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ESA [Endangered Species Act] - 1993

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SUMMARY OF ENDANGERED SPECIES ACT REAUTHORIZATION BILLS

The Baucus-Chafee and Studds bills recognize that the Endangered Species Act is fundamentally sound and reauthorize it for 6 years. The proposed amendments will improve conservation of species and, by making the Act more workable and understandable, they will help reduce conflicts.

The bill is a starting point. Hearings this year will solicit comments on the bill and suggestions for additional changes in the Endangered Species Act. The bill has four major goals:

- ▶ to avoid crisis management by encouraging earlier and more comprehensive protection and recovery of species;
- ▶ to help private landowners protect species;
- ▶ to build a stronger partnership with the states in carrying out the Endangered Species Act's goals; and
- ▶ to encourage better decisions to lessen social and economic burdens.

Avoiding Crisis Management

Earlier, More Comprehensive Species Protection

- ▶ Emphasizes the importance of looking at groups of species dependent on the same ecosystem, rather than single species, in making listing decisions, developing recovery plans, and conducting federal agency consultations.

- ▶ Directs each Federal land-managing agency to identify measures to conserve candidate species on its lands in order to avoid the high cost of bringing species back from brink of extinction or, in some cases, to prevent a species from becoming threatened or endangered. Permits each agency to enter into agreements with the Interior Secretary to carry out those measures.
- ▶ Facilitates development of habitat conservation plans and private land owner agreements to protect candidate species on private and non-federal lands.
- ▶ Qualifies candidate species for protection and funding before they reach critical stages.

Additional Resources

- ▶ Increases the Interior Department spending authorization from \$110 million in fiscal year 1994 to \$160 million in fiscal year 1999 -- substantially more to adequately implement the Endangered Species Act.

More funding will result in fuller implementation of recovery plans, faster recovery and more de-listings.

Helping Private Land Owners

- ▶ Provides that private land owners who protect a candidate species on their property under a habitat conservation plan can proceed to develop their property even if the species is subsequently listed.
- ▶ Provides technical assistance and grants to private land owners in a cooperative program with states to encourage and help these property owners conserve species that have been listed as threatened or endangered, or that are candidates for listing.
- ▶ Requires federal agencies rather than private land owners, where possible, to bear the principal responsibility for protecting and recovering species by taking actions on federal lands.

- ▶ Provides for federal grants and interest-free loans to states, counties, and municipalities to develop habitat conservation plans for private and other non-federal lands.

Building a Stronger Partnership with the States

- ▶ Gives states a stronger role in the listing, de-listing and recovery of threatened and endangered species by:
 - requiring that the appropriate states be asked for data on listing and de-listing proposals and that these state data be considered fully in the final decision;
 - requiring that recovery plans be developed and implemented in cooperation with the appropriate states;
 - making the states partners in the private land owner program; and
 - providing interest-free loans to states to develop habitat conservation plans for state, county and private lands.

Encouraging Better Decisions

Giving More Consideration to Social and Economic Consequences

- ▶ Directs the Interior Secretary to minimize social and economic consequences of recovery plans, to the extent consistent with the timely conservation of endangered and threatened species and their habitats.

Encouraging Sound Science

- ▶ Continues to base species' listing and de-listing solely on the best scientific data available.

- ▶ Establishes an independent, scientific peer-review process for listing and de-listing decisions. The peer review is triggered by a request that presents a substantial scientific basis for questioning the accuracy or sufficiency of the listing or de-listing determination.

Fostering Coherent, Coordinated Decisions

- ▶ Links critical habitat designations to the development of recovery plans by requiring that critical habitat designations incorporate relevant information that is gathered during the development of recovery plans.
- ▶ Allows the Interior Secretary to consolidate federal agency requests for consultation on the effects of their actions on species -- so that one coherent decision is made when different agencies are conducting activities that affect the same species.

MAJOR OBJECTIVES OF ENDANGERED SPECIES ACT REAUTHORIZATION BILLS

The Endangered Species Act is a landmark environmental statute enacted 20 years ago to conserve threatened and endangered species and the ecosystems upon which they depend. The reauthorization bills build on the existing Act to provide more effective conservation of species and to help reduce conflicts. The bills would--

1. **Encourage earlier, more comprehensive species conservation by--**
 - ▶ giving priority to multi-species listings, recovery actions and federal agency consultations;
 - ▶ encouraging Federal agencies to conserve candidate species to avoid the high cost of bringing species back from brink of extinction or, in some cases, to avoid the necessity to list the species; and
 - ▶ facilitating development of habitat conservation plans for candidate species on private and non-federal lands.
2. **Improve efforts to recover species by--**
 - ▶ requiring recovery plans to be detailed blueprints for cooperative efforts among state, federal, and private parties to recover species; and
 - ▶ requiring recovery plans to be completed in 18 months.
3. **Help reduce social and economic impacts by requiring recovery plans to include measures to minimize economic and social impacts, while providing for species recovery.**
4. **Create incentives for private landowners to conserve species by--**
 - ▶ authorizing federal assistance for private property owners to conserve species on their land; and
 - ▶ authorizing private landowners to obtain a conservation planning permit for a candidate species, before the species is listed.
5. **Build a stronger partnership with the States by--**
 - ▶ giving the States a stronger role in the listing, de-listing and recovery of threatened and endangered species;
 - ▶ making the states partners in the private land owner program; and
 - ▶ providing interest-free loans to states to develop habitat conservation plans for non-federal lands.
6. **Improve scientific review by providing for independent peer review of listing and de-listing proposals in a manner that does not delay these decisions.**
7. **Lead by example by requiring federal agencies rather than private parties, where possible, to bear the principal responsibility for conserving species by taking actions on federal lands.**

Remarks of
Senator Max Baucus,
Chairman, Senate Environment & Public Works Committee

The Endangered Species Act Amendments of 1993
May 6, 1993

Let me first acknowledge the work of those of you who are here, and the others who were unable to attend this little ceremony. Your care 20 years ago produced a landmark law that has done a great deal to protect species from extinction.

