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Forgotten in Capital: A Biodiversity Center

WASHINGTON, Jan. 21 (AP) — An executive order that would have created a national center on plant and animal species was shelved in the final days of the Bush Administration, apparently lost in the last-minute flow of work, an official of that Administration says.

The biodiversity center, which would have served as an information clearinghouse on Earth's varied life forms, had been seen as a way for President George Bush to mute the criticism of his refusal to sign the Biodiversity Treaty at the Earth Summit in Rio de Janeiro last year.

But the order never got to Mr. Bush's

desk, apparently stopping in the Office of Management and Budget, said the official, who had helped put together a multiagency agreement to cooperate on the center. The official, who is now working in the Clinton Administration in a holdover job, spoke Thursday only on the condition of anonymity.

It is unclear whether President Clinton might now have an interest in creating such a center.

Company News:

Tuesday through Saturday,
Business Day

Tom -

Is this on your agenda with Jack?

Mary

Mediation sought on biotechnology disputes

San Francisco. The biotechnology industry, confronted with indications that genetically engineered foods face a wary or even hostile public, has enlisted a mediation team to help it find common ground with its critics.

The first genetically engineered whole food, a tomato made by Calgene Inc., is likely to reach grocery store shelves later this year (see *Nature* 357, 352; 1992). But already chefs are vowing not to serve it, farmers are agreeing not to grow it and consumers are asking how it and other biotech foods will be labelled. Earlier this month, Campbell Soups announced that it had no plans to sell any product containing the tomato, which it helped to develop.

The Industrial Biotechnology Association has asked Resolve, a centre for environmental dispute resolution in Washington, to see whether its opponents would be willing

to talk face-to-face. "We were hoping that it might create a forum that would allow discourse at a slightly lower volume", says Richard Godown, president of the Washington-based trade association.

The association is concerned that the public might not accept the new products because of concern about the way the government regulates them. Last year, the US Food and Drug Administration (FDA) said that genetically engineered foods would not require any special labelling or safety testing unless there were indications that they might cause allergic reactions or pose safety concerns.

Environmental groups, convinced that the foods should be labelled, tested for safety and registered, urged their members to write to the FDA. Jeremy Rifkin, an outspoken industry critic, began organizing a boycott

and signed up thousands of chefs, growers and distributors.

The FDA has received 3,200 comments on its proposed regulations. About 35 per cent have asked that all genetically engineered foods be labelled, with 50 per cent also requesting premarket testing to prove safety. Food allergies were the concern of 40 per cent, while 10 per cent raised ethical or religious issues. The FDA is considering an open meeting to talk about the labelling question and is meeting experts on food allergies, said James Maryanski, biotechnology coordinator for the agency's Center for Food Safety and Applied Nutrition.

FDA officials also have agreed to an initial meeting with Resolve, which is contacting environmental groups such as the Environmental Defense Fund and the National Wildlife Federation. Rifkin has not been approached. Calgene is also a participant.

Resolve, a subsidiary of the World Wildlife Fund, helped to bring about the National Wetlands Policy Forum that led to a government policy stipulating no net loss of wetlands. For five years, it has conducted a quarterly roundtable meeting on the ecological effects of pesticides with representatives from government, industry, universities and the environmental movement.

The organization typically convenes a group of about 20 people holding diverse views on a particular issue and tries to reach a consensus. The result can be policy recommendations, agreements on joint research or even a draft of new federal rules. In the case of genetically engineered foods, new regulations would not be possible because the FDA did not initiate the process.

Resolve expects to complete a feasibility study within a couple of months to decide whether the project should proceed, what its goals would be and who would fund it. Potential participants are optimistic.

Sally Lehman

US keeps promise on biodiversity

Washington. Outgoing President George Bush this week was expected to sign an executive order creating a National Biodiversity Center to serve as a repository for scientific data on biodiversity within the United States and its territories. The order, coming in the final days of an administration with a reputation for dragging its feet on environmental issues, directs the Smithsonian Institution to take the lead in working out an agreement among federal agencies to establish and fund such a centre.

At present the US government has no clearinghouse for biodiversity information. Taxonomic and other data on species, habitats and ecosystems exist in many places, including museums, universities, government agencies and conservation groups. In its simplest form the new centre would set up an electronic network linking the different databases; a more elaborate plan would be a single large database at a location yet to be determined.

The executive order designates a committee of at least a dozen federal agencies to determine the scope and structure of the new centre, which could be in operation within a year.

The centre is not expected to require the construction of a new facility. It would neither collect data nor do biological surveys. "There's a strong argument for keeping the science separate from the policy", says Thomas Lovejoy, assistant secretary for external affairs at the Smithsonian and a leading figure in negotiations to create the centre.

In fact, one reason the Smithsonian was selected is its reputation as a nonpartisan research agency. "Biodiversity is still a politically touchy issue, and they [the White House] wanted to put the centre somewhere

with the least possible political content", says Peter Jutro, who heads the biodiversity research programme at the Environmental Protection Agency.

Both the centre and an international workshop on biological surveys held last week in Washington fulfil promises made by the Bush administration during the environmental summit held last summer in Rio de Janeiro. Although the United States did not sign the convention on biological diversity at the summit, it endorsed the idea of establishing centres to coordinate scientific data-gathering within individual countries and offered to host the first international workshop to set standards for coordinating biological surveys.

White House officials wanted to hold the workshop, involving scientists and administrators from several US government agencies as well as representatives from 12 other countries, before the end of Bush's term of office on Wednesday this week. Its recommendations will go to the United Nations Environment Programme and to other organizations working on biodiversity issues.

Participants at the workshop were concerned that museums and private institutions might be reluctant to share their data, particularly with commercial interests that might use them for profit. "Some of the best experience in this area is in private zoos, herbariums and organizations like the Nature Conservancy", says Jutro. "We have to have a big tent."

Although Bush was expected to sign the order creating the centre before leaving office on 20 January, Clinton also supports the idea, says Jutro. "I think it will be followed up enthusiastically by the next administration."

Tony Reichhardt



ScienceScope

edited by RICHARD STONE

Transition Chaos at Science Agencies

As *Science* went to press, a last-minute battle between the incoming and outgoing presidential administrations had thrown the federal science agencies into a state of pandemonium, with agency heads scrambling to find out if their jobs would survive the inauguration.

The trouble started when the White House issued a surprise notice giving all top presidential appointees less than a week to clear out their desks—whether or not Bill Clinton wanted them to stay. In the one-paragraph memo, the Bush White House accepted the resignations of most top presidential appointees, effective 20 January. That move, reportedly a reflection of deteriorating relations between the two transition teams, turned a leisurely changing of the guard into a lifeboat drill:



Should I stay or should I go? David Kessler, FDA commissioner, and NIH Director Bernadine Healy.

Stunned agency officials started placing frantic calls to the Clinton team to try to save their posts, at least until Clinton could name their successors.

Officials at top science posts (many of which are considered nonpolitical and not necessarily

subject to automatic turnover with a new administration) are among those appointees making last-minute attempts to hang on. Officials at the National Aeronautics and Space Administration say that their administrator, Daniel Goldin, expects to take

advantage of a clause in the White House order that allows each agency to keep one Senate-confirmed appointee to run the shop until a replacement is named. And while National Institutes of Health Director Bernadine Healy had ordered her office packed up, officials there say that she, too, is hoping for a similar reprieve. Meanwhile, officials at the Food and Drug Administration (FDA) refused to speculate on FDA commissioner David Kessler's future.

Ironically, National Science Foundation (NSF) director Walter Massey, who has been shielded from much of the tumult thanks to his special 6-year term, may actually be among the first to leave. NSF officials confirm that he is considering a top job with the University of California, and a Clinton aide predicts an announcement from Massey within a month.

Bush to Order Creation of Biodiversity Center

After declining to sign the biodiversity treaty at the Earth Summit in Brazil last June, President George Bush offered environmentalists an olive branch. He promised to create a national center for biodiversity studies. Now, the

rhetoric is about to become reality. As one of his last presidential actions, Bush earlier this week was expected to sign an order that calls for the center's establishment.

The center would assemble information on animal and plant diversity in the United States, and serve in a United Nations world-

wide monitoring program. It would be housed at the Smithsonian Institution in Washington, D.C., rather than at a federal line agency in order to "try to keep science separate from policy," says Thomas E. Lovejoy, a prominent biologist and the Smithsonian's secretary for external affairs.

The order would follow a flurry of environmental actions by federal agencies last week, including decisions to limit logging in the Pacific Northwest to protect the endangered spotted owl; to lift a requirement that companies obtain permits for small-scale tests of genetically engineered pesticides; and to transfer federal land to the state of California for use as a nuclear waste dump.

The promise of a biodiversity center had languished for months because the Department of the Interior and other agencies opposed it. In the end, says a federal scientist close to the negotiations, the Office of Management and Budget—spying a chance for Bush to burnish his environmental record—overrode Interior's objections.

Because the president lacks direct authority over the Smithsonian, the decree would order several other federal entities to help the Smithsonian set up a board of advisers that will write an operating plan, including cost estimates, for the center. Lovejoy, who officials say is likely to head the board, predicts the center will be up and running by early next year.

It's Official: SSC Is a U.S. Baby

Remember all those foreign contributions to the Superconducting Super Collider (SSC) that always seemed just a diplomatic nod away? That, at least, is the way the Department of Energy (DOE) portrayed the project over the past few years, as DOE officials returned from one overseas trip after another with nothing but encouraging signals to report. Now it turns out that the prospect of winning substantial foreign contributions to the \$8.3 billion project isn't so hot—and probably never was.

Last week, DOE Secretary James Watkins officially confirmed what many researchers have suspected: The United States will have to build the SSC without much help from abroad. In a letter responding to questions from Representative George Brown (D-CA), the chairman of the House Science Committee, Watkins said that DOE thinks it can get just \$400 million worth of aid for the SSC from foreign countries by 1999—primarily in the form of labor and materials from Russia, China, and India. That's less than one-quarter of the \$1.7 billion that Congress has allocated

DOE must get from foreign sources. And it's even less than the commitment of \$650 million in foreign contributions over the next 3 years that DOE must have by 1 June, if it is not to lose the rest of its 1993 funding.

But rather than kill the project, Watkins wants Congress to change the rules. We should not be in the position of allowing another nation to determine the [SSC's] schedule," he wrote. Build it like a ship, the former Navy admiral suggested. Give DOE full funding up front. "I recognize that this is a major change that demands serious discussion," Watkins conceded. "However, the approach would substantially improve our ability to successfully compete this project..."

Brown had not responded as *Science* went to press. But one of his questions may give a clue to the thinking on Capitol Hill: "What are the implications for termination of the project?" he asked. Watkins answered: an estimated \$278 million in shutdown costs, and "a negative message to the [world] about our commitment to science and technology."



DRAFT -- OPEN FOR COMMENT AND SUBSTANTIAL REVISION

TO: Whom It May Concern

FROM: Biodiversity Working Group --
David Beier, Genentech
Isabelle Claxton, Merck
T. J. Glauthier/Richard Mott, WWF
Gareth Porter, EESI
Walt Reid, WRI

SUBJECT: Convention on Biological Diversity

DATE: February 22, 1993

As the Clinton/Gore Administration reconsiders the United States position on the Convention on Biological Diversity ("Biodiversity Treaty"), it is appropriate to examine the potential for harmonizing the interests of environmental preservation and conservation with intellectual property rights.

Vice President Gore has stated that:

The Clinton-Gore Administration will ... present a coherent plan for protecting biodiversity and intellectual property rights in a way that enhances conservation and facilitates global research efforts by U.S. businesses and universities ... [thereby] linking economic progress to the protection of biodiversity.¹

As the Working Group continues its work, it is appropriate to review two documents. First, assuming that it is possible to reach the desired harmonization, a draft statement to be submitted with the signature of the United States to the Biodiversity Treaty.² ATTACHMENT 1. This statement indicates that in the event of a substantially different interpretation being given to the provisions of the Convention, the United States reserves its rights under Article 38 to withdraw as members of the Convention.

¹ Gore, "Essentials for Economic Progress: Protect Biodiversity and Intellectual Property Rights, 4 Journal of NIH Research 18,19 (1992).

² This latter statement would also be submitted to the Senate in connection with the submission of the treaty to the United States Senate. As appropriate, these understandings should be incorporated into the ratification process by the Senate.

*X Nothing in Convention
requires a change in US domestic
law*

Second, a draft document to be issued by President Clinton that outlines the Administration policy with respect to the domestic issues that arise with respect to intellectual property generally, and with respect to the Biodiversity Treaty, specifically. ATTACHMENT 2.

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article 8(g) - deliberate resp didn't discuss
Guest - DDA says not a

ATTACHMENT 1

INTERPRETATIVE STATEMENT OF THE UNITED STATES

General Interpretative Statement

The United States hereby declares its understanding of Articles 1, 15, 16, 19, 20, 21, and 23 of the Convention on Biological Diversity. In the event that the Conference of Parties adopts an interpretation contrary to these understandings, the United States reserves its right to take appropriate steps to respond, including withdrawal from this Convention and all its protocols, as provided in Article 38.

Article 1

interpreted taking into account all rights of this state & private party

The United States declares its understanding that fair and equitable sharing of the benefits arising out of utilization of genetic resources requires members of this Convention to respect the rights of other member countries and of private parties to the technology that arises out of such utilization of genetic resources. The United States further declares its understanding that the phrase "appropriate transfer of relevant technologies" under this agreement means that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 15

The United States declares its understanding of the meaning of Article 15(3) that resources obtained by public or private entities before or outside of the Convention are not governed by the Convention.

The United States declares its understanding that the obligation imposed by paragraph 6 of Article 15 to carry out research activities on genetic resources with the full participation of Contracting Parties that provide such resources in research activities is an obligation that applies only to Contracting Parties, and not to the private sector within each Contracting Party.

The United States declares its understanding with respect to paragraph 7 of Article 15 that any sharing in a fair and equitable way of the results and benefits arising out of use of a genetic resource must take fully into account: exclusive rights to technology that a party obtains through its efforts; and that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 16

The United States declares its understanding that access to and transfer of technology under this agreement subject to intellectual property rights under the Convention requires the recognition of, and consistency with, the adequate and effective protection of intellectual property rights, and thus does not provide a basis for the use of compulsory licensing laws to compel private companies to transfer technology under this agreement.

The United States declares its understanding of paragraph 2 of Article 16 that the phrase "fair and most favorable terms" means terms that are determined by a free market without trade restrictions or government coercion.

The United States further declares its understanding of paragraphs 2 and 3 of Article 16 to be that in the case of proprietary technology, transfers may only take place on terms that recognize and are consistent with the adequate and effective protection of intellectual property rights. In connection with transfer of technology under this agreement subject to patents and other intellectual property rights, failure of a member country to extend such protection, or action by a member country to limit the exercise of an entity's intellectual property rights, is considered by the United States as being inconsistent with this provision of Article 16.

The United States declares its understanding that the measures encouraged under paragraph 4 of Article 16 does not permit the violation of "adequate and effective protection of intellectual property rights" in any transfer of, or access to, technology under this agreement.

The United States declares its understanding that while the transfers of technology contemplated under Article 16 will often be made by the private sector, the obligation to facilitate such transfers attaches to the Contracting Parties themselves rather than to entities within the private sector.

The United States declares that Article 16(5) does not alter any obligation established in this agreement, and in particular, the obligation in Article 16, paragraph 2 that any access to, and transfer of, technology subject to patents and their intellectual property rights, must be on terms that provide adequate and effective protection of those intellectual property rights.

Article 19

The United States declares its understanding that paragraphs 1 and 2 of Article 19 impose no obligation on Contracting Parties

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to coerce private companies to share biotechnological research with foreign governments or private companies.

The United States declares its understanding that paragraph 3 of Article 19 does not presume the necessity of a protocol on the procedures for the safe transfer, handling and use of living modified organisms resulting from biotechnology.

Article 21

The United States declares its understanding that the periodic decisions of the Conference of the Parties to be taken under paragraph 1 of Article 21 concerns "the amount of resources needed" by the financial mechanism, not the extent or nature and form of the contributions of the Contracting Parties.

Article 23

The United States declares its understanding that the requirement for consensus on rules of procedure binds the parties to consensus agreement upon procedures and mechanisms for implementation of the Convention, including guidance on funding for the financial mechanism and guidance relating to technology transfer.

STATEMENT OF ADMINISTRATION POSITION ON
THE INTELLECTUAL PROPERTY RELATED PROVISIONS OF
THE CONVENTION ON BIOLOGICAL DIVERSITY¹

The United States believes that the conservation of biological diversity and the sustainable use of its components serve important environmental and economic goals. Conservation of biological diversity will provide numerous benefits, including new food sources, improved agricultural products and procedures, new tools for combating disease, and will help maintain the health of our ecological systems.

The United States believes that one way to support the conservation of biological diversity and sustainable use of its components is to create an economic incentive for countries to preserve the biological diversity within their borders. For this reason, the United States accepts the principle that benefits stemming from productive use of genetic resources should flow back to those nations that act to preserve biological diversity and provide access to their genetic resources. These benefits should arise from mutually agreed transfers between contracting parties or private entities.

The United States also recognizes that the participation of the private sector greatly enhances the attainment of economic value from genetic resources. Providing effective incentives for the development of new technologies that make use of genetic resources is as critical as assuring the equitable sharing of the economic benefits that may arise from the use of genetic resources. However, absent an effective means to protect the significant investments necessary to develop new technology, the potential contribution of the private sector to the development of economically valuable products will not be realized.

For this reason, the United States believes that the extension of adequate and effective intellectual property protection for the technology derived from the use of genetic resources is an essential prerequisite to the success of the Convention. The United States has also determined that its current system of laws that provide an effective level of protection for intellectual property is entirely consistent with the goals of the technology transfer provisions of the Convention.

Furthermore, the United States firmly believes that the provisions of the convention dealing with technology transfer

¹ We anticipate that other statements will be made with respect to the financial mechanism, biosafety, and other parts of the Convention.

require that all parties to the convention must provide adequate and effective protection of intellectual property rights in any measures aimed at transfer of or access to technology subject to patents and other intellectual property rights. The United States would resist strongly any effort by parties to the convention to argue to the contrary, and believes that this position will be upheld in any international forum in which the issue might be raised. The United States will continue to insist on adequate and effective protection of intellectual property rights in negotiations on bilateral and multilateral trade agreements and will not accept agreements that fail to provide such protection.

