outlined above (UNESCO 1995). By combining *in situ* and *ex situ* approaches to conservation of genetic resources, many more species can be secured and made available for human use. This would be a significant contribution to food sustainability and security. Using biosphere reserves to communicate these ideas throughout the world also has great benefits in terms of getting people to better understand one another—itself a powerful form of diplomacy (Figure 8).

## 12. LOOKING FORWARD: THE CATALYTIC POTENTIAL OF UNA-USA

One of the greatest threats to humankind is war, and a major threat in many places is armed conflict and competition for natural resources. Immediately after the United Nations officially came into existence in 1945, UNESCO was created to work towards peace, education, science,

**FIGURE 8.** Brian Gilbert and new friends near their home on Mount Kilimanjaro, Tanzania, in 1966. A great adventure and the best kind of diplomacy. This was made possible by a USAID program. **TOM GILBERT**



and cultural needs, and today has a program on Global Citizenship and Peace Education. The United Nations also was created in 1945. Today one of the best programs we have for nurturing the requisite relationships is the UN Association of the United States of America (UNA-USA). It is “dedicated to educating, inspiring, and mobilizing Americans to support the principles and vital work of the United Nations and its specialized agencies such as UNESCO.” UNA-USA can be a means to bring hundreds of groups and thousands of individuals into a more effective effort to work for peace and sustainability. UNESCO MAB, UNESCO’s Global Citizenship and Peace Education Program, and UNA-USA can help to educate a new generation of broad-minded political leaders. The world network of biosphere reserves now contains 759 sites in 136 countries. This network is an ideal place to inculcate the principles of citizenship, an ethic of natural resource sustainability, and support for peace education in the thousands of institutions associated with the World Network of Biosphere Reserves, UNESCO’s system of World Heritage Sites, and many national parks and similar areas. Biosphere reserves are ideal places to understand the threats to sustainability and options for dealing with them. There are hundreds of organizations and thousands of individuals working to achieve these goals through their separate and often isolated actions. They could become a much more powerful force if they worked together, and UNA-USA may be our best opportunity to cooperate and to determine how a new generation of leaders could help keep options open for future generations. All of us should encourage people, and especially young people, to join UNA-USA. This is all

the more important now that the current administration has announced it will withdraw the US from UNESCO by December 2026.

### 13. A CLOSING THOUGHT: “THE WORK IS PEACE”

In late February 1945, with the Soviet Army approaching Berlin, it was no longer a matter of whether Germany would be defeated, but what a post-war Europe would look like. Winston Churchill, Joseph Stalin, and Franklin D. Roosevelt met at Yalta, Crimea, to shape the post-war peace (Preston 2020). This is where Roosevelt endorsed the creation of a new organization—the United Nations—to create a lasting framework for cooperation, and thus security, among the world’s nations, and in this way, it was hoped, to prevent future wars. By April, while planning to attend the upcoming conference in San Francisco where the United Nations Charter would be created, Roosevelt, whose health had been failing, retired to his retreat at Warm Springs, Georgia, to rest and write.

On the evening of April 11, while preparing for a nationwide radio broadcast scheduled a few days later, Roosevelt wrote the words below (Hathaway and Shapiro 2023). He died later that night and so was never able to deliver the address, but his thoughts remain, and must continue to inform our thinking today:

The work, my friends, is peace, more than the end of this war—an end to the beginning of all wars, yes, an end, forever, to this impractical, unrealistic settlement of the differences between governments by the mass killings of peoples.

**This is the United Nations, and this is UNESCO.**

### ACKNOWLEDGMENTS

The authors express heartfelt appreciation to our friends and colleagues Patty McGrew, Jacob Thomas, Christina Shelley, and Nancy Bandy who provided critical assistance with this project.

### REFERENCES

Barney, G.O. 1980. *The Global 2000 Report to the President—Entering the Twenty-first Century: The technical report*. Washington, DC: US Government Printing Office.

Dasmann, R. 1972. *Planet in Peril? Man and the Biosphere Today*. New York: Penguin Education.

Elliott, H., ed. 1974. *Second World Conference on National Parks, Yellowstone and Grand Teton National Parks, U.S.A. September 18–27, 1972*. Morges, Switzerland: International Union for Conservation of Nature and Natural Resources.

Gilbert, V.C. 1997. Biosphere reserves and the ‘American Land Sovereignty Protection Act.’ *The George Wright Forum* 14(2): 6–9. <https://www.jstor.org/stable/43597520>

Hathaway, O.A., and S.J. Shapiro. 2023. *The Internationalists: How a Radical Plan to Outlaw War Remade the World*. Leading Works in International Law. London and New York: Routledge.

IUCN [International Union for Conservation of Nature and Natural Resources]. 1974. *Biotic Provinces of the World: Further Development of a System for Defining and Classifying Natural Regions for Purposes of Conservation*. IUCN Occasional Paper no. 9. Morges, Switzerland: IUCN. <https://portals.iucn.org/library/sites/library/files/documents/OP-009.pdf> (accessed June 25, 2025)

McCormick E., and J.F. Kormondy 1981. *Handbook of Contemporary Developments in World Ecology*. Westport, CT: Greenwood Press.

Preston, D. 2020. *Eight Days at Yalta: How Churchill, Roosevelt and Stalin Shaped the Post-War World*. New York: Atlantic Monthly Press.

UNESCO [United Nations Educational, Scientific, and Cultural Organization]. N.d. UNESCO in key figures. <https://www.unesco.org/en/key-figures> (accessed June 16, 2025)

UNESCO. 1968. Use and conservation of the biosphere. <https://unesdoc.unesco.org/ark:/48223/pf0000067785?posInSet=1&queryId=3aae32f6-428d-45f9-93cc-7307d6979e2e> (accessed June 25, 2025)

UNESCO. 1974. *Report of the Task Force on Criteria and Guidelines for the Choice and Establishment of Biosphere Reserves*. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000009889?posInSet=1&queryId=6e2abab0-687f-4ff3-803d-427edfabee7b> (accessed June 23, 2025)

UNESCO. 1995. *The Seville Strategy for Biosphere Reserves*. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000262500> (accessed June 25, 2025)

UNESCO. 2020. *Statutory Framework of the World Network of Biosphere Reserves*. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000373378?posInSet=1&queryId=899774a8-fbd2-461e-8335-69530be68024> (accessed June 25, 2025)

UNESCO. 2024. Constitution. <https://www.unesco.org/en/legal-affairs/constitution> (accessed June 23, 2025)

USAID [US Agency for International Development]. 1984. Environmental Training and Management Project 1984, Endangered Resources for Development. Report. Washington, DC: USAID.

US Department of State. 1975. *Nature and Resources Bulletin on the Man and the Biosphere Program* 11(4).