The Endangered Species Act always has been somewhat controversial, and in recent years the controversy has intensified. Environmental groups and industry groups squared off. Positions hardened. Both sides fought to a deadlock.

Today, there are refreshing signs that this "religious war" mentality is ending. We are introducing this bill today in the spirit of breaking the deadlock and finding common ground. The bill is supported by a broad array of groups -- including the Western Governors' Association. It is based on two principles:

- . First, that a strong and sensible Endangered Species Act is critical to the lives of our children and grandchildren.
- . Second, that the Act can be improved significantly -- by building a stronger partnership with states; by working more cooperatively with private landowners; and by "getting ahead of the curve" to forestall problems before they occur.

The Endangered Species Act has not always worked as well as we would have liked, of course -- usually because we often waited too long to act. It did meet its original goal, though -- to be a safety net, to make sure that we do not recklessly drive species to extinction. Actions under the Act helped to save such animals as the bald eagle, the American alligator, the whooping crane, and others from extinction.

But the Spotted Owl's infamy suggests that in the eyes of many Americans the Endangered Species Act is not a success. In fairness, it wasn't designed to be the structural steel that frames decisions about how best to use our natural resources. It was supposed to be a last resort; too often, it has been the only action because officials during the 1980s shirked their job of making important decisions about how best to use our resources.

Americans always have competed for the land. In the last century, cattle ranchers and sodbusters settled range wars with guns. Now, we need to find a way to settle our disputes that let's us both use our resources and conserve them to give future generations the birthright we enjoy.

We are blessed with a tremendous diversity of species and ecosystems. Diversity that gives us the genetic materials we need for medicine. For example, a Montana biologist just found a fungus in the ancient cedar forests in northern Montana -- a fungus that may help in the fight against breast cancer.

Our nation's natural diversity also shields us from the pests, diseases and droughts that once kept previous generations in constant fear for their survival. And this diversity provides a quality of life -- and a certainty of that quality -- that few among us would gamble away.

The decisions about how best to use our natural resources are not easy ones to make -- especially in the West, because it is so rich and so vast. Looking at Montana, I often have to remind myself that its beauty is not endless. No one is served by delaying making these difficult decisions, though. The failure to make tough choices during the 1980s served no one:

- . Not the loggers who depend on our forests' health.
- . Not the fishermen whose catch depends on salmon runs that begin in the forests.
- . Not the increasing number of people who depend on tourism.

I am very hopeful that President Clinton will at last help sort out the competing demands on our resources. I want to help him, and I believe this bill will do just that. Among other things,

. It will change the way we operate -- so that we do more to prevent species from becoming threatened, so that we act before their decline becomes a threat to both our environment and our economy.

. It will give private land owners additional incentives to be good stewards of their land -- and our heritage.

. It will consider humans' needs -- both social and economic -- in choosing ways to bring species back from the brink of extinction.

Congress built flexibility into the Endangered Species Act -- indeed, Secretary Babbitt told his employees that "we haven't even come close to working with the authority, the concepts, and the flexibility that are in it right now."¹

Nonetheless, there are ways we can improve conservation of species while taking steps to ensure that economic pressures do not drive the Endangered Species Act itself to extinction. I believe these bills will do this important work.

More than a decade ago, E.O. Wilson told Congress that the loss of genetic and species diversity is "the folly our descendants are least likely to forgive us." I hope to be here 20 years from now -- and see you all 20 years from now -- commemorating another milestone in our efforts to avoid this folly.

¹According to a Los Angeles Times story 4/26/93.

News From
SENATOR JOHN CHAFEE
RHODE ISLAND

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STATEMENT BY JOHN H. CHAFEE
ENDANGERED SPECIES ACT
May 6, 1993

Twenty years ago, Congress acted to stem the loss of living species and protect our natural heritage. This landmark legislation, the Endangered Species Act, had a seemingly simple purpose: to conserve endangered and threatened species and the ecosystems upon which they depend. The Act recognizes a fundamental truth that the faster humans extinguish other forms of life the more we imperil ourselves.

The Endangered Species Act has proven to be one of our most effective conservation tools and a model for similar laws that have been adopted around the world. Species, including our nation's symbol -- the bald eagle -- as well as the peregrine falcon, the whooping crane, the brown pelican and the American alligator (among others) have made dramatic come backs due to the protections afforded by the Act.

Today, Senator Baucus and I will introduce a bill to reauthorize and improve the Endangered Species Act. We have worked cooperatively with Chairman Studds in the House to craft legislation which builds upon the strengths of the existing Act and places new emphasis on the conservation of ecosystems rather than individual species. This multi-species approach will enable us to conserve more species at a lesser cost than the current species-by-species method.

The bill emphasizes the importance of recovering species to the point that they no longer need the protections of the Act and can be delisted. In part, the bill improves the recovery planning process by setting deadlines for the completion of recovery plans and requiring that the plans contain a detailed blueprint of the specific steps that need to be taken to achieve recovery.

Under the bill, recovery plans must also include measures to minimize the social and economic impacts of achieving recovery without compromising the fundamental goals of the Act. This provision responds to concerns that the Act does not adequately consider the costs of protecting species.

The bill also encourages private land owners to conserve endangered species by setting up an incentives program and by authorizing private property owners to obtain a conservation planning permit for species that are candidates for listing, before the species is listed. These provisions reward private landowners who take early action to conserve declining species.