Furthermore, the United States is convinced that the best means to foster the technology transfer envisioned by the Convention is for other member countries to provide an effective level of intellectual property protection. Such protection will provide the incentives necessary for the private sector to generate the technology using genetic resources in the first place. It will also provide the suitable climate necessary for cooperation between U.S. firms and those in countries harboring genetic resources. This cooperation can yield tremendous benefits by fostering not only the voluntary and cooperative transfer of new technology to developing countries, but by encouraging the application of this technology to solve indigenous problems facing those countries.

These private sector mechanisms should be complemented by public sector initiatives to support technology transfer in order to meet specific needs or objectives unmet by the private sector.

NGO PARTICIPANTS IN BIODIVERSITY CONVENTION MEETING
with Kathleen McGinty
Deputy Assistant to the President and
Director of the Office of Environmental Policy

February 23, 1993

- Merck & Co., Inc. Isabelle Claxton, Director, Congressional Relations
Dorothy Bowers, Vice President, Corporate
Environmental Affairs
(CEO: P. Roy Vagelos, Chairman,
President & CEO)
- Genentech, Inc. David Beier, Vice President, Government Affairs
(CEO: G. Kirk Raab, President & CEO)
- World Wildlife Fund T.J. Glauthier, Director, Energy & Climate Change
Richard Mott, Treaties Officer
(CEO: Kathryn Fuller, President)
- World Resources Institute Walt Reid, Vice President
(CEO: Jonathan Lash, President)
- Environmental and Energy
Study Institute Gareth Porter, Program Director
(CEO: Ken Murphy, Executive Director)



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240



MEMORANDUM

March 17, 1993

TO: Secretary of Agriculture
Secretary of Commerce
Secretary of Defense
Secretary of Energy
Secretary of State
Secretary of Transportation
Administrator, Environmental Protection Agency
Director, Office of Management & Budget
Director, Office of Science & Technology Policy
Secretary of the Cabinet
President, National Academy of Science
Director, Smithsonian Institution
Director, Office on Environmental Policy

FROM: Secretary of the Interior *B. Bullitt*

RE: Creation of the National Biological Survey

I wanted to make you aware of a proposal I am considering in the Department of the Interior that will improve the caliber of our biological science. Critical to our mission in the Department is sound technical and scientific expertise, which guides our ability to better manage and conserve our precious natural resources. Currently, eight Interior Bureaus -- the National Park Service, the Fish & Wildlife Service, the Bureau of Land Management, the Bureau of Reclamation, the Minerals Management Service, the Office of Surface Mining, the U.S. Geological Survey, and the Bureau of Mines -- have biological research activities. Many of these researchers focus on specific functions that are essential to the Bureaus' land management functions and related statutory responsibilities: determining critical habitat as required under the Endangered Species Act, evaluating the condition and trends of wildlife and plant populations, examining the impact of global climate change on the national parks, and surveying and monitoring the health and abundance of many of our country's fish stocks. By gathering this expertise under a National Biological Survey, I will be able to strengthen these critical functions.

NBS will serve the needs of land and resource managers within all of the Department's bureaus, for biological research to fulfill their missions better. NBS will focus on national, regional, ecosystem and landscape level science needs. It will also help resource managers acquire and apply scientific tools necessary for land management decisions at the local level, and provide them with the best available biological information. NBS will also serve, on a reimbursable basis, the needs of other federal agencies, state and local governments, and other entities.

In addition, NBS will undertake a coordinated inventory and monitoring program to assess the overall status and trends in the abundance, health, and distribution of plants and animals, as well as the ecosystems on which they depend. This will include efforts to identify, in a pro-active fashion, chronic declines of species and natural habitats. Without a standardized program developed by an entity such as the NBS, monitoring can be inefficient, inappropriate, and often unnecessarily expensive. Research results from this program will enable land and resource managers to adopt ecosystem-based management strategies to protect potentially imperilled species at reduced levels of cost and conflict.

NBS will include a National Biological Technical Center to transfer research results to users, and a network of state units to provide local research support and technical assistance and information transfer. To ensure responsiveness to Departmental needs and to mission-dependent needs of the various bureaus, NBS will be advised by a science board and a policy board on research needs and priorities. The policy board will consist of representatives from each bureau, and the science board will consist of scientists from other Federal agencies, States, and academia.

NBS will serve as a national source for objective information and analysis, not for advocacy. By focusing on biological research, NBS will not supplant the staffs of land management agencies or their operational biologists who apply ecological information to local land management decisions (such as the carrying capacity of a particular rangeland allotment, or the height to which water levels may be maintained). Not all bureau biologists will be included in the NBS, but only those having research functions consistent with the NBS function.

Activities

To accomplish its mission, the National Biological Survey will:

- * Conduct basic and applied research on biological resources, including plants, fish, wildlife, and ecosystems and their processes.
- * Conduct studies to improve the capability for predicting the effects of natural phenomena and human activities on ecosystems and biological diversity.

- * Collect, analyze, and disseminate data and information concerning the distribution, abundance, health, status and trends of biological resources and ecosystems.
- * Develop tools, technologies, protocols, and standards for the consistent, systematic collection and analysis of data on ecosystems and their components.
- * Disseminate data and technologies to resource managers, scientists, and the public.
- * Provide scientific and technical assistance in support of legislative, regulatory, and resource management decisions.
- * Cooperate in international research activities related to the management of global biological resources.

Examples of research emphases include:

- * Species biology, such as systematics, taxonomy, physiology and behavior
- * Population dynamics, including modeling minimum viable populations
- * Ecosystems, habitats, and landscapes
- * Inventories and monitoring status and trends
- * Technology transfer and technical assistance

Budget

The NBS will consist of a core of research from existing activities within Interior bureaus, augmented by new initiatives. The functions to be transferred include research on biological systems and their components. In addition to research, the National Biological Survey will provide the basis for nationwide assessment of the status and trends of living resources and their habitats. Many bureaus conduct inventories ranging from nationwide surveys, such as Gap Analysis and the National Wetlands Inventory, to site-specific surveys for Refuge, Park, or land management decisions. NBS will assume the Departmental biological diversity and monitoring programs that focus on: national and regional inventories; inventories and monitoring resources of national significance (such as the spotted owl or other endangered species inventories); local inventory efforts that can have regional or national consequences (such as to improve offshore oil and gas leasing activities); and the development of standards and protocols for conducting inventories and monitoring programs.

NBS will emphasize the transfer of information to and support for operational units. For this reason, the Survey will include components of bureaus involved in or directed toward technology transfer where consolidation of those components can lead to better

technical assistance and support for Operations.

Benefits

By consolidating existing fragments of biological research within the Department into an independent, non-advocate science bureau, the National Biological Survey can produce numerous benefits. Among these are:

- * Improved research quality and productivity, at a lesser cost.
- * Economies of scale, and consistent standards and protocols not now existing among the many bureau research programs.
- * A net increase in research capability available to individual clients.
- * An expanded commitment to technology transfer and support, including providing analytical support, modeling, and Geographic Information System assistance to clients.
- * Research that will enable resource managers to be proactive, to design ecosystem management strategies, and to anticipate resource management needs rather than responding to "train wrecks."
- * Improved interagency coordination and strengthened cooperative relationships.
- * A reduction in competition for resources within bureaus.

VIC5 MILITARY USE AND IMMUNITY FROM PUBLIC SCRUTINY

Despite increasing global awareness about the health of coastal and marine ecosystems, there is little available information about the effects of military activities on the sea. Military bases and weapons-producing facilities along coasts and in drainage basins generate large amounts of wastes, including some that are very hazardous, that can enter the sea accidentally or by design. The military has dumped everything from shipboard garbage to barrels of nerve gas and unexploded bombs into the sea, and the USA (Davis and VanDyke 1990) and Russia have viewed the sea as the logical place to sink decommissioned nuclear submarines or high-level nuclear wastes from the military. The former USSR used the Arctic island of Novaya Zemlya and the USA, Great Britain, and France have used Pacific atolls for testing nuclear weapons. Many countries use islands as naval bombing and shelling targets. Wars have littered some marine areas with ordinance and sunken vessels that can leak fuel for decades. And 1991 saw the first use of a new military tactic: the intentional release of some six million barrels of crude oil into the Persian/Arabian Gulf by Iraq.

It is difficult to gauge the magnitude of harm from these and other activities that have not yet come to light. Most have been exempt from environmental regulatory controls by law or common practice. Even nations with generally good environmental records tend to look the other way when actions are carried out under the cloak of "national security."

There are also less obvious effects of military activities, both negative and positive. One of the negative ones is the introduction of alien species. Wars create novel shipping corridors that are distinct from historical trade routes, or impose upon older routes much higher levels of transport activity. Not surprisingly, a large number of marine organisms are thought to have been newly introduced co-incidental to world wars. The Australian barnacle *Elminius modestus* appeared in England during World War II (Elton 1958). Two species of Philippine jellyfishes (Cuttress 1961) were carried to Hawaii (USA) during World War II. The Korean-Japanese shrimp *Palaemon macrondactylus* appeared in San Francisco Bay (USA) shortly after the Korean War (Newman 1963), and many more western and southwestern Pacific invertebrates appeared in California (USA) harbors during the Vietnam War (Carlton 1979).

"Normal" military activity can transport species as well. Noting the arrival of the rapacious blue crab (*Callinectes sapidus*) near Yokohama Naval Base (Japan), Sakai (1976) suggested that it might have come in the ballast tanks of submarines returning from the east coast of the USA.

On the other hand, military bases and target ranges are commonly closed to the public and therefore suffer far less disturbance than readily accessible areas. Areas up to many thousands of square kilometers where submarine detection devices or explosives sit on the seabed are usually closed to bottom trawling, thus providing refuge for demersal fishes and benthic communities. As a result, intertidal and sub-tidal areas of military reservations can

be far richer biologically than adjacent areas that endure commercial, subsistence, and sport collecting. Seabirds on many islands worldwide owe their nesting success to the bombs and shells that occasionally fall in their midst; the explosions, deadly as they and their chemical residues are, are far less disturbing than human visits.

Furthermore, commercial whaling in the Antarctic essentially ceased when whaling ships were diverted to military use during World War II, giving the great whales a brief respite before the killing resumed (Figure VI-1).

In addition, many of the most expensive research projects, including oceanographic studies of currents, mapping of undersea topography, and studies in the Arctic and Antarctic, would never have happened without the military's need for information during the Cold War. It is unfortunate that nations could justify these projects only under a military definition of national security, rather than for their contribution to management of marine resources, but the fact remains that research carried out or funded by the military has generated information of considerable importance to our understanding of life in the sea.

Increasing concern about marine pollution has increased pressure for military accountability (Davis 1990). Ideally, this could lead to diminished harm from military activities, while retaining the very real benefit of providing refuge from human predation.

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WWF

— 4-14
Katie —

Here's a
copy of The letter
we're sending to
The Vice President
today. The letter
to The President
will go tomorrow.

Copies are
only being sent
to you and
Eileen.

— TD

April 14, 1993

The Honorable Albert Gore, Jr.
Vice President of The United States
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

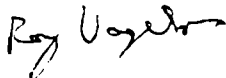
Dear Mr. Vice President:

Enclosed you will find a copy of a letter that we are sending to the President, urging him to sign the Convention on Biological Diversity, and to do so in a way that clearly indicates our country's commitment to protecting both intellectual property rights and the world's wealth of biodiversity.

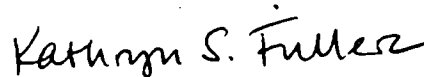
As the chief executive officers of six corporations and environmental and policy research organizations with interests in biodiversity and biotechnology, we believe it is in the shared interests of the nation and the world community for the United States to join in signing this treaty and, further, to assume a leadership position in its future implementation.

We have undertaken our efforts in this area with the encouragement of your staff, Mr. Vice President. We have kept them informed throughout, and have shared the interpretative statement with them recently, in the hopes that it would facilitate discussions within the government. We are happy to assist further in whatever ways may be helpful.

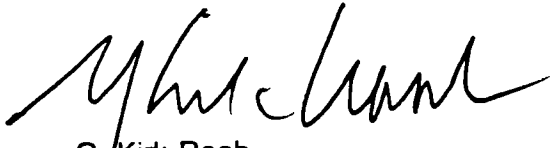
Sincerely,



P. Roy Vagelos
Chairman and Chief Executive Officer
Merck & Co., Inc.



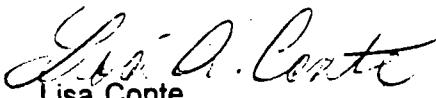
Kathryn S. Fuller
President
World Wildlife Fund



G. Kirk Raab
President & CEO
Genentech, Inc.



Jonathan Lash
President
World Resources Institute



Lisa Conte
Chief Executive Officer
Shaman Pharmaceuticals



Ken Murphy
Executive Director
Environmental and Energy Study Institute

April 15, 1993

The Honorable William J. Clinton
President of The United States
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear Mr. President:

As the chief executive officers of six corporations and environmental and policy research organizations with interests in biodiversity and biotechnology, we believe that the protection of biodiversity serves the shared interests of our nation and the world community. We endorse global efforts to create economic incentives to preserve biodiversity and the sustainable use of genetic resources. It is also our belief that strong private property rights can and should facilitate these efforts.

Based on these shared values and objectives, we urge you to sign the Convention on Biological Diversity, and to do so in a way that clearly indicates our country's commitment to protecting both intellectual property rights and the world's wealth of biodiversity. This Convention establishes for the first time an international framework for economic incentives for biodiversity conservation and calls for the protection of intellectual property rights in any technology transfer under the agreement.

As in any international agreement, some other parties to the Convention may suggest alternative interpretations of certain provisions. Both the U.S. government and industry were especially concerned that such efforts would weaken the Convention's protection of intellectual property rights. This was the chief concern that prevented our signature in Rio.

In order to address this, in late December with the encouragement of the Vice President-elect's staff, our organizations formed a small working group, bringing together corporate and NGO perspectives. We examined in detail primarily the issues pertaining to intellectual property rights and technology transfer, which we felt were the major U.S. concerns with the treaty. We dealt with other key issues as well, but in less depth, and did not attempt to cover every possible interpretative issue that the U.S. might have with the treaty. Specifically, we did not assess problems, if any, under Article 22 on the Convention's relationship to other international agreements, or Article 27 on dispute resolution. We concluded from our review that the U.S. could sign the Convention while protecting intellectual property rights.

Our working group developed an interpretative statement that could serve as the basis for a U.S. interpretation of key provisions of the Convention, and a draft policy statement that could accompany such a statement that further details policy on key issues, especially the protection of intellectual property rights and technology transfer. We offer both drafts for use by your Administration in its work on this issue. Copies of both have been shared with your staff and are attached. A copy of this letter and attachments is also being sent to the Vice President and his staff.

We believe that depositing an interpretative statement such as this with the United Nations at the time of our signature of the Convention, would resolve the major substantive concerns. We believe there is minimal risk of adverse interpretations by the Conference of the Parties on the issues arising out of the Convention, especially those involving intellectual property. Moreover, as our draft interpretative statement notes, in the event that the Conference of the Parties does adopt a contrary interpretation, the U.S. could take any appropriate steps to respond, including in extreme cases, withdrawal from the Convention. The proposed interpretative statement should, in our view, also be made a part of the Senate ratification process.

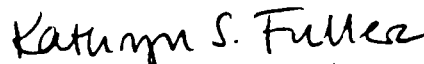
We are working with our colleagues in the corporate and NGO communities to help broaden the understanding of this issue and to strengthen support for this course of action. It is in the interest of both the conservation community and industry for America to assume a leadership position on this issue. As a member of the Conference of Parties, the United States will be accorded a seat at the table for all future discussions on implementation and subsequent amendments or protocols.

We hope that the consensus reached in our working group will promote a wider recognition of the inherent value of the Biodiversity Convention. We offer you whatever additional assistance is needed to resolve any outstanding substantive concerns and assure ratification.

Sincerely,



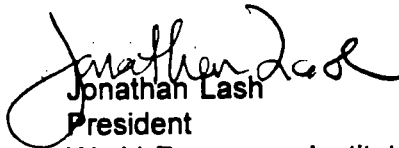
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World Wildlife Fund



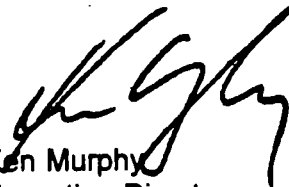
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Chief Executive Officer
Shaman Pharmaceuticals



Ken Murphy
Executive Director
Environmental and Energy Study Institute

INTERPRETATIVE STATEMENT OF THE UNITED STATES

General Interpretative Statement

The United States hereby declares its understanding of Articles 1, 15, 16, 19, 20, 21, and 23 of the Convention on Biological Diversity. In the event that the Conference of Parties adopts an interpretation contrary to these understandings, the United States reserves its right to take appropriate steps to respond, including withdrawal from this Convention and all its protocols, as provided in Article 38.

Article 1

The United States declares its understanding that fair and equitable sharing of the benefits arising out of utilization of genetic resources requires members of this Convention to respect the rights of other member countries and of private parties to the technology that arises out of such utilization of genetic resources. The United States further declares its understanding that the phrase "appropriate transfer of relevant technologies" under this agreement means that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 15

The United States declares its understanding of the meaning of Article 15(3) that resources obtained by public or private entities before or outside of the Convention are not governed by the Convention.

The United States declares its understanding that the obligation imposed by paragraph 6 of Article 15 to carry out research activities on genetic resources with the full participation of Contracting Parties that provide such resources in research activities is an obligation that applies only to Contracting Parties, and not to the private sector within each Contracting Party.

The United States declares its understanding with respect to paragraph 7 of Article 15 that any sharing in a fair and equitable way of the results and benefits arising out of use of a genetic resource must take fully into account: exclusive rights to technology that a party obtains through its efforts; and that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 16

The United States declares its understanding that access to and transfer of technology under this agreement subject to intellectual property rights under the Convention requires the recognition of, and consistency with, the adequate and effective protection of intellectual property rights, and thus does not provide a basis for the use of compulsory licensing laws to compel private companies to transfer technology under this agreement.

The United States declares its understanding of paragraph 2 of Article 16 that the phrase "fair and most favorable terms" means terms that are determined by a free market without trade restrictions or government coercion.

The United States further declares its understanding of paragraphs 2 and 3 of Article 16 to be that in the case of proprietary technology, transfers may only take place on terms that recognize and are consistent with the adequate and effective protection of intellectual property rights. In connection with transfer of technology under this agreement subject to patents and other intellectual property rights, failure of a member country to extend such protection, or action by a member country to limit the exercise of an entity's intellectual property rights, is considered by the United States as being inconsistent with this provision of Article 16.