The lesson of the last 20 years has been that the longer we wait to protect species, the more difficult and costly it is. Therefore, the bill encourages Federal agencies to identify and take steps to protect declining species and groups of species that depend upon a common ecosystem before they are listed.

Why is it important that we preserve the widest possible variety of living species? Consider the benefits that humans derive from natural diversity. More than half of all medicines today can be traced to wild organisms. Biological resources are important to the development of hybrid crops for farming as well as to other economic activities including fishing, hunting and tourism. Each species that becomes extinct means knowledge forfeited and opportunities to improve our way of life lost. The presence of one or more endangered species in an area may indicate that an entire ecosystem -- consisting of hundreds or possibly thousands of species -- is in decline.

The introduction of this bill is only a starting point for the reauthorization process and other changes to the Act will be considered during the hearing process. Today we reaffirm our commitment to conserve endangered species in a manner that is more efficient and less costly for private landowners and local communities.

Merchant Marine and Fisheries Committee News

Gerry E. Studds, Chairman

FOR IMMEDIATE RELEASE
Thursday, May 6, 1993

Contact: Sue Waldron
202-225-4047

STUDDS-DINGELL BILL GIVES GO AHEAD FOR ENDANGERED SPECIES ACT

Washington, D.C. -- "It is supreme arrogance to underestimate the value of even the most humble of life forms."

With this admonition, Gerry E. Studds, Chairman of the House Committee on Merchant Marine and Fisheries, today introduced legislation reauthorizing the Endangered Species Act (ESA).

Studds announced the bill's introduction at a morning news conference with the Senate sponsors of the ESA reauthorization, Max Baucus (D-MT) and John Chafee (R-RI), the Chairman and Ranking Minority Member of the Senate Environment and Public Works Committee. The event also commemorated the 20th anniversary of the enactment of the ESA.

"In 1973, we thought there were probably 100 species threatened with extinction. Now we list that many each year. More than anything else, this tells us our other environmental laws aren't working as well as they should. Real, honest-to-goodness environmental protection -- protection that maintains a healthy environment for all creatures -- is still a goal, not a reality. Until we can achieve this goal, more than ever before, we need the Endangered Species Act," said Studds.

Studds noted that while the ESA has been the subject of considerable controversy over the years, problems have been with the implementation of its provisions, not the law itself.

"There is a misconception that the Act is somehow broken and needs fixing. Nothing could be further from the truth. The crises which have marked the ESA of late are the direct result of profound mismanagement by those whose mission was to undermine the program rather than implement it. Thankfully, they are now long gone and Secretary Babbitt has already shown he will be a real partner in making the Act work as Congress intended," said Studds.

At introduction, the bill has over 50 cosponsors, including Energy and Commerce Chairman John Dingell (D-MI) the original sponsor of the Endangered Species Act in 1973.

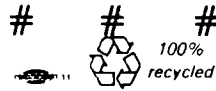
The major objectives of the Studds-Dingell and Baucus-Chafee bills are:

- o Encouraging earlier, more comprehensive species conservation;
- o Improving efforts to recover species;
- o Helping reduce social and economic impacts while providing for species recovery;
- o Create incentives for private landowners to conserve species;
- o Build a stronger partnership with the States;
- o Improve scientific review; and
- o Lead by example by requiring federal agencies to be better land stewards to conserve and protect species on federal land.

In addition, the bill recognizes that for the Act to be truly effective, it needs a lot more money, so it doubles the authorized level of funding.

Finally, Studds noted that the overriding importance of the Endangered Species Act is that it leaves open possibilities. "When a life form ceases to exist, its potential to contribute to the richness of our world forever vanishes. We all now know that the Pacific Yew Tree has proven effective in the fight against ovarian and breast cancers. But how many are aware that scientists discovered a tree in the Malaysian rain forest that contains a compound that, in laboratory tests, has been effective in preventing the replication of the HIV-1 virus? Tragically, when they returned to the rainforest to collect material for further testing, the tree was gone and they were unable to find any others. We will never know if this tree held the cure for AIDS," said Studds.

"The concept of sharing this planet with other living beings is one that most of us understand at a very basic level and embrace wholeheartedly. This bill represents the first step in our renewed dedication to preserve and protect our fellow creatures, large and small. It is a challenge to all of us to make the Act work as effectively as we can -- and must -- for the generations that follow us," concluded Studds.





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May 6, 1993

The Honorable Max Baucus, Chairman
The Honorable John H. Chafee, Ranking Member
Committee on Environment and Public Works
456 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman and Senator Chafee:

As Chairman of the Western Governors' Association and lead governors on the issue of reauthorization of the Endangered Species Act, we support your introduction of legislation that strengthens the ESA by making it more understandable and workable. We especially commend and appreciate your efforts to reaffirm the role of the states as true partners with the federal government in implementing the Act, which we believe was the original intent of Congress.

The WGA's recommendations on reauthorization of the ESA grew out of the heat of nearly a year's debate. During that time the Association reached out to the major stakeholders in the debate and obtained their perspectives, best arguments and solutions. We worked closely with both the International Association of Fish and Wildlife Agencies (representing all 50 State agencies) and the Western Association of Fish and Wildlife Agencies.

We appreciate that your staffs sought out and consulted our staffs throughout your drafting process. Communication clearly occurred since your legislation addresses many of our concerns and policy recommendations.

Chief among the Western Governors' recommendations was that new legislation reaffirm the roles and responsibilities of the states in listing, de-listing and recovery of threatened and endangered species. Your legislation does that. We want to work with you as our Association attempts to identify means to further strengthen these provisions.

We support the incentives the bill provides states, local governments and private landowners to enhance the conservation of threatened and endangered species and its exemption of the states from the Federal Advisory Committee Act.