The United States declares its understanding that the measures encouraged under paragraph 4 of Article 16 does not permit the violation of "adequate and effective protection of intellectual property rights" in any transfer of, or access to, technology under this agreement.

The United States declares its understanding that while the transfers of technology contemplated under Article 16 will often be made by the private sector, the obligation to facilitate such transfers attaches to the Contracting Parties themselves rather than to entities within the private sector.

The United States declares that Article 16(5) does not alter any obligation established in this agreement, and in particular, the obligation in Article 16, paragraph 2 that any access to, and transfer of, technology subject to patents and their intellectual property rights, must be on terms that provide adequate and effective protection of those intellectual property rights.

Article 19

The United States declares its understanding that paragraphs 1 and 2 of Article 19 impose no obligation on Contracting Parties

to coerce private companies to share biotechnological research with foreign governments or private companies.

The United States declares its understanding that paragraph 3 of Article 19 does not presume the necessity of a protocol on the procedures for the safe transfer, handling and use of living modified organisms resulting from biotechnology.

Article 21

The United States declares its understanding that the periodic decisions of the Conference of the Parties to be taken under paragraph 1 of Article 21 concerns "the amount of resources needed" by the financial mechanism, not the extent or nature and form of the contributions of the Contracting Parties.

Article 23

The United States declares its understanding that the requirement for consensus on rules of procedure binds the parties to consensus agreement upon procedures and mechanisms for implementation of the Convention, including guidance on funding for the financial mechanism and guidance relating to technology transfer.

STATEMENT OF ADMINISTRATION POSITION ON
THE INTELLECTUAL PROPERTY RELATED PROVISIONS OF
THE CONVENTION ON BIOLOGICAL DIVERSITY¹

The United States believes that the conservation of biological diversity and the sustainable use of its components serve important environmental and economic goals. Conservation of biological diversity will provide numerous benefits, including new food sources, improved agricultural products and procedures, new tools for combating disease, and will help maintain the health of our ecological systems.

The United States believes that one way to support the conservation of biological diversity and sustainable use of its components is to create an economic incentive for countries to preserve the biological diversity within their borders. For this reason, the United States accepts the principle that benefits stemming from productive use of genetic resources should flow back to those nations that act to preserve biological diversity and provide access to their genetic resources. These benefits should arise from mutually agreed transfers between contracting parties or private entities.

The United States also recognizes that the participation of the private sector greatly enhances the attainment of economic value from genetic resources. Providing effective incentives for the development of new technologies that make use of genetic resources is as critical as assuring the equitable sharing of the economic benefits that may arise from the use of genetic resources. However, absent an effective means to protect the significant investments necessary to develop new technology, the potential contribution of the private sector to the development of economically valuable products will not be realized.

For this reason, the United States believes that the extension of adequate and effective intellectual property protection for the technology derived from the use of genetic resources is an essential prerequisite to the success of the Convention. The United States has also determined that its current system of laws that provide an effective level of protection for intellectual property is entirely consistent with the goals of the technology transfer provisions of the Convention.

Furthermore, the United States firmly believes that the provisions of the convention dealing with technology transfer

¹ We anticipate that other statements will be made with respect to the financial mechanism, biosafety, and other parts of the Convention.

require that all parties to the convention must provide adequate and effective protection of intellectual property rights in any measures aimed at transfer of or access to technology subject to patents and other intellectual property rights. The United States would resist strongly any effort by parties to the convention to argue to the contrary, and believes that this position will be upheld in any international forum in which the issue might be raised. The United States will continue to insist on adequate and effective protection of intellectual property rights in negotiations on bilateral and multilateral trade agreements and will not accept agreements that fail to provide such protection.

Furthermore, the United States is convinced that the best means to foster the technology transfer envisioned by the Convention is for other member countries to provide an effective level of intellectual property protection. Such protection will provide the incentives necessary for the private sector to generate the technology using genetic resources in the first place. It will also provide the suitable climate necessary for cooperation between U.S. firms and those in countries harboring genetic resources. This cooperation can yield tremendous benefits by fostering not only the voluntary and cooperative transfer of new technology to developing countries, but by encouraging the application of this technology to solve indigenous problems facing those countries.

These private sector mechanisms should be complemented by public sector initiatives to support technology transfer in order to meet specific needs or objectives unmet by the private sector.

Lastly, the United States recognizes the value of knowledge held by indigenous peoples, of their plant and animal resources.

A LANDSCAPE APPROACH



Achieving and Maintaining Biodiversity and Economic Productivity

By Chadwick Dearing Oliver

Piecemeal attempts to resolve the various pressures facing Pacific Northwest forests have been frustrating and often counterproductive. As an alternative approach, this article offers a long-term goal for the region's forests, then suggests specific policies that can encourage a shift toward that goal.

The most general aim for managing Washington's forests is to promote human and environmental wellbeing. Specific objectives include maintaining biodiversity, fostering global environmental conservation, and promoting the economic productivity of residents and landowners.

Maintaining Structural Diversity

Biodiversity (biological diversity) describes the variations in life forms, genetic makeup, biological processes, and ecological niches that occur in any specific area. Regional and global biodiversity has been declining (Wilson and Peters 1988); attempting to reverse the trend is of both moral and practical concern. Maintaining stable populations of all species by managing for each species indi-

vidually is an impossible task. However, biodiversity can be promoted by maintaining the habitats—forest structures—in which the various species are found (Oliver, in press).

Historically, natural forest communities were thought to exist in a benign steady state, sometimes associated with climax, old-growth, or ancient forests. Disturbances were considered unnatural, and the steady-state forest was assumed to be most conducive to stability and diversity. Thus, preserving all species meant maintaining the forest in a natural, old condition—with human intervention especially avoided.

Much recent environmental attention has been misdirected at stand-level forestry operations, as if an ideal stand structure or silvicultural system would solve all environmental concerns. The solution actually lies at the landscape level—where the appropriate, dynamic balance of stands in diverse structures and patterns can maintain habitats for a diversity of plants and animals. Silvicultural education, research, and practices need to move beyond management of individual

stands to the landscape scale.

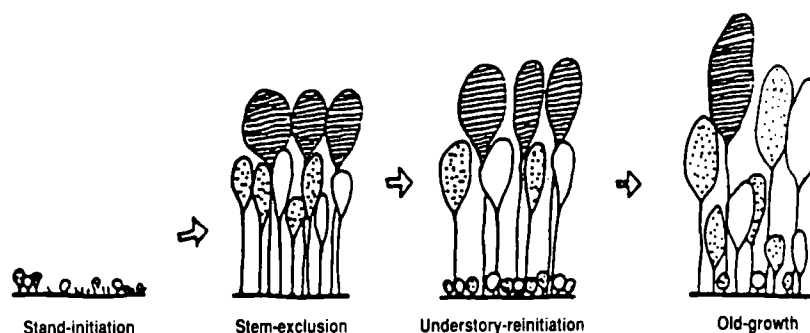
Forests periodically experience both large and small natural disturbances (White 1979) that destroy less than an acre to hundreds of thousands of acres at a time. Then a new forest regrows through a succession of structures (*fig. 1A*). During the stand-initiation stage, regeneration is established in the area opened by the disturbance. As seedlings and saplings grow, a dense canopy develops and prevents further regeneration. The stem-exclusion stage continues until the trees get larger, natural thinning occurs, and the main canopy develops openings. Understory trees, shrubs, and herbaceous plants are established during the understory-reinitiation stage. Eventually, large trees in the overstory die, younger trees in the lower canopy layers are released, and the stand develops into the old-growth stage—an uneven-aged structure with an irregular canopy (Oliver and Larson 1990). Recognizing these different structures is useful because they directly define the habitats on which animal and plant species depend.

Each structure is suitable for some

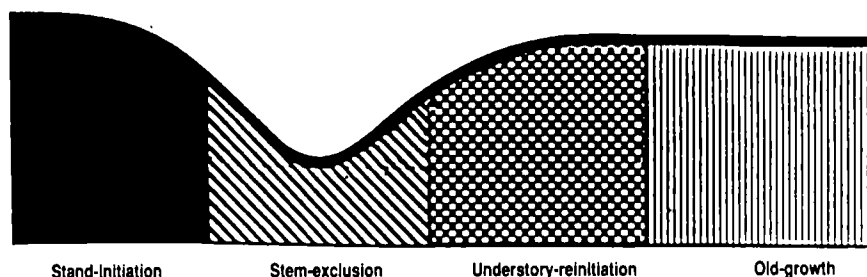
plants and animals and not others (fig. 1B). Before human populations increased, forests of different structures were somewhat randomly distributed across the landscape. Certain plant and animal populations increased dramatically as large areas with the same structure were created by large disturbances (Oliver and Larson 1990). As the structure changed, other plants and animals were favored and many older populations declined—through migration, death, or dormancy. Many forests have always gone through large disturbances, creating continuous population “booms” and “busts” in specific areas; however, over a large region unpopulated by humans, plant and animal populations were maintained as somewhat random disturbances

proposed for the Olympic Experimental State Forest (Washington State Department of Natural Resources 1990). Wildlife, plant, and fish ecologists would prescribe target stand sizes, spatial con-

1991. Oliver et al. 1992, Salwasser et al. 1992). Management at both the stand and landscape levels would control the size and impact of insect, disease, wind, and fire events and would provide replace-



A. Changes in stand structure following disturbance.



B. Mammal species use by structure.

kept large or small areas in each structure.

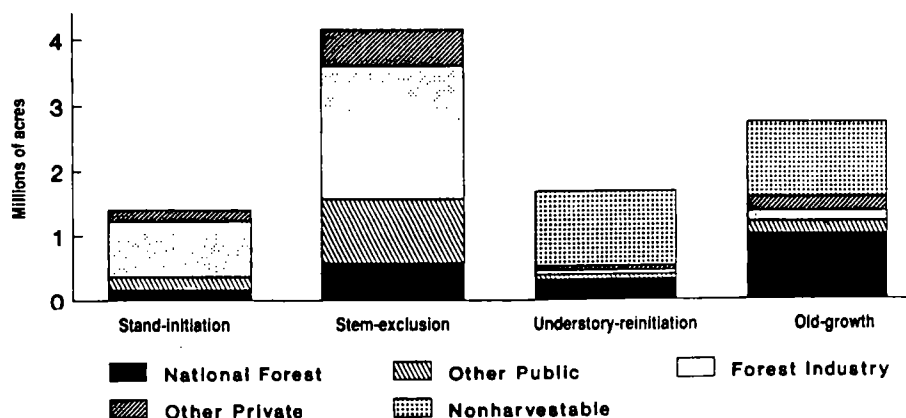
Because of human pressures, the present forest does not necessarily have the same balance of stand structures as the larger, naturally forested area did. Two approaches can maintain a diversity of stand structures. One is to exclude human disturbances, as is done in national parks and similar preserves. However, as these forests become older, it is increasingly difficult to allow small or moderately sized natural disturbances but prevent those of catastrophic proportions. Managers resort to costly programs of protection from natural catastrophes, which may or may not maintain a diversity of structures and species.

The second approach is to use silvicultural operations to maintain a target distribution of structures across the landscape in a dynamic balance. Landscape units would be delineated, such as the 6,000- to 15,000-acre drainage subbasins

straints, and proportions of each structural stage in concert with natural conditions. Stand structures would be controlled across the landscape by thinning, harvesting, snag creation, and other operations (Boyce 1985, O'Hara and Oliver

ment stands if desired structures were destroyed by uncontrollable disturbances.

At times, large stands of several hundred acres may need to be managed as a single structure, so that adjacent stands are not destroyed by winds and adjacent



C. Area of western Washington by structure and ownership.



Chadwick Dearing Oliver

Clearcuts produce the stand-initiation structure, which is home to many plant and animal species. However, past extensive clearcutting has reduced diversity of habitats and species in many landscape units.



Chadwick Dearing Oliver

A 35-year-old Douglas-fir/western hemlock stand in the stem-exclusion stage; this structure predominates in western Washington. Unless thinned, it will produce little valuable timber or wildlife habitat for many decades.

streams are not washed out by continuous small harvest areas. Large blocks of a single structure favor some species; small stands may be more appropriate in other areas. The best scientific and professional judgments will set such targets, which may change as better scientific information becomes available.

Environmental Protection

Reduced forest product outputs from the Pacific Northwest will increase pressure to harvest forests elsewhere in the world (often old-growth or exotic species) and to substitute other products for wood (Perez-Garcia 1991; Lippke, in

press). Few places in the world have the ability of the Pacific Northwest to grow native tree species of high value for timber, paper, and other uses.

Carbon dioxide and other air pollutants are increasing at an alarming rate—caused overwhelmingly by burning fossil fuels (Stuiver 1978). Efforts to limit CO₂ by growing more forests and preserving old-growth will be insignificant unless fossil fuel consumption is reduced. Substitution of wood products for aluminum, steel, cement, plastics, and other materials dramatically reduces fossil fuel consumption and atmospheric pollution, since manufacturing these alternatives re-

quires much higher energy (Koch 1991; Kershaw et al., in press).

Wood products are especially effective and valuable substitutes for nonwood construction material when they are grown to large sizes and free of knots (Kellogg and Kennedy 1986). Growing such timber requires thinning and pruning in the stem-exclusion stage. For example, if 20- to 30-year-old Douglas-fir stands in western Washington are thinned and pruned they can produce high-quality timber by age 60 (Fight et al. 1987, Oliver 1991). Thinning also allows creation of snags and fosters rapid understory reinitiation (fig. 1A, Oliver et al. 1991).

There will always be low-quality wood—from thinnings and from tops of pruned trees. Its use in fiber mills and for fuel will be a necessary part of the region's product mix. However, rather than having all timber go to this purpose, concentration on large, knot-free timber for high-quality structural and esthetic uses will provide an environmentally and economically viable substitute for more polluting products.

A Stable Economy

Rural economic health depends on residents earning money by producing goods or services of value from the forest. Prosperous rural communities counteract the global trend of migration to cities and avert rural subsistence lifestyles that reduce biodiversity. They also provide a steady labor force for managing forests for wood products, for biodiver-

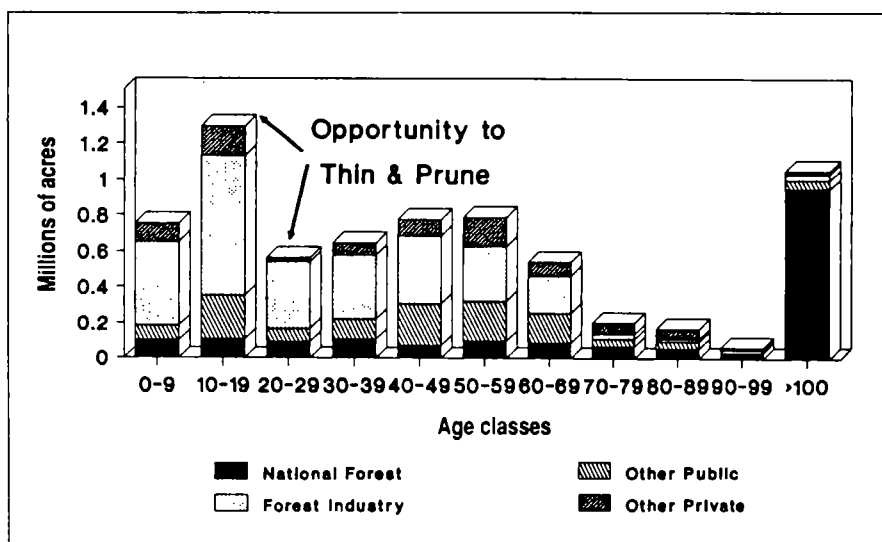


Figure 2. Distribution of forested area for 1989 in western Washington by age class and ownership. Stands less than 100 years are generally postharvest stands. Stands less than 30 years are generally plantations (Maclean et al. 1991a, b, c).



Markian Petruncio

Carefully planned thinning can remove wood for low-value products, create employment, provide high-value wood in the future, and create understory-reinitiation features many decades sooner than without such activity.



Chadwick Dearing Oliver

Repeated commercial thinning of this even-aged stand supplied pulp and saw-timber operations and rapidly created such old-growth features as large tree sizes, deep crowns, many canopy layers, and multiple wildlife species.

sity, and for avoiding and mitigating damage from natural disturbances.

Maintaining all structures across a landscape provides consistent employment in silvicultural operations and in the use, manufacture, and remanufacture of forest products. Maintaining all structures within a relatively small area sustains a constant labor force and supply of forest products in each region, rather than the historical boom and bust when large regions were harvested in a short time.

Retaining diverse stand structures across the landscape also provides a sustained supply of various forest values—low-quality timber products from thinnings, high-quality timber from harvesting previously thinned forests (which simultaneously produce habitat in the stand-initiation stage before trees regrow), and other forest values such as recreation, mushrooms, scenery, floral greens, and berries (Oliver, in press). Nontimber commodities will probably never provide as much revenue as timber; however, they can make silvicultural thinning and pruning more economically attractive as well as increase employment diversity.

A key component in maintaining a stable rural economy is encouraging secondary manufacture (in the forested region) of high-quality conventional products from previously thinned stands, as well as aggressive efforts to create and market new products—such as wood beams to replace aging bridges.

Washington's Forests Now

The forests of western and eastern Washington have different stand structure and landscape patterns because of varying ownerships, cutting and natural disturbance regimes, climate, and species composition. Washington's forests are currently moving in two directions. As more national forests and other forest areas are excluded from management to preserve the spotted owl, the remaining forests are being harvested more heavily.

Where all harvesting is curtailed, areas with stand-initiation structures will soon grow to the stem-exclusion stage. This will cause a shortage of open habitat, which will reduce the area's biodiversity and threaten other species. Protecting these unmanaged areas against natural disturbances will be very costly without timber harvest income to offset costs. When natural disturbances do occur they will probably be quite extensive, since large areas will be in the same susceptible structures; the result will be creation of large stand-initiation areas.

Lack of available timber from mature forests in preserved areas (especially national forests) is causing increased harvest on other areas (especially private lands). Harvesting too rapidly will cause a shortage of timber, and the number of mills (and rural employment) will decrease. Harvesting forests at younger ages may temporarily keep mills open; however, the effect is to "eat the seed corn," since the volume in young stands is small and more acres need to be harvested to ob-

tain the same volume as fewer acres of old stands. Trees from young or unthinned stands are small and of low quality. Processing mills that use low-quality trees to produce fiber and reconstituted forest products will most likely survive if the present trend continues.

Western Washington's forests already contain an overabundance of stands in the stem-exclusion structure (fig. 1C), and stands of different ages are not regularly distributed across the landscape or elevation zone (fig. 2). The national forests contain predominantly older stands in the understory-reinitiation and old-growth structures, while large areas under state and private ownership contain only stands in the younger stages. This distribution partly explains why most spotted owls are on national forest lands.

Most stands less than 30 years old in western Washington—a large proportion of the forests—began as plantations. Unless they are thinned and pruned, they may not grow to large diameters or produce clear wood outside the juvenile core for high-quality products (Barrett and Kellogg 1986, Fahey et al. 1991). With thinning, the stands will rapidly form an understory-reinitiation structure and can grow to large diameters, creating habitat characteristics beneficial to many species. If pruned as well, the trees will form very high quality timber (Cahill et al. 1986, Oliver 1991).

Most eastern Washington forests are in either stem-exclusion or old-growth structures, with a shortage of stand-initi-

ation structures. The large amount of old-growth structures—largely caused by excluding fire and relying on selective logging—partly accounts for the relative abundance of spotted owls in the eastern Cascades. Without active management, however, many eastern Washington stands will be destroyed by insects or wildfires within the next few decades because of their structures. The resulting forest will contain large stand-initiation areas but a shortage of other habitats, including those needed by the spotted owl (Oliver et al. 1991).

Existing Infrastructure

Because of the region's logging and natural disturbance history, most forested landscape units contain stands of approximately the same age. They will become economically mature at the same time and may all be harvested within a short time—again creating large areas that will simultaneously grow through the same structures with little biodiversity.

Incentives or regulations for managing stands for a balance of structures across a landscape are minimal, although steps have been taken (e.g., the Timber-Fish-Wildlife Agreement, Sustainable Forestry Roundtable, recent state forest practice rules). The infrastructure, management tools, and training necessary for implementing silvicultural operations are highly developed for some operations but not others.

Regenerating harvested stands has been very successful and is mandated by the Washington State Forest Practices Act. However, ambivalence among forest managers and a marginal, fluctuating value for the wood removed in thinning has caused an unstable market infrastructure of thinning machinery, operators, and markets. Fear that thinnings may attract spotted owls to a stand—which could then disallow further harvest—discourages these operations. Fear of more regulations is causing some owners to sell their timberland, and large areas of newly purchased timberland are being clearcut to repay the purchasing loan—causing a further imbalance in stand structures. Prunings are generally considered marginal economic investments; the total cost is borne by the landowner in anticipation of returns from high-quality timber when the stands are harvested many years later.

Export restrictions on state and federal lands reduce the cash available for pruning and other silvicultural operations that would increase future wood quality, value, and biodiversity. In addition, private owners lack the cash flow to invest in thinning and pruning operations that would increase future benefits.

The shrinking timber supply is raising stumpage prices and causing some loggers and mills to process logs rapidly while they are able to, even though it further reduces supplies. Industries that use high-quality logs are threatened by a current and future lack of supply. Many older stands with high-quality timber, which could sustain these mills until the thinned and pruned timber matures, may be kept from harvest by spotted owl conservation plans.

There are few incentives—and many disincentives—to promote forest values such as wildlife habitat, fisheries, recreation, and minor forest products, since landowners generally do not realize benefits from these values.

Achieving the Goal

Systems need to be developed that would plan and manage silvicultural operations to maintain a target balance of stand structures across a landscape. Creative incentives, regulations, and approaches are needed to make a transition from the current direction to the goal of managing for a variety of structures across the landscape for biodiversity, high-quality timber, and rural community productivity.

Incentives. Private landowners must be able to benefit from providing wildlife diversity and other public values. Some landowners are harvesting stands prematurely, either for cash flow or from fear of increased regulations. Immature stands could be made more financially liquid by creating bonds for the future value of the stand, which can then be sold and traded like agricultural futures. Other landowners find managing for high-quality products and biodiversity to be economically marginal. Since thinning and pruning conserve fossil fuels and help the environment, subsidies of these activities by power plants (and others) could be encouraged to sequester biotic carbon and offset fossil fuel emissions. Tax deferrals and other adjustments could also help.

Other landowners need a flow of wood to their mills. Harvesting some timber on national forests to create a balance of stand structures could provide some timber supply. Subsidies could help mills retool to produce high-quality and high-value products, which may allow them to purchase high-quality logs from private lands that would otherwise be exported.

Regulations. Regulations may be needed to channel incentives. Taken separately, regulations may be viewed as additional costs that reduce management and outputs; however, in concert with incentives, they should focus efforts toward the region's strategic goals.

Regulations could set target conditions in terms of landscape patterns, stand structures, and operational constraints (Oliver et al. 1992). To minimize inefficient central planning, legislation would set goals and limits while managers could determine the means of achieving the goals within given constraints. Owners who actively manage lands to create these values would be protected from lawsuits and should be given incentives to provide nonmarket values. Several owners of a landscape unit could share the different structures to be maintained (as road networks are shared), or they could buy and sell responsibility for different structures just as air pollution "quotas" are bought and sold on the Chicago Exchange.

National forest harvests. The volume-based sustained-yield goal on national forests may need to be changed to managing for a balance of stand structures across each landscape area (similar to area regulation). Timber harvesting would be the result of maintaining the stand structures, rather than an independent goal. Other adjustments will be needed to manage for biodiversity—such as allowing below-cost timber sales for needed thinnings or roads, and broader use of timber stand improvement funds.

Infrastructures. Various infrastructures will be needed to encourage thinning and pruning; manufacturing and remanufacturing high-quality timber products; trading in "timber futures"; trading stand structures among landowners within a landscape unit; developing technologically modern and efficient tools (computer models, geographic information systems) for landscape management; and promoting other forest val-

ues such as recreation, mushroom-gathering, floral greenery collection, and fish production.

Making the Transition

Several actions could promote transition from the present management directions to the goal of managing across a landscape. Government agencies, environmental organizations, private timberland owners, and timber industry can adopt policies that promote landscape-scale management. Federal, state, and county laws governing forest management and controlling incentives and regulations can be changed in a coordinated way to promote landscape management. A large public or private forest landowner can play a lead role by committing to managing across the landscape, thereby providing the stability to develop thinning, pruning, landscape planning, and similar infrastructures. The technology to manage across the landscape can become so advanced that managing in this way becomes more economically desirable than alternative ways.

Once implemented, landscape management will have additional advantages:

- Forest management will be more efficient and profitable, since greater record-keeping will allow land managers to shift from managing forests on an inventory basis to managing stands as assets in a portfolio (Oliver, in press).

- Reduced fear of more environmental regulations will encourage investments in silvicultural operations at levels that will maximize profits.

- A more constant flow of employment and products from each area will help stabilize rural communities.

- Maintaining all structures across the landscape will ensure species do not become endangered by a loss of habitat.

- The flow of high-quality forest products from the region will protect the environment by reducing global use of more polluting substitutes. ■

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MANAGING LANDSCAPES: ROLE OF GOALS, REGULATIONS AND INCENTIVES

Bruce R. Lippke, Director
Center for International Trade in Forest Products
University of Washington

Abstract

Managing for biodiversity is a new concept requiring an understanding of how economic forces can be used to contribute to both timber production and non-timber values. The problems of using general regulatory mandates to achieve local environmental goals include both increased costs driving out investment and substitution by competing suppliers from other regions. These suppliers are likely to be higher-cost producers with less efficient production. More habitat damage from harvest by alternative wood suppliers, as well as increased CO₂ and other emissions, may be expected. If the alternative suppliers use non-renewable resources, much higher emissions are likely. Using incentives, it is possible to increase investments to serve a broader set of goals including both local biodiversity, rural employment, and global environmental gains. Incentives must contribute to increased returns for reaching target stand structures, cash flow to support the needs of increased management, and reduced risk of confiscation. A system of management bonds is shown to be a potential solution for each of these problems, making it possible to motivate the private sector to achieve both high timber outputs and increased non-timber, non-market outputs. When public beneficiaries contribute revenue to the private forest manager as an incentive for the production of non-revenue-generating public outputs such as biodiversity, market efficiency can be extended to broader goals than just timber production.

Managing for biodiversity is an economic option

Managing landscapes for biodiversity, forest health and sustained timber production is a relatively new concept, as it applies new technology to earlier concepts of sustained management. Oliver (1992) has shown that forest management investment can be directed to increase biodiversity and, as a consequence, increase wildlife habitat and other non-timber outputs. The question of what it might take to motivate forest managers to manage for increased biodiversity will be examined in this paper. The impact of regulatory approaches to achieving forest management objectives is shown to create problems with broad environmental as well as economic effects. The role of goals in addressing some of these problems and the benefits of developing incentive-oriented systems is introduced. Social and legal issues will largely be left to others to analyze.

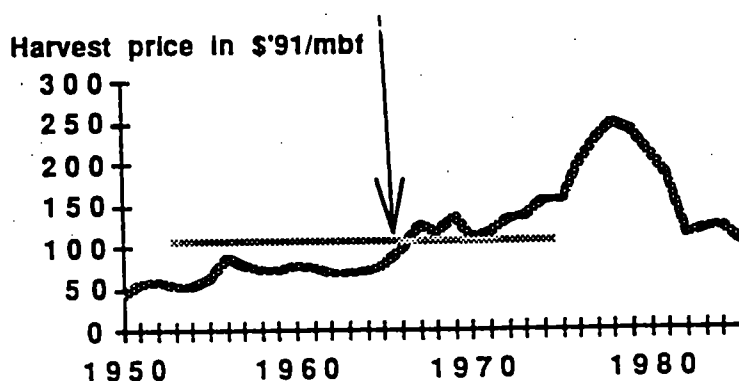
Adequate prices for investment in forest management are a recent phenomenon

The history of forest economics from a management standpoint is not very long. In the Pacific Northwest logging began with the lowest-cost sources of timber along the tidelands. Over the last 80 years it has moved inland and up the mountainsides, with logging, hauling and road costs steadily increasing.

In the earlier part of the century many cut-over lands were abandoned to avoid taxes because the rate of return for managing the land over a rotation was so poor. Tax policies were adjusted to improve the motivation for managing forest lands. The capital gains tax at one time provided a substantial motivation to manage forest lands better.

Holding the land under natural regeneration with some fire control represents a minimum management strategy. The next increment in investment for increased output requires restocking the land soon after harvesting. Restocking involves an investment of roughly \$230 per acre (in inflation-adjusted 1991 dollars) including site preparation, the seedlings and planting. For a reasonable target rate of return of at least 6%, it requires a minimum price of \$100/mbf at harvest to reach target return levels. As can be seen in Figure 1, until the late 1960's the harvest price (adjusted for inflation) was less than \$100/mbf. Thus, the motivation for intensive management of forests has only a 25 year history.

Figure 1: ADEQUATE PRICE FOR RESTOCKING



The most difficult aspect of forestry investments is the long growing cycle. An investment such as stocking has no payout for 50 years and results in negative cash flow for that whole investment period. This is not a common or desirable investment strategy in our economy. Recognizing a reasonable rate of return on one's money (such as 6% or more over the holding period) results in a present value of the next rotation's harvest of only one-twentieth of the value of the current harvest. There is, in effect, a clash between market-economics with its high discount rates and

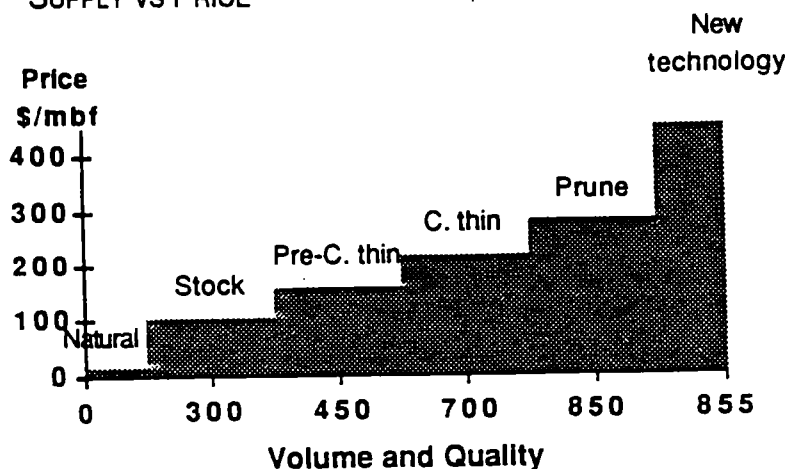
concepts of sustained management, which would value the next generation equally with the current one.

Nevertheless, timber values have risen and are now at least high enough to attract some investment in more than minimal levels of forest management. It took the strong housing years of the early 1970's to pull prices up to levels attractive to investments in forestry.

Higher volume and quality can be produced with higher prices: The timber supply curve

There is a supply curve for timber produced on managed forest land, just as exists for any other product, although it involves a longer term than for most products. As prices rise, production costs increase in order to increase output. With higher prices, higher rates of return are generated for investors, attracting new investment to expand supply. With low prices some natural volume of timber with low quality still exists. Under plantation management, volume and quality can increase with price, consequent to making additional investments in forestry. Such supply curves have been demonstrated before (Sedjo, 1981). Figure 2 illustrates such a supply curve for several levels of management, including natural stands with minimal investment, stocking soon after harvest, pre-commercial thinning, commercial thinning, and pruning.

Figure 2: SUPPLY VS PRICE



There are, of course, other technologies that have been left out of this example, such as fertilization and genetic selection. These results also differ with site quality. Given the many variations, an aggregate supply curve for a region will be a much more smoothly rising function as prices rise than is shown in Figure 2. However, at very high price levels, all worthwhile investments will have been made with

inadequate knowledge of how to extend the output any further and the supply curve for a given land base will rise steeply at that output limit.

This demonstrates that investment in management accelerates the performance of the forest but higher prices than have existed historically are required on all but the most productive acres to make these investments in management make economic sense.

What should we be trying to change to maintain biodiversity?

From an historical perspective, forests have no history of balanced stand structures across landscapes. Nature does not provide stability. Natural disturbances are occasionally very large. On occasion they have devastated total watersheds (Teensma, *et al.*, 1991); smaller disturbances are more frequent.

Economic harvests have not provided a balance, either. Harvests started along coastal waterways and moved inland, up the hills, leaving little behind that could be considered a balance. Even the reduction in forest fires has changed the balance in our forests, resulting in unmanaged second growth stands more dense than historic natural stands. These second growth stands will not move along the same path to old-growth as earlier stands that were subject to more frequent fires.

History is therefore not a great guide as to what managers should do to improve biodiversity. Managing for improved biodiversity can make sense for the production of more non-timber values, but it represents a new goal, requiring new methods.

If Pacific Northwest policy makers choose to pursue such a goal it may well be in concert with a new and growing spirit around the world. The 1972 UNCED conference set the stage for increasing non-market environmental values. The International Tropical Timber Organization (ITTO) has been hard at work for most of a decade, attempting to provide a better balance in tropical forests by increasing sustainable management and reducing deforestation. The recent UNCED conference on the Environment and Development in Rio de Janeiro in 1992 was another step toward a global convention on sustainable forestry. While these historic events have heightened awareness of the need for sustainability and biodiversity, they have also brought into focus the conflict between developing countries' needs, dominated by economic growth, and developed countries' concerns that environmental protection is becoming more important. In reality, a reasonable level of economic growth is required for environmental sensitivity. Developing countries are not willing to sacrifice growth for biodiversity or other non-market values. Developed countries, with their greater wealth, must lead the way in learning how to manage for non-timber values which have no market.

The prescription for increased biodiversity is increased investment

There are several management options available that can make a substantial difference in achieving increased biodiversity:

1. If there are too many dense young stands with no understory, thinning is required, whether it is commercially profitable or not, in order to avoid overly-crowded stands. This will improve the health of the forest as well as biodiversity.
2. If there is too little old growth in a watershed:
 - Both commercial thinning and increased pruning will accelerate the rate of -stands taking on late successional characteristics.
 - Some harvests can be delayed in watersheds where the amount of old growth is in short supply.
 - Fertilization can accelerate growth and the time when managed stands achieve structures more like old-growth.
 - Leaving more trees and logs for habitat may be appropriate in some situations.
3. If there is too much sedimentation, delaying the amount of harvest in a watershed may be appropriate.
4. To improve cover in cleared areas, leaving behind trees, snags, and corridors may be appropriate in some areas.
5. To slow down rural withdrawals, a growth management issue, link rural development to forest maintenance.

While this list is not exhaustive of the possible prescriptions, it does represent major opportunities to improve biodiversity. However, each of these actions represents either an increased investment or an increased cost and therefore a reduced return on investment.

The general prescription for increased biodiversity requires increased investment and more management. The dilemma is that no market exists for most of the non-timber outputs being produced by these investments. They are therefore not likely to occur without some change in motivation. If regulations are used to mandate minimum practices to achieve these results, costs increase. Increased costs reduce the rate of return to investments rather than attracting additional investment. Investments will be driven out, resulting in less available cash flow. This is the

reason the economics of biodiversity management are as important as the biology and technology. In order to succeed, we must understand the role of economics. If it is not as simple as regulating minimum standards, then it is important to know just what happens when regulatory mandates are used, and how the goals might be changed to avoid the problems of regulatory approaches. Can alternative incentive approaches produce different results?

As Oliver (1992) has shown, a landscape can be managed to increase biodiversity, reduce sedimentation and erosion problems, and produce a better balance in forest stand structures. These structures produce a better balance of habitat over time, supporting more fish and wildlife with fewer booms and busts. But there are both plus and minus economic consequences of this result, including more jobs from increased investments and higher-quality wood, which can stabilize job growth and reduce fluctuations in the long term. In the short term, however, the lower returns will not support the investment needed in additional management.

As in most issues in management, there is both a carrot and a stick approach. In this case it is regulatory incentives or mandates.

Negative Impacts from mandated regulations

If delayed harvests, buffer strips, set-asides, or less-than-commercial thinning are mandated, the result is reduced timber output with lower returns to managers. If it were already commercially profitable to thin, there would be no cost of minimum practices, since the economics would already be driving managers to provide at least the necessary degree of thinning. That is, if it were already commercially profitable, the regulation would not be needed. If the regulation is mandated to reach a biodiversity goal, it will increase costs and drive out other investments. If that sounds counterproductive, *it should*, as will be shown in more detail.