We are pleased that the legislation reaffirms that the question of whether a species is threatened or endangered must be a scientific decision. We are supportive of the bill's addition of peer review, whenever its need is substantiated, to assure that the decision is scientifically sound and objective. We suggest that there is a continuing role for state agencies to play in this process also.

We also commend you for developing legislation which helps the ESA meet its objectives by giving priority to species whose conservation is most likely to reduce the need to list other species and by giving priority to the development of recovery plans, where biologically accurate and practical, for clusters and related groups of species that are dependent upon a common ecosystem. The bill also furthers the goals of the Act by allowing species awaiting a listing decision to qualify for funding and protection and by requiring the designation of critical habitat and the development of recovery plans to occur concurrently.

Our Resolution also expressed concern that the de-listing and down-listing of species was proceeding at a glacial pace under the ESA even though some currently listed species are biologically recovered. We are pleased that the bill makes the Secretary equally responsible to de-list recovered species. In an equally positive fashion, the legislation builds on the current requirement that economics be considered in designating critical habitat and in adopting recovery plans, by stipulating that the Secretary must seek to minimize social and economic impacts of recovery plans. We would appreciate a reaffirmation of the distinction the Act provides for the management of endangered versus threatened species.

In order to facilitate ways to cooperatively protect habitats as a means to prevent listing of individual species, we suggest that projects, such as the Great Plains Initiative, a joint effort of WGA, the US Fish and Wildlife Service, the Environmental Protection Agency, and a broad spectrum of nongovernmental organizations, be looked at as potential pilots to study their effectiveness in meeting the objectives of proactive management.

We believe the Endangered Species Act Amendments of 1993 is an excellent starting point for the hearings the committee is about to undertake and we look forward to working with you and your committee in exploring further ways to enhance the role of states and strengthen the Act.

Sincerely,

		
Fife Symington Chairman	Cecil Andrus Lead Governor	Marc Racicot Lead Governor

Endangered Species



The Endangered Species Act
Summary, History and Evolution
December, 1992

June 1992

ENDANGERED SPECIES
A Summary of the Act and Service Activities

The following major topics are covered in this document:

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1. History and evolution of Endangered Species Act of 1973, including its relationship to CITES.

Congress passed the Endangered Species Preservation Act in 1966. This law allowed listing of only native animal species as endangered and provided limited means for the protection of species so listed. The Departments of Interior, Agriculture, and Defense were to seek to protect listed species, and insofar as consistent with their primary purposes, preserve the habitats of such species. Land acquisition for protection of endangered species was also authorized. The Endangered Species Conservation Act of 1969 was passed to provide additional protection to species in danger of "worldwide extinction". Import of such species was prohibited, as was their subsequent sale within the U.S. This Act called for an international ministerial meeting to adopt a convention on the conservation of endangered species.

A conference in Washington in early 1973 led to the signing of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which restricted international commerce in plant and animal species believed to be actually or potentially harmed by trade.

Later that year, the Endangered Species Act of 1973 was passed. It combined and strengthened the provisions of its predecessors, while also breaking some new ground. Its principal provisions follow:

- o U.S. and foreign species lists were combined, with uniform provisions applied to both (section 4);
- o Categories of "endangered" and "threatened" were defined (section 3);

- o For the first time, plants and all classes of invertebrates were eligible for protection, as they are under CITES (section 3);
- o All Federal agencies were required to undertake programs for the conservation of endangered and threatened species and were prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat" (section 7);
- o Broad taking prohibitions were applied to all endangered animal species, which could be made available by special regulation for threatened animals as well (section 9);
- o Cooperative agreements providing matching Federal funds became possible with the States (section 6);
- o Authority was provided to acquire land for listed animals and for plants listed under CITES (section 5);
- o U.S. implementation of CITES was provided for (section 8).

Significant amendments have been enacted in 1978, 1982, and 1988, while the overall framework of the 1973 Act has remained essentially unchanged. The present Act is authorized through Fiscal Year 1992. Principal amendments are listed below:

1978:

- o Provisions were added to Section 7, allowing Federal agencies to undertake an action that would jeopardize listed species if the action were exempted by a cabinet-level committee convened for this purpose;
- o Critical habitat was required to be designated concurrently with the listing of a species, when prudent, and economic and other impacts of designation were required to be considered in deciding on boundaries (section 4);
- o Land acquisition authority was extended to all listed species (section 5);
- o The definition of "species" with respect to "populations" was restricted to vertebrates; otherwise, any species, subspecies or variety of plant, or species or subspecies of animal remained listable under the Act.

1982:

- o Determinations of the status of species were required to be made solely on the basis of biological and trade information, without any consideration of possible economic or other effects (section 4);

- o A final rule to determine the status of a species was required to follow within one year of its proposal unless withdrawn for cause (section 4);
- o Provision was made for designation of experimental populations of listed species that could be subject to lessened restriction (section 10); and
- o A prohibition was inserted against removing listed plants from land under Federal jurisdiction and reducing them to possession (section 9).

1988:

- o Monitoring of candidate and recovered species was required, with adoption of emergency listing when there is evidence of significant risk (section 4).
- o Reports to Congress were required on Federal and State expenditures and the status of listed species and recovery plans (section 4).
- o Protection for endangered plants was extended to include destruction on Federal land and other taking when it violates State law (section 9).

2. LISTING

a) Definitions

A species (see below) may be classified for protection as "endangered" when it is in danger of extinction within the foreseeable future throughout all or a significant portion of its range. A "threatened" classification is provided to those animals and plants likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges. (section 3)

A "species" includes any species or subspecies of fish, wildlife, or plant; any variety of plant; and any distinct population segment of any vertebrate species that interbreeds when mature. Excluded is any species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of the Act would present an overwhelming and overriding risk to man. (section 3)

b) How do species get listed?