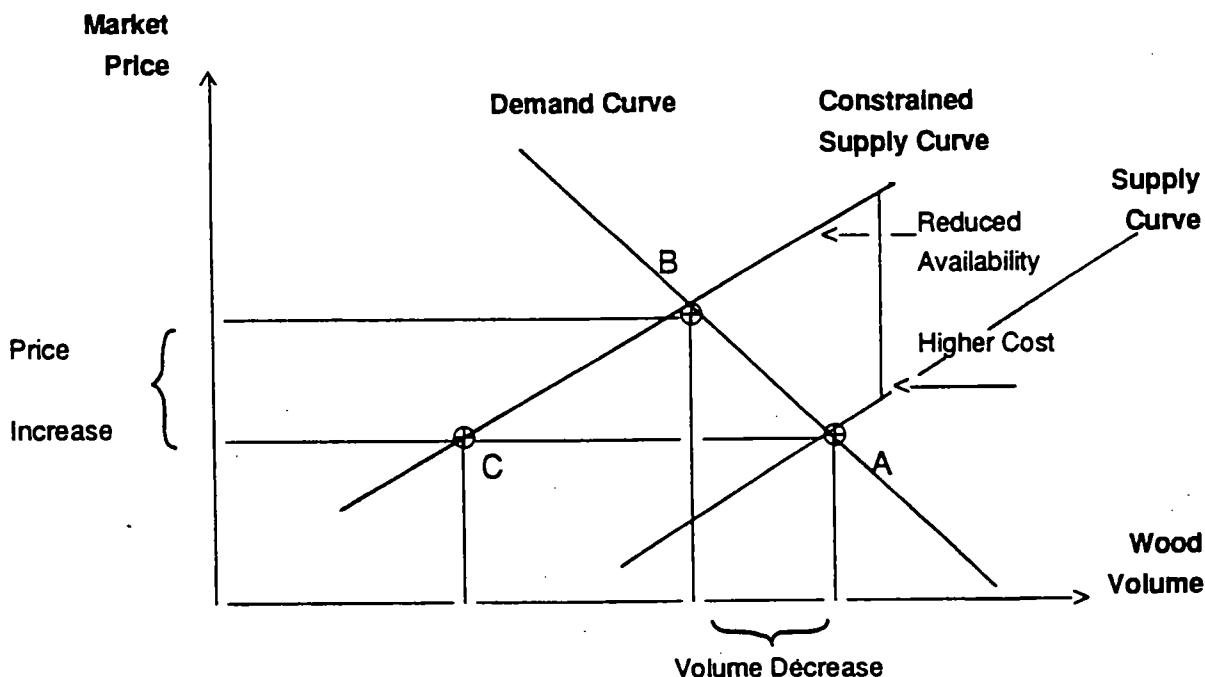
Worse yet is that, if a mandatory regulation succeeds in increasing biodiversity even on the reduced acreage that might be managed, it also increases the risk of a "taking" as a consequence of the success. If, for example, a stand is accelerated to look like old growth and a spotted owl takes residence (a goal of biodiversity management), other regulations may prevent the manager from harvesting, a substantial cost penalty for producing the goal. Instead of successful management producing rewards, the regulatory framework produces additional penalties. That, of course, further reduces the manager's willingness to invest in the prescriptions desired for increased biodiversity. Regulatory approaches all too frequently have perverse consequences.

To determine how to avoid these consequences, it is appropriate to review the interactions between regulations, supply and demand.

Economics of regulations on wood output

The elementary supply and demand curves in Figure 3 show the normal relationship where the demand for timber or wood output in a region decreases as the price rises. Similarly the supply curve, such as that developed in Figure 2, suggests that as prices increase managers will be motivated to increase supply in the region.

Figure 3: ECONOMICS OF REGULATIONS ON WOOD OUTPUT: LOCAL SUPPLY CONSTRAINTS OR COST INCREASES



The equilibrium between unconstrained supply and demand is noted on Figure 3 as point A. If regulations are imposed that mandate buffers or delays in harvesting, the supply that would be available in that time period is reduced, represented by a shift to a constrained supply curve with less output for a given price. Similarly, regulations which mandate non-commercial type operations such as non-commercial thinning or pruning are cost increases that shift the supply curve up to the constrained supply curve. In either case, the equilibrium between supply and demand in the region is shifted to point B.

The impact of the reduced supply curve is reduced competitiveness with other supply regions and a reduced volume and or quality with increased price. The result is less revenue and less cash flow for investment in forest management. If the competition is very strong from other suppliers around the world, prices will not be

able to rise as much as shown. The local demand curve will be flatter, as markets are sourced by other suppliers around the world. Cardellichio, *et al.* (Cardellichio, *et al.*, 1988; Perez-Garcia, 1991) have shown how suppliers from all parts of the globe compete for markets. In the long term it is impossible for processors to increase their prices much before going out of business as a consequence of the competition from the other suppliers. In the worst case, with no price increase needed to pull out competing supplies from substitute sources, the new equilibrium shifts all the way to point C, with a much reduced volume of output and no price increase to offset the volume declines, therefore producing much less cash flow for investment.

The diagram depicts only the local economic consequences of a mandate to increase biodiversity, suggesting that economic gains in other regions will substitute for the reduced output in the constrained region. The question should also be raised what happens to the environment in these other regions that increase output. Since our goal should be more investment, not less, and global environmental improvements, not losses, it is important to understand how these economic and environmental linkages work.

Setting aside Northwest forests produces environmental consequences around the world

To demonstrate these consequences, some global impacts from the reduced timber output from recent constraints on Pacific Northwest timber supply will be used as an example. Lippke, *et al.* (1990), showed that there would likely be a long term harvest decline of 4.2 billion bd ft from the 1983-87 harvest average of 18 billion bd ft, which preceded the conservation actions and litigation. This harvest decline included an estimate of the set-asides required on private acres, the impact of the conservation strategy developed in the interagency report on federal acres (Hamilton, *et al.*, 1990) as well as declines in USFS management plans dependent upon pre-ISC strategy to save owls (as well as other emphasis changes toward less timber production). Forest Service sales levels and other constraints on state and private owners, including recent changes to forest practices acts, have all worsened since the 1990 report, hence a 4.7 billion bd ft reduction in harvest is illustrated here as the supply shift in the Northwest.

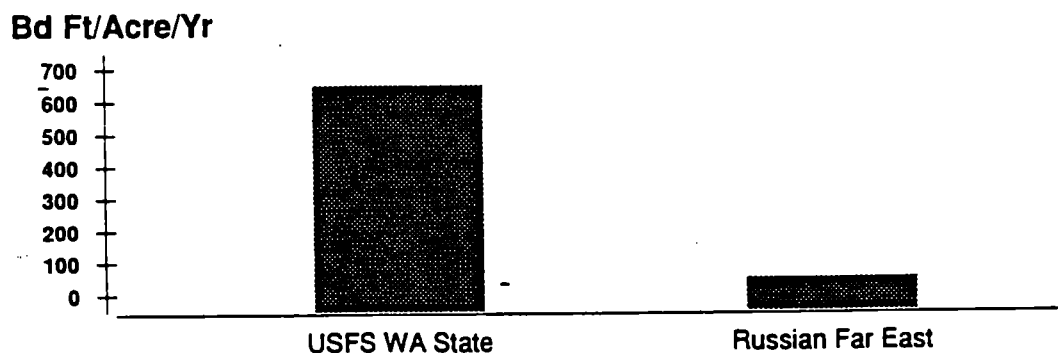
That volume is roughly equivalent to a plantation of 10 million acres on 100 year rotations with 100,000 acres annual harvest using USFS management regimes (somewhat less on industrial lands).

With any constraint in supply the demand does not just disappear but is shifted to other substitute suppliers. These alternatives include other wood producers around the world, non-renewable resource suppliers that provide competing products for

construction and other uses of wood, and some reduction in demand reflective of the higher prices, including some new conservation.

If the substitution is from wood overseas, wood suppliers such as the Russian Far East, holder of the largest softwood inventory in the world, as much as 15 times more acres may have to be harvested to provide the same product (Lippke, 1992). Figure 4 shows the product output per acre per year for the two regions, including adjustments for waste as well as rates of growth.

Figure 4: PRODUCTIVITY COMPARISONS (FOR EQUAL PRODUCT OUTPUT)



A substantially larger number of acres of habitat would be harvested than would be preserved in the US. Part of this increase results from much poorer growing conditions in the Russian Far East. Another part derives from their poor infrastructure, which would result in enormous wood wastes, shown to be roughly equivalent on an annual basis to the CO₂ emissions from a fleet of 900 thousand autos with average usage.

It is, of course, not really known whether saving 100,000 acres of harvest in the Pacific Northwest is better or worse environmentally than increasing harvest by 1.5 million acres per year in the Russian Far East. That would require a relative set of values on different environmental factors. It does suggest that we should not ignore the environmental consequences of policy in one region causing environmental damage in another region.

Given the trend toward larger environmental constraints on timber supplies in many countries, it might be assumed that there is no longer another source for increased wood output. In that case, the substitution for the Pacific Northwest set-asides would be made up from substitution by non-renewable resources such as steel, aluminum, concrete, and plastics, all of which are much more fossil-fuel-intense in their manufacture. Peter Koch, a scientist on the original Committee on Renewable Resources in Industrial Materials (CORRIM) used that commission's report (1976) to

show the impact of non-wood substitution on energy consumptions and CO₂ emissions (Koch, 1991). For a 4.7 billion bd ft harvest reduction replaced by competing non-renewable products, the increased fossil fuel consumption would generate as much CO₂ emission as a fleet of 6 million autos.

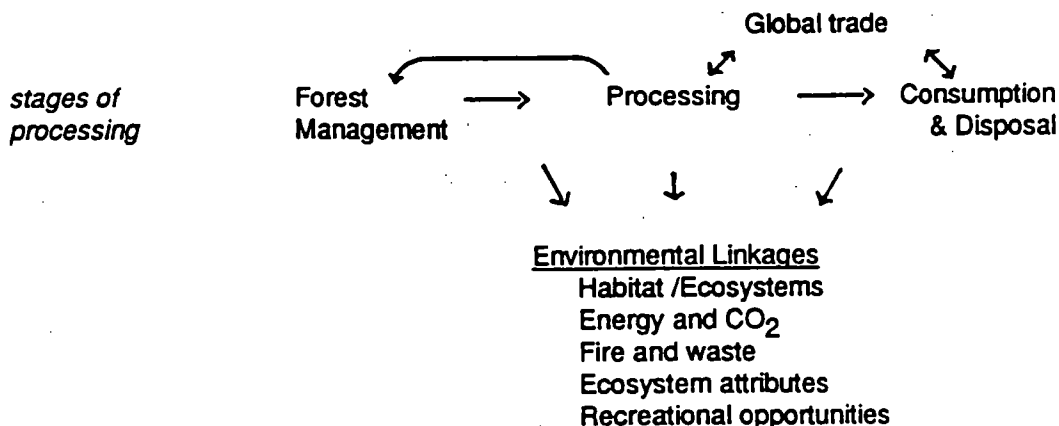
WITH SUBSTITUTION BY NON-RENEWABLES

Harvest Reduction	Energy Consumption Increased	Increased CO ₂
4.6 billion bd ft	80 million bbl/oil	35 million tons

Success with global environmental protection clearly requires more consideration for these linkages than independently regulating in local regions.

Wood markets are linked around the world by relatively free trade. Each stage of production (forest management, processing, and consumption/disposal) has links to the environment. Forest management impacts habitat, energy consumed, fossil fuel used, CO₂ and other emissions, recreational opportunities, and other measures of the environment. Similarly, the processing of wood products impacts many of these measures--like fossil fuel consumption and emissions--and is linked back to forest management. Consumption and disposal also involve energy-intensive activities and impact recreational opportunities through land conversion; they are in turn linked back to processing and forest management.

GLOBAL ECONOMIC/ENVIRONMENTAL LINKAGES

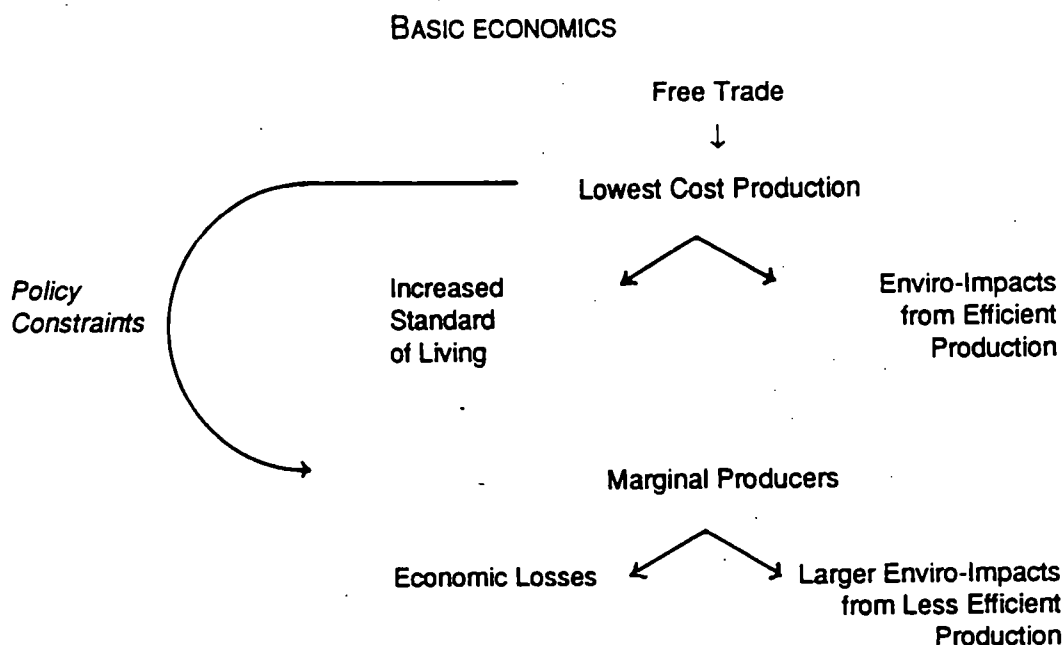


Because of these linkages, one regional impact can not be examined in isolation. Policy based on such an isolated relation and designed to achieve a narrow goal may have significant and probably undesirable consequences in other regions.

Environmental efficiency requires economic efficiency

The basic economic linkages suggest that constraints to efficient production will result in substitution by inefficient producers, which generally causes an increase in environmental damage through the reduced efficiency.

Open markets allow the lowest-cost production to reach consumers. These cost savings are real and produce an increased standard of living measured by values in our market system. But efficient production will generally mean efficient use of resources, which in turn means less environmental damage. Even when the resources are free, such as water, constraining the use of a resource shifts the production to a more marginal producing region. This will most likely shift the environmental consequences to the region of less efficient use of the resource.



As the diagram above suggests, any policy that constrains the flow of the lowest cost production to consumers necessarily shifts production to marginal and less efficient producers. That definitely causes economic losses on a global scale, with the losses in the constrained region greater than the gains by the alternative suppliers. Similarly, the increase in production by marginal producers will increase the environmental impacts due to their greater inefficiency. While there may be counter-examples where the inefficient producer is inefficient because of less access to environmental resources, this is certainly not the likely case in forest products.

Environmental protection generally requires the use of the most efficient producers. Environmental regulations that succeed by constraining efficient producers in one

region can result in substitution by suppliers in some other region with more negative environmental consequences.

It should be obvious from these examples and flow diagrams of impacts that determining the right goal is important. Too narrow a prescription, like saving one species in one region, is likely to be counterproductive to other environmental measures and the global environment unless the value of that species is considered much higher than that of other species and other environmental measures, thereby more than offsetting their losses. It will also be costly.

Target goals for landscape management

A more robust goal that brings these factors together would include:

1. Increased biodiversity and forest health over landscapes (not just one species saved)
2. Contribution to more regional and rural employment (economic efficiency, not just a high cost solution)
3. Global environmental gains greater than losses (not improvement of our own back yard at the expense of global deterioration).

We have shown that, even if regulation produces biodiversity on a limited acreage, it will be at the expense of both regional and global wealth and the global environment. A framework is needed that can support all three goals. If regulations are not effective, the question then becomes: can incentives support all three goals?

What are efficient solutions?

To reduce CO₂ emissions with the least negative economic consequences, users of carbon would be uniformly taxed for carbon taken from the ground (fossil fuels), not carbon that was taken from the CO₂ in the air (plants and trees). Policy makers describe this as internalizing the cost of the environmental damage, so that the market system will efficiently find the next best alternative. Regulating the carbon content of certain products would cause an inefficient allocation of resources since it does not allow the market to find the lowest-cost solution. Note that regional cost internalization of a carbon tax will not suffice, as it will merely allow the region with the cost increase to import the carbon in product form from other regions where the carbon emissions will be increased as much if not more. Much of Japan's energy efficiency gains derive from increased imports of energy-intensive materials.

In order to increase or better balance wildlife habitat, the values for wildlife should be internalized, or alternatively, the costs that are harmful to wildlife should be internalized. But burdening producers with a regulatory tax or cost will reduce forest management and shift the burden to other suppliers, which is generally counterproductive. If incentives are provided, management can be increased while also providing improved environmental outputs. If the incentives are provided by local beneficiaries, the beneficiaries would be paying for their local benefits, an efficient market system. The value--rather than the cost--of the benefits would then be internalized into the market system for efficiency. If local or broader groups of beneficiaries pay for their benefits, there would not be a shift to competitive suppliers, distorting efficient production, as would be the result of internalizing costs in the local supply region.

Who are the beneficiaries of landscape management?

If there are no beneficiaries, clearly no one should be charged the value of incentives. In the case of landscape management, many beneficiaries will gain from increased forest management, even when there would be zero or negative returns to land managers.

- Increased and better-balanced habitat benefits those publics interested in wildlife.
- Better aesthetics from increased diversity would benefit those publics so inclined.
- Reduced CO₂ emissions may become a critical global need.
- Reduced rural unemployment would benefit rural communities and the state and local governments.
- Secondary manufacturing production and employment would benefit processing companies and their workers.
- Higher-quality wood should restore the image of quality wood producers benefiting the processing sector and the region's economy.
- An increased supply of chips from thinning would reduce the shortages caused by conservation.

Hardly any of these benefits will flow to the land manager, certainly none in the near term. Further, the chance of colonization by protected species of improved habitat derived from investment in management may constrain the ability to harvest constitutes a substantial risk to that investment.

Incentive structures most effective in key investment components

First, the rate of return to the land managers should be increased if they manage to increase non-timber outputs as well as timber outputs (which have market values).

Second, and especially for small owners, it must be recognized that the availability of cash flow is every bit as important as rate of return. Small owners generally do not have available cash for the necessary forest investments, as they have no steady stream of operations producing cash on an annual basis.

Third, the regulatory risk of confiscation has risen dramatically in recent years in the Pacific Northwest. It will be necessary to reduce this risk if long term investment in the region is to be expected.

Useful incentive structures

The traditional motivation provided to increase investment has been the **tax credit**. Compensation for public non-market outputs in the form of a tax incentive would increase the rate of return and motivation for intensified management. A **cash management bond** could be drawn upon when the necessary management to increase biodiversity is accomplished. A **joint venture or contract** with public regulators would reduce risk of a taking of assets which may result from successful implementation of a biodiversity management strategy. Basically, success in producing non-market values requires reward in terms of a benefit to landowners, either in increased returns or a protection against risk of confiscation of assets.

These concepts can usefully be integrated by using tax credits as a source for cash management bonds, which would function as biodiversity performance contracts. A portion of the state yield tax or federal capital gains tax could be placed in management bonds. The bonds would be redeemable only to reimburse cash for management steps necessary to reach target stand structures in a watershed. These bonds would therefore be established for management options such as thinning, pruning, buffers, delayed harvesting, etc. The bond would provide the incentive and much of the cash to manage for non-market non-timber outputs as supplementary to timber outputs.

While the example below suggests that such an incentive structure could be established by dedication of only a portion of the state yield tax, it would require a 25 year startup, a classic problem of sustained management concepts. To produce incentives to manage more acres now, rather than 25 years down the road, including management on the backlog of acres already in need of thinning, additional sources

Example application over a rotation

Public funding of tax credit in forest management bonds year 1 (current yield tax about \$500 per acre)	\$250/acre
Bond grows at government secure rate	4%/yr
Bond worth by year 25	\$670
Use \$300 for thinning & pruning ROI from 5.5% to 7.5%	+2% ROI
Bond worth by year 50	\$990
Use \$990 to defer harvest as needed (can defer 10% for 50 yrs, more for shorter periods)	defer 10% harvest

of funds would be required. The next example represents one possible scenario:

How to source funds today--rather than in 25 years

Apply 60% of current yield tax in bonds to thin 25 year old stands	
\$300/acre credit to thin & prune	+2%ROI
Use federal tax credit of 10% of income, resource capital gain, or allow inflation adjusted depreciation of all costs	
\$990/acre to defer harvesting or to catch up on backlog of thinning & pruning	10+% deferral

A portion of the current yield tax should be made available today for managing overly-dense stands that are now 25 years old. However, the yield tax can not simultaneously fund incentives to delay harvests where needed. In recognition of the importance of resource management for public benefits, a resource management capital gain could be established in order to generate additional funds.

There is no overwhelming reason to consider the yield tax or capital gains tax exclusively as the source of the funds; they are merely public sources of funds. A public bond paid off by any other source would be as good.

While these incentives may seem costly given the problem of current budget deficits, in reality they are less so when the regulatory alternatives are considered. The cost of recent changes in forest practice requirements in Washington state has been shown to be in the 5-10% range (Pierson, 1992). This is a negative impact to the region that could be offset by using the incentives approach and produce the new goals far more efficiently. If it is worth doing, it certainly should be worth doing efficiently. If it is not worth the cost, it is counterproductive to mandate the results.

There is a risk of introducing inefficiency by placing too high a value on social benefits and incentives. The marginal benefits could be smaller than the marginal costs. But if the costs are low there should be little likelihood of assuming too much value for the benefits being received.

Alternatives for fund raising that lower the cost of purchasing biodiversity

There are other schemes to raise the funds to promote increased forest management. Since some watersheds will produce benefits more efficiently than others, the market mechanism could also be used to allow bidding by land managers to allocate the bonds. If there is a limited pool of funds for the incentives, more biodiversity improvement would be obtained with less timber output loss per dollar of incentive by placing the bonds out for bid. A forest management bond issue could be offered at the state level through the bond market with the payback to be derived over time from the yield tax and other taxes on wildlife and other non-timber forest outputs¹. The uses of funds from the bond would be provided in the form of the cash management bonds shown above except that they would be made available in sealed subscription bids so that their full value to the timber owners is determined by competitive bidding, hence there would be no more cost to the public than necessary to obtain the increased forest management practices.

Other alternatives to the offering of a state forest management bond might include the re-licensing of dams that cause wildlife damage by requiring electric power utilities to put up bonds for buying wildlife offsets through increased biodiversity management of the forests. While internalizing this cost to hydro power could decrease competitiveness with many of the consequences described earlier, hydro power in this region is so much below the cost of other power sources there is little risk of making them less competitive by internalizing their cost of wildlife damage. It is true that even a small increase in electric rates makes those producers most sensitive to electric costs--such as aluminum producers--somewhat more marginal. In that sense it would be nice if an estimate for the true cost of CO₂ emissions could be internalized at the same time to avoid the substitution of fossil fuel power sources.

The larger problem might be to determine how much net damage to wildlife the dams have created in order to determine how much they should contribute to a bond for forest management. At least it would seem to be more efficient for the dam to

¹At the conference on Managing Landscapes for Biodiversity, Forest Health and Sustained Timber Production, a coffee break discussion group extended several of these ideas considerably, with noted contributions by Jim Kraft, Plum Creek Timber Company.

offset its wildlife damage by putting up a bond for forest management, using market efficiency to produce biodiversity, than for the dam to be forced to curtail its supply.

Reducing the risk of success in achieving biodiversity from causing a taking of assets

Since the management bond is similar to a public agency contract with a private provider, it would not be difficult to build in protection from a public taking. The contract would simply include a guarantee allowing the harvest under the management objectives or a requirement that the government purchase the asset at market value if it desires to maintain the forest for non-market public purposes. If the timber that is produced under biodiversity management will not be allowed for harvest, compensation should be provided in the same way as for other deferrals, by paying the market rate necessary to defer harvest.

This should not be regarded as an inconsequential issue. Small tree farmers appear to be liquidating at an alarming rate compared to their earlier harvest levels. When they are asked what is motivating their actions, the general response is that the risk of never being able to harvest is increasing, hence their best strategy is to harvest before it is too late. Whatever motivation they had in the past to hold their inventory to more mature ages appears to have been more than offset by the risk that they may not be allowed to harvest when they want to.

Just as this risk of confiscation by government override of contract terms could be reduced by the management bond as a contract, the risk to the public of loss of habitat and other environmental degradation through land conversion could similarly be averted by contract.

If the value increase in land conversion to non-forest uses such as residential construction is less than the losses in wildlife and other values to society, the joint benefit should be to avoid the conversion. In this case, the landowner who wants to convert should pay a value for conversion that could be used to buy up offsets to the wildlife lost, much like the dam example. The land converter would pay a price for conversion which would allow the public to buy an equal amount of wildlife in other management bonded areas.

Again, the practical problem is in establishing the values. If the costs are low, there is not a great difficulty in creating incentives. If, however, values of non-timber benefits are badly estimated on the high side, market inefficiencies could be generated.

Other factors important to allocation of incentives for delaying harvest across multiple owners over a landscape

If the management bonds are not allocated on a bidding system but are instead allocated on a watershed basis, the problem of determining who gets to harvest and who must defer harvest arises. For efficiency, management bonds at a landscape level would need to be tradeable within a watershed, so that the owner in the poorest position to defer harvest would be able to harvest and the owner in the best position would gain the benefits of deferring.

For example, in a watershed short on old-growth stand structures, the management bonds offered would include an increased share of harvest deferral bonds vs harvest bonds. The bonds would be made available on a fair share of mature inventory basis and could then be resold within the watershed to other owners, so that owners could more efficiently pursue their best strategy.

Other fine-tuning alternatives

The magnitude of tax credits offered in a watershed could be made proportional to the degree to which the watershed is out of balance in stand structures. In a watershed far short of a particular stand structure, the size of the management bond could be increased to attract the desired investments. This might work well in the situation where a limited number of management bonds are auctioned off to the highest bidder, since there would be larger benefits available for the larger problem areas thus making it more attractive to purchase those bonds in a limited offering. With increased incentives for severe stand structure imbalances, there would be less chance that the sale of management bonds would be under-subscribed for the more difficult situations.

Other benefits of management bonds

Management bonds for forest management would also serve other purposes, such as improving timber market efficiency and the social acceptance of forest management.

The bonds would provide a guaranteed track of management performance over the rotation. That is, the public would be protected by knowing that the manager were performing. It could not be said that owners were irresponsible, since they would be managing to the best public goals that scientists could set. It should expand the public's limited knowledge and perception of forest management as the terms would be defined and no longer in dispute. In effect, the management would be bonded through the accountability for actions taken to use the management bonds.

With a bonded track record of performance on the acre, the market for immature stands could be more liquid. Timber values may not be discounted as much due to uncertainty about what has happened to the stand. Increased liquidity of less-than-mature stands with better values would go a long way toward making available the cash needed for increased investments in forest management.

Forest management bonds would be largely goal-oriented rather than prescription-oriented. Every approach suffers some risk of over-management. Targeting goals is better than forcing prescriptions.

Why not make the tree farmer pay for the bonds?

The logical temptation with such a bonding scheme is to make the tree farmer pay for the bonds. While that may be more direct than other regulatory approaches, the objections should still be obvious.

The tree farmer forced to absorb costs which are benefits to others is less able to compete with even less efficient alternative timber supply sources. There is no free lunch: public beneficiaries must pay for their benefits. If costs could be equitably internalized on a global basis, competitiveness shifts could be avoided. However, that would require an effective world government, which does not yet exist. Shifting the burden to other regions or resources does not constitute environmental protection. The best that can be done on a regional basis is for public beneficiaries to pay for their benefits through incentives to forest managers.

If the costs of other people's benefits continue to be internalized into the tree farmer's costs, the shift to non-renewable resources and their pollutants will be accelerated. If the beneficiaries pay for producing their environment and other values, the forest sector can be made more environmentally sound and sustainable without having to solve the problems of the steel, coal and gas industries at the same time.

Relationship between private and public managers

While the focus of this evaluation has been on private forest managers, the question of how it relates to federal public lands should be considered. For example, is there a benefit to trade federal public acres for private acres to increase publicly-preserved old-growth in a watershed?

It costs the consumer as much (and more) for state or federal managers instead of private owners to forego timber values for wildlife or biodiversity values. It is just as

important that public owners contribute efficiently to goals as for the private owner. Inefficiency is not discriminatory.

While it may be easier for public managers to support non-market outputs, it does not reduce the cost burden on the consumer. It may redistribute who pays for the wildlife and other values by requiring a general tax rather than a local tax. The best policy is generally for the beneficiary to pay. Public decisions are probably more wasteful of resources and less efficient, being less guided by market forces.

The opportunity exists but our Institutional structures are not empowered

In conclusion, we have shown that if biodiversity is a useful goal the problems with regulatory approaches are large and generally counterproductive to other environmental goals. Global trade linkages will transfer demands from efficient producers to less efficient producers, causing both economic and environmental losses at the global level even if local environmental benefits are achieved. Broader goals must be considered, such as to balance achievement on biodiversity with economic impacts while making sure that local environmental gains are greater than any global losses. For biodiversity management to succeed in increasing non-timber outputs with relatively low cost to timber outputs, an incentive system must be developed that avoids the negative impacts of mandated goals. A skeleton of such a system was developed. Unfortunately, the regulatory agencies involved in forest management do not necessarily have the authority to devise incentive systems.

The ethical questions are:

If all you have power to do is to regulate (and increase costs), rather than to develop incentives, *can you improve the environment?*

Even if you can improve the environment in one area, if it is more than offset by declines in other areas, *should you?*

World leadership in environmental improvement must come from developed economies such as our own. We must learn how to organize our institutional processes to support incentive approaches to non-market environmental values. Managing forests for biodiversity provides a good opportunity to learn how to use incentive approaches.

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CONVENTION ON BIOLOGICAL DIVERSITY : UK AND US CONCERNS

1. The Convention on Biological Diversity was adopted in Nairobi on 22 May 1992 following negotiations conducted under the auspices of UNEP. The Convention was opened for signature at the Earth Summit in Rio on 5 June. To date around 160 countries have signed the Convention and eight have ratified. The UK has signed but not ratified the Convention. We are committed to establishing the basis on which we can ratify the Convention by the end of 1992. The US has not yet signed the Convention. This note looks at the primary concerns which the UK and the US have, explores the UK approach to the financial concerns, notes the concerns which have been expressed about Article 3 of the Convention and looks at the UK interpretation of the provisions dealing with intellectual property rights.

Background

2. The seventh and final plenary meeting of the Intergovernmental Negotiating Committee in Nairobi was difficult and the financial Articles in particular presented some considerable problems for the UK, the US and a number of other countries. In addition, the US took the view that the provisions in the Convention dealing with intellectual property rights (IPR) were unsatisfactory. Both the UK and US made statements at this

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final meeting. The UK indicated that it had serious reservations about Articles 20 and 21, particularly in regard to decisions to be taken by the Parties. We reiterated our call for deletion of those parts of Article 21.1 which suggested that the Conference of the Parties would have authority over the financial mechanism and would make decisions on the levels of contributions by Parties. We also stated our understanding that Article 3 sets out a guiding principle for Parties to take into account in actions under the Convention. The US statement referred to existing conservation measures in the US, its commitment to biosafety, expressed concerns about IPR, and, like the UK, stated its understanding that Article 3 sets out a guiding principle for Parties. During negotiations the UK and US were unsuccessful in their call for a chapeau to Article 3 to emphasise that it was no more than a guiding principle to be taken into account.

3. At the time of the adoption of the text of the Convention, the UK, the US and 17 other countries signed a Declaration indicating their understanding of Article 21.1 The US also tabled a unilateral Declaration stating their concerns about the parts of the text relating to intellectual property rights, finance, technology transfer and biotechnology.

4. At the time of signing the Convention in Rio, the UK deposited a Declaration stating our understanding that the decisions to be

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taken by the Conference of the Parties under paragraph 1 of Article 21 concern "the amount of resources needed" by the financial mechanism; and that nothing in Article 20 or 21 authorises the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties under the Convention, and that Article 3 "sets out a guiding principle to be taken into account in the implementation of the Convention." The texts of these Declarations and Statements are at Annex I.

Financial Concerns

5. Specific reference to the Global Environmental Facility (GEF), as the body entrusted, albeit in the first instance temporarily, with operating the financial mechanism of the Convention was achieved during the negotiations but at the price of unwelcome language in paragraph 1 of Article 21. In particular we are concerned that while the Convention requires the Conference of the Parties to decide on the amount of resources needed, the Article can also be interpreted to mean that there is a requirement that such funds will be provided and that in addition the Conference of the Parties will determine the amount, nature, frequency and size of the contributions required from individual Parties to achieve the total sum needed.

Possible Approach to Meeting Financial Concerns

6. The major concerns of the UK on finance focus on the fifth sentence of Article 21.1. For us, it is important to know, or at least to be confident before the first Conference of the Parties that we will have the means of controlling the level of the financial obligation we have to meet and to be certain that donors are not going to be faced with having to write blank cheques for completion by the Conference of the Parties, only a minority of which are likely to be developed countries. We see no prospect, in the next few years at least, of amending the text of the Convention either directly under Article 29 or by means of a protocol of amendment and it has already become clear that the expert panels established by UNEP (and on which UK and US are represented) are unlikely to address these issues. As the UK sees it, that leaves just one possibility, the Rules of Procedure for the Conference of the Parties, as a lever for enabling effective control over decisions under Article 21.1 to be exerted. For related reasons the donors probably also need to ensure control over decisions made under Article 21.2 since it provides that "the Conference of the Parties shall decide on the arrangements and give effect to para 1 above."

Not clear
from?

7. Under Article 23 of the Convention the Rules of Procedure of the Conference of the Parties are to be agreed by consensus.

/Provided...

Provided a state was already a Party, it could prevent the Rules of Procedure from being adopted unless they contained satisfactory provision regarding decision making under Article 21.1 and 2. The Rules of Procedure are likely to be negotiated by the Intergovernmental Negotiating Committee (INC) and adopted at the first meeting of the Conference of the Parties. There can be no guarantee that the Rules will be adopted in the form negotiated in the INC, so only Parties will be in a position to block their adoption if, during the first meeting of the Conference of the Parties, they turn out to be unsatisfactory. The first meeting of the INC will not take place until September 1993, though it is not clear that the areas on which we have concerns will be discussed at that first meeting. The first meeting of the Conference of the Parties will take place within a year from when the Convention comes into force, ie ninety days after the thirtieth instrument of ratification has been deposited; so far eight countries have ratified and many others have plans to do so in the course of this year. The first meeting of the Conference of the Parties could be as early as the first quarter of 1994, in which case decisions on Ratification would need to be taken later this year in order to be sure of being able to influence the adoption of the Rules of Procedure from within the Conference of the Parties.

8. In practice, it would be politically very difficult for just one state to stand out alone against adoption of the Rules of Procedure at the first meeting of the Conference of the Parties. To ensure an acceptable way forward on Article 21.1 and 21.2, it would be important to develop as wide a range of support as possible for a firm position on the key voting provision in the Rules of Procedure; and even if the Rules of Procedure were agreed satisfactorily we recognise it would not preclude attempts to amend them at other meetings. In negotiating the Rules we would want to insist that they contain a concluding provision to the effect that "These Rules of Procedure may be amended by consensus by a meeting of the Conference of the Parties". Such language is well preceded in the Rules of Procedure to international environmental agreements.

9. The UK considers that ideally there should be language in the Rules of Procedure on voting that makes it clear beyond doubt that decisions under Article 21.1 and 21.2 require unanimity of the Parties. However, we recognise that, in the context of a global convention, this is unlikely to prove achievable and in reality we would have to settle for consensus of the Parties.

10. The typical Rules of Procedure for UNEP conventions make the following provision:

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"The Parties shall make every effort to reach agreement on all matters of substance by consensus. If all efforts to reach consensus have been exhausted and no agreement reached, the decision shall, as a last resort be taken by a two-thirds majority vote of the Parties present and voting, unless otherwise provided by the Convention and the present Rules of Procedure".

The position of countries concerned about the ambiguities of Article 21.1 could, in our view, be protected if the basic UNEP convention voting formula were to be augmented, thus:

"The Parties shall make every effort to reach agreement on all matters of substance by consensus. If all efforts to reach consensus have been exhausted and no agreement reached, the decision, except a decision under paragraphs 1 or 2 of Article 21 of the Convention, shall, as a last resort, be taken by a two-thirds majority vote of the Parties present and voting, unless otherwise provided by the Convention, and the present Rules of Procedure. Decisions of the Parties under paragraphs 1 and 2 of Article 21 shall be taken by consensus."