As with most other Federal regulations, a species is proposed for addition to the lists (50 CFR Part 17) in the Federal Register. The public is offered an opportunity to comment, and the rule is finalized (or withdrawn). Species are selected by the Service for proposed rules from a list of candidates, which presently numbers about 3600 U.S. species. To become a candidate, the Service relies largely upon petitions, Service and other agencies' surveys, and other substantiated reports on field studies. The Act provides very specific procedures

on how species are to be placed on the list (e.g., listing criteria, public comment periods, hearings, notifications, time limit for final action). These latter requirements are found in the regulations at 50 CFR Part 424. Selection from the list of candidates for a proposed rule is based upon a priority system (September 23, 1983, Federal Register).

Species may be active "candidates" from a number of sources. The Service has its own biologists who are monitoring the status of some species. Other agencies have similar staffs that can report when a species seems to be at some risk to its continued existence. Informal letters and various reports are also submitted to the Service from the States and private groups and individuals. There is also a formal petition process available under the Act.

1) Petition process

- o Anyone may petition the Service to have a species listed or reclassified as endangered or threatened, or removed from the list. Findings are required before any proposal is published in the Federal Register.

90-day finding

- o Within 90 days of receiving a petition, the Service must make a finding as to whether the petition presents substantial information that the listing may be warranted.

1-year Finding

- o Within 1 year of receipt, a finding is required that the listing is either warranted or not warranted.
- o A finding of warranted must lead directly to an immediate (<30 days) proposed listing, or the Service can find that such an immediate proposal is precluded by other listing activities such that the proposal may not be made for several additional weeks, months or even years. In order to make this secondary finding of warranted but precluded the Service must also be making expeditious progress in its overall listing program (e.g., candidates of higher priority are taken first).
- o Any warranted but precluded finding must be re-examined on each successive anniversary of the petition's receipt until the listing is either proposed or the petition is turned down as not warranted.

Judicial review

- o Negative 90-day findings, not warranted findings, and warranted but precluded 1-year findings are subject to judicial review.

ii) Selecting candidates for listing

- o In general, species to be listed in a given year are selected from among those recognized as category 1 candidates (see below) in accordance with the Service's listing priority system.
- o Under the priority system, species facing the greatest threat are assigned highest priority, further criteria account for the immediacy of the threat and the genetic distinctness of the species as reflected by the taxonomic level at which it is recognized.

iii) Define categories 1, 2, and 3.

- o The Service maintains a list of "candidates" from all the accepted petitions and other sources. Species are assigned to one of three categories:

A candidate species is one that the Service is actively reviewing for possible inclusion in the endangered or threatened lists --

Category 1 candidates are those for which the Service has substantial information to support the proposal to list.

Category 2 candidates are those for which the Service has information indicating the possible appropriateness of listing, but for which further information is still needed.

Species no longer considered as active candidates are placed in the last category in order to indicate their disposition --

Category 3 species are those that had been considered (e.g., subject of previous notice in Federal Register for listing but that are no longer considered candidates --

3A species are believed to be extinct on the basis of persuasive evidence.

3B species are no longer considered to be taxa or vertebrate populations fitting the Act's definition of "species."

3C species have been found to be more abundant or widespread than had been believed, or not to be subject to threats that place the continued existence of the species at risk.

Species on these lists can move from one to another as more information becomes available. For example, species thought to be extinct (C-3A) can, on occasion, be rediscovered after many decades and immediately

move to the top (C-1), and vice versa. Typically, most species enter the list as C-2 and move either up or down as more information becomes available. This latter process may take days, months, or years.

iv) The listing statistics, as of June 1992, are:

Species on list ¹	1245
U.S. species ²	717
Endangered	548
Threatened	169
Foreign species ³	528
Endangered	490
Threatened	38
Candidates and Category 3 species ⁴	
Category 1 (approx.)	455
Category 2 (approx.)	3225
Total active candidates	3680
Category 3 (inactive candidates)	875

c) Criteria for listing

A species is only determined to be an endangered species or a threatened species because of any one or more of the following factors (economics or others not listed here are not permissible under the Act):

- o the present or threatened destruction, modification, or curtailment of its habitat or range;
- o overutilization for commercial, recreational, scientific, or educational purposes;
- o disease or predation;
- o the inadequacy of existing regulatory mechanisms; or
- o other natural or man-made factors affecting its continued existence.

¹ species with both threatened and endangered populations are counted twice (e.g., bald eagle); listings for an entire genus or family are counted only once (e.g., gibbons); experimental populations or entries under Similarity of Appearance are not tabulated.

² under US jurisdiction all or part of its life cycle.

³ not under US jurisdiction at any time.

⁴ current estimates and under revision for plants.

3. CONSULTATION

a) When do we consult?

All Federal agencies must consult with the Service when any activity permitted, funded or conducted by that agency may affect a listed species or designated critical habitat.

- o The Service conducts two types of consultations on Federal agency activities, i.e., informal and formal consultations.
- o Informal consultations precede formal consultation and may be conducted with the Federal agency, the applicant, or a designated non-Federal representative.
- o Informal consultation also may involve the Service's written concurrence with the Federal agency's determination that its action is not likely to adversely affect listed species or their critical habitat, i.e., an exception to formal consultation.
- o Formal consultation is conducted when the Federal agency determines its action may affect a listed species or its critical habitat and submits a written request to initiate formal consultation.

b) Consultation vs. conference - differences

- o Formal consultations are conducted on listed species and designated critical habitat when it is determined that a Federal action may affect such species or habitat.
- o Conferences are conducted on proposed species and proposed critical habitat when it is determined that a Federal action is likely to jeopardize the continued existence of the proposed species or result in the destruction or adverse modification of the proposed critical habitat.

c) What are the steps in conference?