/11. This...

11. This form of words would, we consider, meet concerns about others taking decisions on the amount of resources donor countries are to provide, the "blank cheque" problem. In order to be sellable, any text we propose will have to be simple and brief. Wording comparable to that suggested above is to be found in the Rules of Procedure for the Basel Convention on the Trans-boundary Movement of Hazardous Waste adopted in Uruguay last December, though the parallel is not exact and reference to it as a precedent will have to be carefully presented.

12. The above approach is not without its problems. The wording suggested would mean that all decisions under Article 21.1 and 21.2 would be taken by consensus, with the consequence that one developing country could block a decision which the donors wanted adopted, for instance concerning the relationship between the Convention and the GEF. It would be possible, as a matter of drafting, to provide for different voting arrangements for decisions under different elements of Article 21.1 and 2. But the more complicated the text of the voting rule becomes the more complex its negotiation will be.

13. Insistence on an unambiguous consensus requirement for Article 21.1 and 2 decisions, seems to us to be the only sure way forward on our concerns on the financial provisions. We would be interested to hear if the US agrees and if it considers there are

/other...

other effective approaches under the Convention for protecting the financial concerns of donor countries. We would also be interested to know if the major financial concerns of the US are contained in Article 21.1 and 21.2 or whether concerns range more widely perhaps to include Article 21.3 and Article 20.3

14. As mentioned above, on signature the UK deposited a Declaration stating our understanding that the decisions to be taken by the Conference of the Parties under paragraph 1 of Article 21 concern "the amount of resources needed" by the financial mechanism; and that nothing in Article 20 or 21 authorises the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties under the Convention, and that Article 3 "sets out a guiding principle to be taken into account in the implementation of the Convention." This enabled the UK to sign the convention but at the same time expressed our concerns and set out the points of interpretation on which we would need to secure a wide measure of agreement before moving to ratification. In the event of US signature the UK suggests that they might want to deposit a similar Declaration, so adding weight to our common concerns.

Concerns on Article 3

15. As already stated, both the UK and the US included in their statements at the final negotiating session their understanding of Article 3. The Declaration which the UK deposited on signature of the Convention stated our understanding that Article 3 "sets out a guiding principle to be taken into account in the implementation of the Convention." The principle was first agreed in 1972 at the Stockholm Conference and since then has been reiterated in many non-binding environmental texts and even in the preambles to Conventions.

16. It can be argued that the title to Article 3 demonstrates that the Article constitutes a single principle and it is not therefore possible to read its second limb without accepting that its impact is qualified by the first limb. Moreover, Article 3 is called a Principle and hence it must provide overall guidance in the implementation of the Convention and not as an operative provision. There remains some sensitivity in the UK, however, about the possible effects of the inclusion of this principle as a binding provision in Article 3, without any qualification or chapeau, because the words might be read as creating a new head of liability between states. The UK's interpretative statement on Article 3 was tabled to reduce the risk of excessively broad interpretations; clearly such risks would be further reduced were

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a similar statement to be made by the US. We would be interested to hear the US views on this issue.

Concerns on Intellectual Property Rights

17. We are aware that the US has concerns about the possible effect of other provisions in the Convention, in particular that the provisions giving access to biotechnology may be read as having the effect of undermining the value of US intellectual property, particularly patents. Whilst we would agree that the language used in the Convention on this subject is not particularly clear, we consider that it does firmly support the concept of IPR. We do not therefore share these concerns about the implications of this part of the Convention.

18. The key article on patents is Article 16. We are aware that some voices in industry have suggested that this Article requires there to be no patents, or at least only very weak patents, for biotechnology. There are a number of reasons however why the UK does not share these concerns. First, in Article 16.2, it is clear that access to technology under the article "shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights". Second, Article 16.3, states that access to technologies by developing countries which provide genetic

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resources (including property protected by patents) are to be on "mutually agreed terms" and in accordance with Article 16.4, which states that the obligations in Article 16.2 have to be observed. Third, Article 16.3 states that access to technology also has to be "in accordance with international law", thereby indicating that states party to the Paris Convention for the Protection of Industrial Property (of which there are 108) must, in granting compulsory licenses, observe their obligations under that Convention.

19. We understand that the US also have concern about access to genetic resources. Whilst there is an obligation of sorts on Governments to encourage sharing in a "fair and equitable way", it is made clear in Article 15.7 that this shall be on "mutually agreed terms". Provision of IPR-protected technology on "concessional and preferential terms" is clearly qualified in Article 16.2 by the words "where mutually agreed". Taken together, we are satisfied this provides sufficient safeguards.

20. We could always have wished for better language in many parts of the Convention but equally it could have been much worse. The penultimate sentence in Article 16.2 in our view firmly supports IPR and, given the extreme difficulty of the negotiations on this issue, is perhaps as strong as we could have hoped for. It should also be kept in mind the fact that much of the technology

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which would be of most use to developing countries is not in any case protected by IPR.

21. We understand that the Executive Director of UNEP is aware of the problems about IPR and has proposed a process by which these concerns could be addressed. This will begin after the round of expert panels is complete and before the first INC in September 1993. This process is, however, not likely to produce a solution which involves amendment of the text. As stated above, either amendment under Article 29 of the Convention or a Protocol of Amendment would be likely to require a number of years. Amendments can only be proposed by a Contracting Party and must be proposed at least six months in advance of a meeting of the Conference of the Parties where any adoption of amendments would occur. If an amendment were adopted it would come into force three months after two thirds of Contracting Parties had ratified it. Such a procedure could therefore take up to five or six years to go through and would certainly entail the US becoming a Party to the Convention. Similarly, it would be premature to think in terms of a Protocol of Amendment. The Convention would have to have been languishing in the doldrums for some time before such an approach became feasible.

 22. A more likely way forward would be by an interpretative statement. This could be anything from a unilateral Declaration

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to some kind of multilateral arrangement. A multilateral arrangement, if promoted by, for instance, the Executive Director of UNEP and agreed by a number of prospective parties to the Convention would clearly provide greater comfort than a unilateral statement.

Department of the Environment
March 1993

UNITED KINGDOM

(ORIGINAL: ENGLISH)

1. The United Kingdom congratulates the Chairman, the Executive Director and the hardworking Bureau on their successful efforts in bringing this important Convention to a conclusion. It will be a significant contribution to next month's Earth Summit. Unfortunately, like Japan, the United Kingdom has serious reservations about the financial Articles, 20 and 21, particularly in regard to decisions to be taken by the Conference of the Parties. We have not however sought to block consensus, even though our difficulties may prevent the United Kingdom becoming a Party to the Convention.

2. The United Kingdom understands that the basic principle of the financial mechanism under this Convention is that the Conference of the Parties determine policy, strategy, programme priorities and eligibility criteria, the institutional structure has responsibilities of administration and operation. Thus the available amount of resources, modalities of contributions should be agreed between the Conference of the Parties and the institutional structure entrusted with the operation by the Conference of the Parties. Thus we insisted on the deletion of "authority and" in Article 21, paragraph 1, line 4, and the deletion of the fifth sentence in paragraph 1 and at least the replacement of "decided" by "reviewed".

3. The United Kingdom understands Article 3 to set out a guiding principle for the Contracting Parties to take into account in their action under the Convention.

UNITED STATES OF AMERICA

(ORIGINAL: ENGLISH)

1. In regard to Article 3, the United States understands that that Article references a guiding principle that the Conference of the Parties will bear in mind in their actions under this Convention.
2. In regard to Articles 7-13, the United States has a tightly woven system of state and federal programmes in fish and wildlife management. Our system is undergirded by hundreds of state and federal laws and programmes and an extensive system of federal and state wildlife refuges, wildlife management areas, recreation areas, parks and forests. The United States does not intend to disrupt its existing federal and state authorities. Indeed, our Government is committed to expanding and strengthening these relationships. Should the United States become a Party to this Convention, its intent would be to meet its conservation obligations through existing federal laws and would look forward to continued cooperation with the various states in this regard.
3. In regard to Article 15, the United States would like to reaffirm its belief that the impressive gains in world food production have been a consequential result of the free flow of genetic resources among all countries. We intend to retain our policy of open access to genetic resources and related technologies.
4. The United States cautions that, if the application of this Convention restricts access to these resources, the world will not benefit from this instrument. We urge other nations to join in assuring the availability of genetic resources for the purposes of food and agriculture.
5. In regard to Article 16, this delegation finds it potentially deficient in the protection of intellectual property rights. The United States strongly supports the promotion of the transfer of technology and scientific cooperation provided that intellectual property rights in technology are recognized and protected. Article 16 fails to to recognize the positive role of intellectual property systems in facilitating technology transfer and cooperative research and development by private entities. The United States encourages the establishment of strong intellectual property rights systems in all nations and stands ready, if so requested, to offer technical assistance to any nation wishing to do so.
6. With respect to the biosafety provisions of Article 8, paragraph (g), and Article 19, paragraphs 3 and 4, the United

/States...

States is strongly committed to ensuring safety for all biotechnology products, including those intended for planned introduction into the environment. We believe the record is clear, based on experiences in many countries around the world, that the most effective and efficient approaches build on existing frameworks and authority, and guided by scientific principles brought to bear in considerations of the qualities of the products or organisms involved. New regulatory mechanisms that take inappropriate account of processes of production create unnecessary bureaucratic problems with no commensurate increase in environmental or human health and safety, and should be avoided. We are eager to cooperate with other nations in sharing insights and experiences in this area with a view to building all nations' capacities to take advantage of these new technologies.

7. In regard to Article 22, paragraph 1, in the context of this paragraph we interpret "threat" to mean a threat of serious damage to biological diversity.

**DECLARATION OF AUSTRALIA, AUSTRIA, BELGIUM, CANADA, DENMARK,
FINLAND, GERMANY, GREECE, ITALY, JAPAN, MALTA, NETHERLANDS,
NEW ZEALAND, PORTUGAL, SPAIN, SWITZERLAND, UNITED KINGDOM,
AND UNITED STATES**

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Malta, Netherlands, New Zealand, Portugal, Spain, Switzerland, the United Kingdom and the United States of America state their understanding that the decision to be taken by the Conference of the Parties under Article 21, paragraph 1, of the Convention refers to the "amount of resources needed" by the financial mechanism, not to the extent or nature and form of the contributions of the Contracting Parties.

DECLARATION OF THE UNITED STATES OF AMERICA

1. In signing the Final Act, the United States recognizes that this negotiation has drawn to a close.
2. The United States strongly supports the conservation of biodiversity and, as is known, was an original proponent of a convention on this important subject. We continue to view international cooperation in this area as extremely desirable.
3. It is deeply regrettable to us that - whether because of the haste with which we have completed our work or the result of substantive disagreement - a number of issues of serious concern in the United States have not been adequately addressed in the course of this negotiation. As a result, in our view, the text is seriously flawed in a number of important respects.
4. As a matter of substance, we find particularly unsatisfactory the text's treatment of intellectual property rights; finance, including, importantly, the role of the Global Environmental Facility (GEF); technology transfer and biotechnology.
5. In addition, we are disappointed with the development of issues related to environmental impact assessments, the legal relationship between this Convention and other international agreements, and the scope of obligations with respect to the marine environment.
6. Procedurally, we believe that the hasty and disjointed approach to the preparation of this Convention has deprived delegations of the ability to consider the text as a whole before adoption. Further, it has not resulted in a text that reflects well on the international treaty-making process in the environmental field.

**DECLARATION OF THE UNITED KINGDOM OF GREAT BRITAIN
AND NORTHERN IRELAND**

1. The Government of the United Kingdom of Great Britain and Northern Ireland declare their understanding that Article 3 of the Convention sets out a guiding principle to be taken into account in the implementation of the Convention.

2. The Government of the United Kingdom of Great Britain and Northern Ireland also declare their understanding that the decisions to be taken by the Conference of the Parties under paragraph 1 of Article 21 concern "the amount of resources needed" by the financial mechanism, and that nothing in Article 20 or Article 21 authorizes the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties under the Convention.

ROUGH DRAFT
OPEN FOR COMMENT AND SUBSTANTIAL REVISION

TO: Whom It May Concern

SUBJECT: Convention on Biological Diversity

As the Clinton/Gore Administration reconsiders the United States position on the Convention on Biological Diversity ("Biodiversity Treaty"), it is appropriate to examine the potential for harmonizing the interests of environmental preservation and conservation with intellectual property rights.

Vice President Gore has stated that:

The Clinton-Gore Administration will ... present a coherent plan for protecting biodiversity and intellectual property rights in a way that enhances conservation and facilitates global research efforts by U.S. businesses and universities ... [thereby] linking economic progress to the protection of biodiversity.¹

As the Working Group continues its work, it is appropriate to review three documents. First, a draft letter from members of the Working Group to the Clinton/Gore Administration urging that certain steps be taken to implement this harmonization.
ATTACHMENT 1.

Second, a draft document to be issued by President Clinton that outlines the Administration policy with respect to the domestic issues that arise with respect to intellectual property generally, and with respect to the Biodiversity Treaty, specifically. ATTACHMENT 2.

Finally, assuming that it is possible to reach the desired harmonization, a draft statement to be submitted with the signature of the United States to the Biodiversity Treaty.²
ATTACHMENT 3. This statement indicates that in the event of a substantially different interpretation being given to the provisions of the Convention, the United States reserves its rights under Article 38 to withdraw as members of the Convention.

¹ Gore, "Essentials for Economic Progress: Protect Biodiversity and Intellectual Property Rights, 4 Journal of NIH Research 18,19 (1992).

² This latter statement would also be submitted to the Senate in connection with the submission of the treaty to the United States Senate. As appropriate, these understandings should be incorporated into the ratification process by the Senate.

Dear Mr. President:

We, the undersigned, ~~on behalf of our organizations and corporations, urge that you initiate a process that will lead to the United States becoming a signatory to the Convention on Biological Diversity~~ as chief executive officers of a small working group of corporations and environmental organizations that have interests in biodiversity and biotechnology, urge you to sign the Convention on Biological Diversity and to do so in a way that clearly indicates our country's strong commitment to protecting intellectual property rights and other national interests. We firmly believe that in the event that these steps are taken, our Nation can demonstrate to the world community that it is possible to harmonize the goals of protecting biological diversity and encouraging development of new technologies based on genetic resources.

We agree that the protection of biodiversity serves the interests of our Nation and the world community. For this reason, we support the global efforts to preserve biological diversity. In particular, we believe that creation of economic incentives for countries to preserve their biological diversity can be an extremely effective means to accomplish the goal of conservation of biodiversity and the sustainable use of genetic resources.

Now, ~~after further analysis in view of the safeguards that the Convention provides and the U.S.'s ability to address IPR and other concerns during implementation of the treaty, we are prepared to recommend that — provided specific safeguards are set in place —~~ the United States could agree to sign and ratify the Convention. ~~First~~ As one early step, we believe that it is essential that your Administration promulgate a statement on intellectual property protection that spells out the underlying rationale of why strong private property rights facilitates biodiversity and mutually agreed technology transfer. A draft statement that outlines these points is attached.

As in any international agreement, a number of articles of the convention are subject to different interpretations, and some of these interpretations would be detrimental to U.S. commercial or global environmental interests. We feel that this is not grounds for refusal to sign the convention. Rather, we feel the U.S. should sign the convention and state its interpretation of the more ambiguous articles. The United States, as a member of the Conference of Parties, would then be in a position to influence negotiation of subsequent amendments or protocols. Moreover, if the Conference of Parties takes actions contrary to

the U.S. interpretations, the U.S. could exercise its option under Article 38 to withdraw from the Convention.

For these reasons, ~~we believe that it essential that, upon~~ there are two documents that the U.S. should prepare and issue at the time of signing the Convention., ~~the United States make a strong pronouncement on the importance of providing effective protection of intellectual property rights. [A draft statement is enclosed.]~~ Further, we believe it vitally important that, with our instrument of ratification, a statement be deposited that reinforces this belief through interpretations of selected provisions of the Convention. Such a statement would reinforce the view of the United States that member countries cannot rely on the Convention to diminish their protection of inventions made with genetic resources. One of these is an interpretative statement that presents the U.S. view of key provisions of the Convention, which should be deposited with the United Nations at the time of depositing our signature or accession to the Convention. The other is a U.S. policy statement that explains further our country's interpretation of the Convention's provisions in key areas of concern, including especially the protection of intellectual property rights and technology transfer. We are enclosing initial drafts of both the interpretative and policy statements as an indication of the positions that our organizations believe would resolve our substantive concerns sufficiently to warrant signing the Convention. This interpretative statement would also emphasize that if these key points were adversely interpreted by other member countries, the United States would exercise its option under Article 38 to withdraw from the Convention. This document should be incorporated in the Senate ratification process.

We look forward to working with you and members of your Administration to find a satisfactory solution to the issues raised by the Biodiversity Convention. ~~If appropriate, we would propose a working group comprised of representatives from the Departments of State, Commerce, Agriculture and Interior, as well as representatives from the Environmental Protection Agency and the United States Trade Representative, to develop the necessary interpretative statements.~~ We are happy to offer our services and our support to your Administration in fashioning a way for our country to join the community of nations that have signed the Convention and at the same time to reassure our business and NGO leaders that we can resolve their substantive concerns about the agreement. We are certainly willing and available to discuss our proposed drafts and the thinking behind them with Tim Wirth, his staff at the State Department, and other members of the interagency working group that will be developing the formal materials to support a U.S. signature. We have addressed primarily intellectual property issues and urge such a working group to review these issues in detail. In addition, we expect that you will review concerns about the legal and policy impact

of Article 22 on existing United States obligations under international agreements.

We would be pleased to meet with you, or Vice President Gore, to discuss these presentations in greater detail.

Sincerely,

STATEMENT OF ADMINISTRATION POSITION ON
THE INTELLECTUAL PROPERTY RELATED PROVISIONS OF
THE CONVENTION ON BIOLOGICAL DIVERSITY¹

The United States believes that the conservation of biological diversity and the sustainable use of its components serve important environmental and economic goals. Conservation of biological diversity will provide numerous benefits, including new food sources, improved agricultural products and procedures, new tools for combating disease, and will help maintain the health of our ecological systems.

The United States agrees with the proposition that one way to support the conservation of biological diversity and sustainable use of its components is to create an economic incentive for countries to preserve the biological diversity within their borders. For this reason, the United States accepts the principle that benefits stemming from productive use of genetic resources should flow back to those nations that act to preserve biological diversity and provide access to their genetic resources. These benefits should arise from mutually agreed transfers between contracting parties or private entities.

The United States also recognizes that the participation of the private sector greatly enhances the attainment of economic value from genetic resources. Providing effective incentives for the development of new technologies that make use of genetic resources is as critical as assuring the equitable sharing of the economic benefits that may arise from the use of genetic resources. However, absent an effective means to protect the significant investments necessary to develop new technology, the potential contribution of the private sector to the development of economically valuable products will not be met.

For this reason, the United States believes that the extension of adequate and effective intellectual property protection for the technology derived from the use of genetic resources is an essential prerequisite to the success of the Convention. The United States has also determined that its current system of laws that provide an effective level of protection for intellectual property is entirely consistent with the goals of the technology transfer provisions of the Convention.

¹ We anticipate that other statements will be made with respect to the financial mechanism, biosafety, and other parts of the Convention.

Furthermore, the United States firmly believes that the provisions of the convention dealing with technology transfer require that all parties to the convention must provide adequate and effective protection of intellectual property rights in any measures aimed at transfer of or access to technology. The United States would resist strongly any effort by parties to the convention to argue to the contrary, and believes that this position will be upheld in any international forum in which the issue might be raised. The United States will continue to insist on adequate and effective protection of intellectual property rights in negotiations on bilateral and multilateral trade agreements and will not accept agreements that fail to provide such protection.

Furthermore, the United States is convinced that the best means to foster the technology transfer envisioned by the Convention is for other member countries to provide an effective level of intellectual property protection. Such protection will provide the incentives necessary for the private sector to generate the technology using genetic resources in the first place. It will also provide the suitable climate necessary for cooperation between U.S. firms and those in countries harboring genetic resources. This cooperation can yield tremendous benefits by fostering not only the voluntary and cooperative transfer of new technology to developing countries, but by encouraging the application of this technology to solve indigenous problems facing those countries.

These private sector mechanisms can be complemented by public sector initiatives to support technology transfer in order to meet specific needs or objectives unmet by the private sector. Among the actions that could be considered would be: the establishment of a public-funded "intermediary" to either purchase technologies or to facilitate private sector transactions; strengthening the role of international institutions like the International Agricultural Research Centers (IARCs) which are already involved in technology transfer; provision of development assistance funding to developing countries enabling them to purchase technologies; and training and assistance to developing countries to strengthen their ability to develop technologies based on genetic resources.

There is an issue regarding seed banks and other depositories of genetic material samples that have been collected prior to the entry into force of this Convention. Since the text of Article 15(3) does not apply retroactively to samples previously collected, the Convention imposes no legal obligation for parties to share the benefits of the use of those materials with the countries of origin. Nevertheless, the United States and all countries should urge their research and commercial organizations to enter into mutually agreed arrangements by which such sharing would occur in these cases.

INTERPRETATIVE STATEMENT OF THE UNITED STATES

General Interpretative Statement

The United States hereby declares its understanding of Articles 1, 3, 15, 16, 19, 20, 21, and 22 [etc] of the Convention on Biological Diversity. In the event that the Conference of Parties adopts an interpretation contrary to these understandings, the United States reserves its right to take appropriate steps to respond, including withdrawal from this Convention and all its protocols, as provided in Article 38.

Article 1

The United States declares its understanding that fair and equitable sharing of the benefits arising out of utilization of genetic resources requires members of this Convention to respect the rights of other member countries and of private parties to the technology that arises out of such utilization of genetic resources. The United States further declares its understanding that the phrase "appropriate transfer of relevant technologies" under this agreement means that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 15

The United States declares its understanding of the meaning of Article 15(3) that resources obtained by public or private entities before or outside of the Convention are not governed by the Convention.

The United States declares its understanding that the obligation imposed by paragraph 6 of Article 15 to carry out research activities on genetic resources with the full participation of Contracting Parties that provide such resources in research activities is an obligation that applies only to Contracting Parties, and not to the private sector within each Contracting Party.

The United States declares its understanding with respect to paragraph 7 of Article 15 that any sharing in a fair and equitable way of the results and benefits arising out of use of a genetic resource must take fully into account: exclusive rights to technology that a party obtains through its efforts; and that transfers of proprietary technology may only proceed with the voluntary participation of the owner of the technology.

Article 16

The United States declares its understanding that access to and transfer of technology under this agreement subject to intellectual property rights under the Convention requires the recognition of, and consistency with, the adequate and effective protection of intellectual property rights, and thus guarantees against the use of compulsory licensing laws to compel private companies to transfer technology.

The United States declares its understanding of paragraph 2 of Article 16 that the phrase "fair and most favorable terms" means terms that are determined by free market negotiations.

The United States further declares its understanding of paragraphs 2 and 3 of Article 16 to be that in the case of proprietary technology, transfers may only take place on terms that recognize and are consistent with the adequate and effective protection of intellectual property rights. Failure of a member country involved in a genetic resources transfer to extend protection, or action by a member country to limit the exercise of an entity's intellectual property rights, is considered by the United States as being inconsistent with this provision of Article 16.

The United States declares its understanding that the measures encouraged under paragraph 4 of Article 16 **does not permit the violation of "adequate and effective protection of intellectual property rights" in any transfer of, or access to, technology under this agreement.**

The United States further declares its understanding that it is the Contracting Parties -- not the private sector -- that are to abide by the obligations in paragraphs 1, 2 and 3 referred to in paragraph 4 of Article 16.

The United States declares its understanding that the influence of the patents and other intellectual property rights referred to in Article 16, paragraph 5 is fully consistent with the objectives of the Convention.

Article 19

The United States declares its understanding that paragraphs 1 and 2 of Article 19 impose no obligation on Contracting Parties to coerce private companies to share biotechnological research with foreign governments or private companies.

The United States declares its understanding that paragraph 3 of Article 19 does not presume the necessity of a protocol on the procedures for the safe transfer, handling and use of living modified organisms resulting from biotechnology.

Article 21

The United States declares its understanding that the **periodic** decisions of the Conference of the Parties to be taken under paragraph 1 of Article 21 concerns "the amount of resources needed" by the financial mechanism, not the extent or nature and form of the contributions of the Contracting Parties.

Article 23

The United States declares its understanding that the requirement for consensus on rules of procedure binds the parties to consensus agreement upon procedures and mechanisms for implementation of the Convention, including guidance on funding for the financial mechanism and guidance relating to technology transfer.



MEMORANDUM

TO: Tim Wirth, Under-Secretary Designate for Global Affairs,
State Department, through David Harwood
CC: Peter Seligman, Conservation International
FROM: T.J. Glauthier
DATE: February 12, 1993
RE: Strategy to Garner Business Support for Biodiversity Protection

This is a first installment in response to the charge that you gave me at the NGO meeting on January 28th. That charge was to suggest an approach for involving the business community, in particular, in the Department's activities related to the Biodiversity Convention in a way that will garner their support for signing and implementing the treaty.

In developing these ideas, I have had discussions with Conservation International, World Resources Institute, and the Environmental Defense Fund. Schedules have prevented us from collaborating as much as I would like, but I am getting good initial support for the ideas below. In the interests of time, I wanted to share these with you as quickly as possible, so you would know our thinking and can give us some of your thoughts and reactions.

Some of the groups represented at the NGO meeting, notably WRI with support from CI, are planning to send you more detailed recommendations for the longer-term development of a national biodiversity protection strategy. The shorter term recommendations in this memo should be entirely consistent with such a longer term program, and could be a way to get the process started quickly.

Of course, you've seen the "town meeting" format recommended here used during and since the campaign. I've used it quite successfully myself with EPA, and, of course, WWF's RESOLVE group dedicates itself to variations of this approach in its dispute resolution work. I know you are anxious to make some decisions quickly in this area, so I would like to follow up with you as soon as possible. I'm sure we could convene a small working group of people like Peter Seligman, John Sawhill, and others from the business and NGO communities to develop specific ideas regarding how to carry this out.

World Wildlife Fund

1250 Twenty-Fourth St., NW Washington, DC 20037-1175 USA
Tel: (202) 293-4800 Telex: 64505 PANDA FAX: (202) 293-9211

Incorporating The Conservation Foundation. Affiliated with World Wide Fund for Nature.



WWF and PANDA

Signing the Treaty

In the meeting on the 28th, I described the process which WWF has underway that we believe will significantly aid you in being able to sign the Convention on Biological Diversity, which the U.S. did not sign last June at the Earth Summit. We have assembled a small working group of five corporate and NGO organizations to work on this, with support at the CEO level. The five are WWF, Merck & Co., Genentech, World Resources Institute, and the Environmental and Energy Study Institute.

Our goal is to reach consensus on the way that we believe the U.S. should sign the treaty in order to resolve the major substantive concerns that industry, in particular, had with it. Our goal is for our CEOs to send a joint recommendation to the President that he sign the treaty, and to provide the President with our detailed recommendation on how that should be done. We then expect to work with our colleagues in industry and the NGO community to seek broad support for this position.

We have been meeting for several weeks, and are very close to completing our work. In our judgement, the best course of action for the U.S. is to sign the treaty and file a strong interpretative statement with our signature. We are working on a draft of such an interpretative statement, which our CEOs will provide to the President for use in developing the government's official version. We are also drafting a summary policy statement that would accompany the interpretative statement, in a form that could be used in announcing his signature and in transmitting the convention to the Senate for ratification. Our hope is to complete our work so the letter from our CEOs to the President could come at the beginning of March.

During the course of our work, we have informed others in the business and NGO communities about this in a general way, but have not yet been at the point where we were ready to circulate draft documents. We certainly expect to share this more generally, and hope to receive a degree of broad-based support. Undoubtedly, there will be differences on specific technical points in our recommendations which will be points for you in the State Department and in the broader interagency working group to consider.

We hope this product will be useful to the President, both in recommending a specific course of action that will result in our joining with all of the other nations that have signed the convention, and in indicating a base of support among major corporations and NGOs that have considered the issue in detail.

Town Meetings on Biodiversity

In order to bring the broader business and NGO community into discussions at the State Department on biodiversity protection, we recommend that you hold two or three "town meetings" over the next several weeks. These would be convened by the State Department and would probably include 30 to 40 people at each session. By holding two to three such meetings, with different attendees at each one, you would be able to draw in approximately 60 to 100 representatives of business, NGOs, and other government agencies.

The agenda for the meetings is critical. While the overall objective is to involve the business community and garner support from them, there must be a substantive, legitimate agenda for the meetings in order to actually attract the individuals and organizations that you want. In our view, the meetings should not be used to answer the question of whether to sign the convention. That is a question that may just elicit a lot of rhetoric—perhaps more heat than light. We think our small NGO-corporate workgroup process described below will help you a lot there.

The town meetings could provide quite useful information if they are focused on a set of questions regarding what the government should do to ensure the best possible implementation of the convention. In my experience, it is very important to frame three or four direct, relevant questions in order to focus the discussion and ensure that the group has a positive experience. If you decide to proceed with this concept, it will be important to spend some time developing a final set of questions. We offer some preliminary suggestions for questions that could provide such focus:

- Here in the U.S., where we would have to develop our own biodiversity protection plan, what government policies would provide the best incentives for the private sector to preserve biodiversity here, on public and private lands?
- Internationally, what should the U.S. government do to facilitate and support the beneficial transfers of, in the words of the Convention, "technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment?"
- Regarding the overseas operations of U.S. corporations, what are the obstacles to responsible practices regarding biodiversity protection and sustainable development, and what should the U.S. do, alone or in cooperation with other countries, to create a setting in which the international business community could more readily incorporate environmental concerns into business practices?

Holding multiple meetings, with different participants, has a couple of advantages. Obviously, as pointed out above, it increases the number of people you can involve, while still keeping each group to a small enough size to facilitate active discussion. It will also increase the likelihood of getting key individuals and organizations to participate, if you have a couple of alternate dates. In addition, the dynamic of each discussion will differ, so you will tend to get greater variety of views, and can feel more confident in those areas where different groups all converged on similar recommendations. Finally, using multiple groups puts final control firmly in your hands, as the convenors. No single group can try to force a consensus on you in this design.

This approach should also be able to accomodate your desire to begin working with the business community right away. It should be possible to convene these meetings within just a few weeks, where the timetable is set primarily by the time to make arrangements and to contact the participants with a little advance notice.

The town meeting approach is clearly a way to "jump start" the cooperation with the private sector in a very short, focused manner. For the longer term, it will still be appropriate to involve businesses and NGOs in more formal, product-oriented processes, such as the development of a long-term biodiversity protection strategy. I know that both World Resources Institute and Conservation International have recommendations for what should be done over a longer, nine- to twelve-month timeframe. The town meeting approach complements that, and can help develop a very cooperative spirit, but does not replace such long-term efforts.

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2/12/93

UNCLASSIFIED

TO: The White House - Ms. McGinty
C - Mr. Wirth, Designate

FROM: OES - Curtis Bohlen

SUBJECT: Biodiversity Convention

SUMMARY

The second meeting of the UNEP experts panels on the Biodiversity Convention convened last week in Nairobi. No meaningful progress was made on interpretive issues relating to finance and technology transfer. Ambassador Vicente Sanchez (Chile) proposes to recommend to the new Executive Director of UNEP that a new panel be convened to address technology transfer issues, including intellectual property rights (IPR). He has asked informally for our views. Separate discussions on the need for a biosafety protocol continued to be problematic.

BACKGROUND

UNEP has convened a series of experts panels to advise the Executive Director on the implementation of the Biodiversity Convention prior to its entry into force. The first meeting was held in December of last year; the second meeting was held the week of February 1 in Nairobi; a third and final meeting is scheduled for the week of March 15 in Montreal.

Panel 3 is devoted to finance and technology transfer issues. Participants at the December meeting agreed that the panel should consider interpretive issues related to both finance and technology transfer and agreed further that the Swiss could prepare a paper and bring to the February meeting an expert on IPR to educate the panel on the Swiss concerns. The Swiss did prepare a general paper outlining their concerns, but could not bring their IPR expert due to illness.

Finance. The panel did not discuss interpretive issues at this session, and it is not clear whether they will do so at the next session. Instead, discussions centered around establishment of policies, strategy, programme priorities, and eligibility criteria for GEF funding. Discussion was positive and productive, although no consensus was reached.

Technology Transfer. The panel engaged in a brief discussion of the interpretive issues associated with technology transfer, and it was essentially non-substantive. France supported convening of a sub-working group on IPR. The German co-chair agreed that these issues were of serious concern to the German government and should be addressed, but was of the view that this panel did not have the necessary mandate. Developing countries did not support convening a new group and stressed that the panel did not have the mandate to discuss the issues further.

Panel four continued its discussion of the need for and modalities of a biosafety protocol. There is increasing pressure -- in particular from the chair -- for rapid movement towards a protocol based on the EC approach to biosafety. The EC approach is diametrically opposed to long-standing U.S. law and policy on biosafety. An attempt by the chair to call for a vote on the need for a protocol was successfully resisted by the United States. It is becoming increasingly clear that the United States needs to carefully reassess its position on biosafety to determine whether to withdraw from the process entirely or to soften its position in order to meaningfully participate in the development of a protocol.

PROPOSAL FOR NEW PANEL ON IPR

Ambassador Sanchez (former chairman of the INC and organizer of the panel discussions) proposes to recommend to the new Executive Director of UNEP that a new panel be convened to address IPR issues. He originally envisaged a jointly-sponsored UNEP/WIPO (World Intellectual Property Organization) meeting with a broad mandate to address IPR issues. It appears, however, that he now intends to revise his proposal to a UNEP-only sponsored experts panel, parallel in format to current experts panels, with a mandate to advise the Executive Director as to the scope of the interpretive issues relating to IPR. He invited the USG to contact him this week with any additional suggestions on his proposal.

In our view, convening of this experts panel would be a positive development. It would provide a meaningful forum to

air IPR concerns prior to the first meeting of the Intergovernmental Committee next fall. Existing panels have been a forum for highly informed, rational debate. There is a chance that convening of such a panel could further divide developed and developing countries on technology transfer issues, but on balance we believe that identification of key technology transfer issues is the necessary first step towards resolution of the issues. We believe that the proposed panel is the best forum in the short-term.

There are advantages and disadvantages to having WIPO co-sponsor the meeting. On the one hand, co-sponsorship with WIPO might inject additional support for full and fair treatment of IPR. On the other hand, co-sponsorship with WIPO (and/or GATT) could have the unintended effect of broadening the debate beyond the text of the Convention. (WIPO and GATT could be invited to participate, however.) In our view, the USG would be willing to participate under either scenario. Moreover, we agree that the panel should have a relatively limited mandate, i.e., to frame the issues for the Executive Director but not to attempt to resolve the issues or even decide upon a specific process to do so. Developing countries -- particularly those that have already ratified the Convention or are close to doing so -- are skittish about re-opening technology transfer issues and are not likely to support convening of a panel with a mandate beyond the scope of existing panels.

We believe it is important, however, that the subject of the new panel be expanded to technology transfer issues generally, and not limited to the narrower but important sub-set of intellectual property rights.

The Swiss are considering whether they would be able to host the meeting in Geneva. The Swiss participant informally asked whether the USG would be able to contribute funds to the meeting.

We have informed Commerce/PTO, USTR, and EB of these developments. Working level personnel are generally supportive of our approach, but have not sought clearance within their respective agencies or bureau.

CONCLUSION

On the technology transfer issues, I propose to call Ambassador Sanchez this week with the following points:

- o The USG supports establishment of a new experts panel on the same basis as existing panels to advise the Executive Director on the interpretive issues relating to technology transfer.
- o The subject of the panel should be all interpretive issues relating to technology transfer, and not confined to the narrower but important sub-set of intellectual property rights.
- o We would be amenable to a UNEP-only sponsored meeting or a meeting co-sponsored with WIPO. In any event, WIPO should be invited to participate.
- o The panel should have a limited mandate of airing and framing the interpretive issues for the Executive Director, but should not as a first step have a mandate to resolve the issues (e.g., negotiation of a protocol).
- o The panel should be convened at the earliest opportunity (i.e., well before June 1993).
- o Although there should be only one speaker at a time per country, the panel should not be limited to one expert per country.
- o In our view the following countries should be considered as participants:

Developing

India

Argentina

Korea

Mexico

Kenya

EC

Developed

USG

Switzerland

France

Germany

Japan

- o If asked: We would be willing to contribute funds to convene the meeting.

On the biosafety issues, I propose to hold consultations with interested industry members concerning the development of a protocol. I will also convene an interagency working group to reassess the U.S. position on biosafety issues.