- o The Federal agency must determine jeopardy/adverse modification to a proposed species or proposed critical habitat, respectively.
- o The Federal agency initiates a conference with the Service.
- o The Service reviews the information provided by the agency and other information and makes advisory recommendations to the Federal agency on ways to minimize or avoid adverse impacts.

- o If the proposed species or proposed critical habitat becomes listed or designated, respectively, during the life of the project that retains Federal involvement, the Federal agency must then determine whether consultation is required.
- d) **How do we determine jeopardy vs. no jeopardy?**
 - o In determining jeopardy, the Service must first look at the environmental baseline, i.e., the present status of the species. Added to the baseline is the direct, indirect, interrelated, and interdependent effects of the Federal action undergoing consultation. The final factor is cumulative effects, which are those State and private actions reasonably certain to occur.
 - o This analysis is then measured against the definition of jeopardy which is an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.
- e) **Reasonable and prudent alternatives**
 - o These are alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Service believes would avoid jeopardy or adverse modification to the listed species or critical habitat, respectively.
- f) **What is incidental take and how do we determine that?**
 - o Incidental take is a taking that results from the Federal action but is not the purpose of the otherwise lawful activity.
 - o Through the analysis of the effects of the action on listed species and critical habitat, the Service may recognize that some individuals or a certain amount of habitat may be taken, in which case an incidental take statement will be provided with the biological opinion. The statement will include the amount (number) or extent (habitat) of anticipated take, reasonable and prudent measures to minimize the take, terms and conditions to implement the reasonable and prudent measures, and the procedures to be used to handle or dispose of any individuals of the species actually taken.

g) Reasonable and prudent measures

- o Reasonable and prudent measures are included in the incidental take statement. They are nondiscretionary actions the Service believes necessary or appropriate to minimize the amount or extent of incidental take.

h) Responsibility of action agency under ESA, when they receive a biological opinion

- o In accordance with section 7(a)(2) of the ESA, the Federal agency must insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat.
- o Following the issuance of a biological opinion, the Federal agency determines whether and in what manner to proceed with the action in light of its section 7 obligations and the Service's biological opinion.
- o If a jeopardy biological opinion is issued, the Federal agency shall notify the Service of its final decision on the action.
- o If, after consultation, the Federal agency cannot comply with the requirements of section 7(a)(2), it may apply for an exemption (50 CFR Part 451). Likewise, exemptions may be requested by the Governor of the State affected or the applicant for a Federal permit. Exemptions are administered by the Assistant Secretary for Policy, Budget, and Analysis.

i) Consultation workload vis a vis budget in Fiscal Year 1990/91

- o The 1991 budget justification provided \$5.3 million and 93 FTE nationally for Service consultation activities, which reflects level funding for this subactivity.
- o The consultation workload has increased dramatically in recent years as the complexity of the projects going through the consultation process increases and the Service is asked to consult on broad programmatic issues such as the registration of pesticides by EPA.

j) Statistics of consultation

- o Of the 17,000+ consultations conducted by the Service from 1987-91:
 - 15,500 were informal;
 - 1,800 were formal;

- Only 181 resulted in jeopardy opinions; and
- Only 23 had no "reasonable and prudent alternatives."
- o A recent study by the U.S. General Accounting Office (GAO/RCED-92-131BR) concluded that implementation of the Act was not halting a significant number of projects.

4. RECOVERY

The ultimate purpose of the Act is to save species from extinction. The Service's goal is, therefore, to recover listed species and remove them from the list.

a) Recovery planning - why is recovery difficult?

- o It is not unusual, even for experts, to initially have an incomplete understanding of the cause of a species' decline. This lack of information makes it difficult to design an effective plan for recovering the species. Research can usually identify the problem, but this takes time.
- o Once the causes of decline have been correctly identified, and a recovery plan prepared, recovery may take years to start because of social or economic obstacles that need to be overcome, including lack of sufficient funding.
- o Once a consensus is reached on the necessary recovery tasks, the unpredictable nature of ecological systems may produce recovery task results that had not been anticipated, and new or modified approaches may need to be developed to achieve the intended result.
- o Species recovery is typically a gradual process. It will normally take several generations of successful reproduction before the Service can be confident that a sufficient number of individuals are present to comprise one or more viable (self-perpetuating) populations. This may take many years, or even decades in many cases, as it is often difficult to reverse all the threats that have been affecting the species for the past decades, if not centuries.

b) 1988 Amendments to the E.S.A.

Several of the 1988 amendments to the Endangered Species Act of 1973 dealt with recovery matters.

- o Section 4 of the Act was amended by adding a new subsection (g) that requires five years of monitoring of species that have recovered.

- o Recovery plans will now be submitted for public notice and review, and affected Federal agencies must give consideration to comments made by the public on recovery plans.
- o Reports are now required every two years on the development and implementation of recovery plans and on the status of all species with plans.
- o A new Section 18 was added that requires a report of all reasonably identifiable expenditures on a species-by-species basis made primarily for the recovery of endangered or threatened species by the States and the Federal government.
- o The first report tabulated (January, 1990) approximated \$44 million in reasonably identifiable expenditures by the reporting Federal and State agencies. Of the 347 listed species having any amounts reported, the median expenditure was \$11,750. Half of the total amount was for just 12 species, each having reported expenditures in excess of \$1 million for FY 1989.

c) **Recovery plans**

i) **Who prepares recovery plans?**

The Service's Regional Offices are responsible for approving recovery plans. Depending on the species, plans are either prepared by a panel of recognized experts under the direction of a Service employee, or they are contracted out to an appropriate consultant on the species. In either case, the Regional Director is responsible for recovery plans for listed species occurring in his Region.

ii) **When are they needed after listing?**

The Director has asked that when a species is listed, the responsible Region prepare a one-page outline of the major recovery actions that will be needed for the species. The plan is usually begun soon after listing, depending on our state of knowledge of the recovery needs of the species, and depending on available funds.

iii) **Do all species need a recovery plan?**

Foreign species do not require recovery plans because the United States Government has no means for implementation of management options. Some domestic species do not have recovery plans because their nesting habitat is unknown (e.g., Eskimo curlew), they are in such low numbers that they cannot be found with regularity (ivory-billed woodpecker, Bachman's warbler), or the management options are so limited or the species has such a low priority that a plan is not justified at this time.

iv) What are recovery tasks within a recovery plan?

Recovery tasks are actions necessary to reduce or resolve the threats or limiting factors that have contributed to the listed status of the species. They are designed to assist in accomplishing recovery objectives.

v) What is the priority system used for tasks?

Recovery tasks are assigned a priority number associated with one of the three priority levels. They are tasks necessary to prevent extinction (priority 1), avoid significant further decline (priority 2), or other activities necessary to achieve recovery (priority 3).

d) Recovery plan statistics (as of June, 1991)

No. listed U.S. species	717
No. with 1 or more recovery plans	389 (54%)
No. species expected to be covered by end of FY 92 a recovery plan	413
No. species with more than 1 plan	9
No. plans with more than 1 species	31
No. species with revised plan approved	66

e) Some recovery success stories are:

Bald eagle, American and Arctic peregrine falcons, and Eastern brown pelican

These three species benefitted from aggressive habitat management, protection during the breeding season, and most of all from the banning of DDT. The chlorinated hydrocarbon DDT and its metabolic byproducts caused thinning of the eggshells and nest failures. The peregrine falcon also benefitted from a broad-based public involvement in the raising of falcons in captivity and their reintroduction to appropriate DDT-free habitat.

American alligator

Recovery was effected through the control of taking and management of commerce in meat and leather products. The species remains on the list only because of its similarity to the listed American crocodile and other crocodilians subject to import. The alligator no longer receives the full protection of the Act (e.g., section 7).

Black-footed ferret

A long history of prairie dog control programs has reduced populations of the ferret's preferred prey species. Once thought to be extinct, the ferret was rediscovered near Meeteetse, WY, several years ago. Canine distemper devastated that wild population in the late 1980s.

A captive colony was formed from the seven survivors. The greatest problem facing the species now is the lack of genetic variation due to the small number of founders in this captive colony, which now numbers nearly 300.

In the fall of 1991, 49 juvenile ferrets were released in the Shirley Basin area of Southeast Wyoming as part of a nonessential experimental population. The release was the result of considerable landowner cooperation. The landowners owned about 55% of the management area where the ferrets were released.

California condor

Environmental contaminants, conflicts with man, and specialized habitat requirements have brought the condor to the very brink of extinction over the past 200-300 years. An aggressive captive breeding program has recently increased the species numbers to some 52 birds. A surrogate species, the Andean condor, was used to study the techniques needed to return California condors to the wild.

In January 1992, two California condors from the captive flock were released to the wild. Additional release efforts will continue as excess birds become available from the captive flock.

Red wolf

At the very verge of extinction, the last remaining wild individuals were captured. The species has been successfully raised in captivity. With the help of the Nature Conservancy, acquisition of the Alligator River National Wildlife Refuge, NC has provided an opportunity for study of reintroduction techniques. Although the reintroductions have gotten off to a slow start due to high mortalities, the program shows promise for the eventual recovery of the red wolf. Some 100 wolves are now in captivity and another 25-30 are free in the wild at several sites in the Southeast.

Some problem species include:

Northern spotted owl

Dependent upon old growth forests in the Pacific northwest, this species poses a large array of problems, many of which relate to the economic and social factors of the residents of the region. A pair of owls may require 2-4,000 acres of suitable habitat, and a number of such pairs must be able to interchange offspring to maintain the local population.

Desert tortoise (Mojave Desert population)

The tortoise has a very low reproductive rate and is quite capable of living 80-100 years in an undisturbed environment. However, introduced diseases and plants and the loss of habitat pose serious threats to the animal.

Grizzly bear

While constantly in conflict with the activities of mankind, the grizzly can be found only in a few places in the lower 48, and more abundantly in Alaska and Canada, where it is not listed. Recovery activities are being intensively made.

Gray wolf (including E. timber, N. Rocky Mountain, and Mexican wolves)

Recovery of this wide-ranging species will always be a problem because of local opposition to wolves. This opposition, which is based largely on fear of extensive livestock predation and direct threat to human life, has long prevented any attempt to reintroduce and recover the gray wolf. Extensive planning is underway to consider releases in the Yellowstone ecosystem (N. Rocky Mtn. wolf) and in parts of New Mexico (Mexican wolf).

Florida panther

Although the cougar (or puma, panther or mountain lion) is doing better in many parts of the country, the Florida subspecies of the panther is near extinction. One of the greatest problems facing it is mortality on the highways through the Everglades and apparent inbreeding from such small numbers of animals (est. <50).

5. ENDANGERED SPECIES RESOURCES

	1991 <u>Expenditures</u>	1992 <u>Enacted</u>
Listing	4,325	7,467
Recovery	14,875	18,924
Consultation	5,267	8,131
Permits	910	1,199
Grants to States	6,636	0
Subtotal	\$32,013	\$35,721
Research	7,577	7,845
Law Enforcement	8,811	10,340

TOTAL

\$48,401

\$53,906

6. THE 1988 AMENDMENTS TO THE ACT

Compliance measures on the 1988 amendments to the ESA have been worked out and are being implemented.

- o The President signed enrolled bill H.R. 1467 on October 7, 1988 as Public Law 100-478, the 1988 amendments to the Endangered Species Act.
- o The African Elephant Conservation Act (H.R. 2999, as amended) was included in the bill signed by the President.
- o Appropriations authorized under section 15 were increased to (Section 6, State grants, are not included.):

\$35.0M for FY88
 \$36.5M for FY89
 \$38.0M for FY90
 \$39.5M for FY91
 \$41.5M for FY92.

- o Candidate Monitoring:

The latest Animal Notice of Review was published on November 21, 1991. The most recent Plant Notice of Review was published on February 21, 1990.

Candidate assessment will be incorporated in section 6 studies in the future.

- o Monitoring Recovered Species:

Recovered species will be incorporated under section 6.

An annual report of monitoring activities has been solicited from Regions and will continue to be reported each subsequent year.

- o Public Review of Recovery Plans:

Guidance has been provided to the Regions on involving the public in plan development.

Regions are directed to notify other agencies of the need to consider public comments.

Regions publish notices in the Federal Register requesting public comment on recovery plan drafts.

o Recovery Plan Status Report:

Regions will report the status of species as improving, stable, declining, unknown, or extinct, and the data are kept in a database. The first report is expected to be delivered from the printers in July 1991. Summaries of the status of each U.S. species is included, along with general information on the trends in the status of these species. The next report will cover Fiscal Years 1991 and 1992.

o Annual Expenditures Reporting:

A reporting system has been initiated for reasonably identifiable expenditures. The International Association of Fish and Game Agencies has agreed to participate in collecting reports of State expenditures.

The first compilation was submitted in January 1990. The report showed some \$44 million being spent in FY 1989 by all reporting Federal and State agencies as reasonably identifiable expenditures for 347 of 554 specific species. The top dozen species accounted for about half of the total amount.

The second report for FY 1990 was released on April 1, 1991. It tabulates some \$102 million for 477 of 591 species. The increase is considered due to better accounting by the reporting agencies and not to an actual increase in resources. The top 10 species accounted for 50 percent of the total expenditures reported. Ten percent of the species (60) accounted for 90 percent of the total.

o Cooperation with EPA on Pesticide Labeling Program ⁵

EPA has proposed and is expected to finalize an Endangered Species Protection Program in the next year or so and to consult with the Service on effects of pesticides on listed species. Those opinions will become the basis for guidance on the use of pesticides. The program has been developed with assistance from the Service, various agencies and bureaus of the Department of Agriculture, the States, and the public.

⁵ Not an amendment to Endangered Species Act, but part of the 1988 amendments passed by Congress (P.L. 100 - 478).

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TROPICAL RAIN FOREST EXPLORATIONS AND DRUG DEVELOPMENT

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ABSTRACT

4 More than half of the 250,000 species of flowering plants of the world are found in the tropical rain forests, yet only a tiny fraction of this assemblage of plants has been studied for their medicinal potential. The historical record clearly supports that tropical rain forest plants have contributed and can continue to contribute in many very important ways to medicine and to the well-being of the human population. Tragically, however, the tropical biomes, in particular pristine tropical rain forests, are presently facing decimation. And, this means the disappearance of species that could provide us with medicinal agents to treat diseases for which we still have no effective treatments or cures at present. It is imperative for our search for new drugs that efforts be made and speeded up to explore the remaining forests, for collection of plants for mass biological evaluation programs. Without such bold action, it will soon be too late to attempt to discover what new clinically useful pharmaceuticals the rich tropical rain forests can offer to humanity. The promise that these forests do have a lot to offer to medicine can be abundantly documented. A very contemporary example is the discovery of the potent anti-HIV compound, calenolide A, from Calophyllum lanigerum var. austrocoriaceum (Guttiferae), a tropical rain forest tree of Sarawak (Malaysia). This example vividly illustrates many of the unique problems and challenges which must be faced and solved for successful drug development following such a discovery, before the true medicinal potential of tropical rain forest plants can be realized.

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INTRODUCTION

Perhaps more than 250,000 species of flowering plants presently grow on our planet. Plants have provided modern medicine with more diverse and important drugs than any other natural source (see, e.g., Farnsworth and Morris 1976). Indeed, more than 120 plant-derived drugs in clinical use worldwide and their plant source (about 100 species) have been tabulated by Farnsworth et al. (1985), Farnsworth (1988) and Farnsworth and Soejarto (1991).

We have no solid statistics as to how many species of plants have been investigated to find those 120 or so drugs. Perhaps, the largest database on biological screening is that of the U.S. National Cancer Institute (NCI), which indicates that more than 30,000 flowering plant species had been screened up to 1990 for their cancer arresting properties (Suffness and Douros 1982). From among these species, one new anticancer drug was discovered and developed, namely, taxol, which was approved by the U.S. FDA for clinical use in the treatment of ovarian and breast cancer, in January, 1993. The NAPRALERT database located at the University of Illinois at Chicago (UIC) (see Loub et al. 1985 for details) lists 13,000 species of flowering plants which have been studied, either in cursory (screening) or in-depth manners, for their biological and/or pharmacological activities. The NAPRALERT figure represents only 6.4% of the total number of all species of flowering plants. Even if we would add to this number all other studies on biological evaluation of plant extracts worldwide, but which because of the negative results were never published, the number of all flowering plants that have been looked at experimentally for their medical potential would be only 15-17%. If we consider that 50% (120,000 species) of all flowering plant species are found in the moist tropical (rain) forests (Myers 1984, 1992), it is obvious that only a small fraction of the 120,000 species has been investigated for their medical potential.

The current importance of tropical medicinal plants to modern medicine may be more forcefully conveyed through the following figures. Of the more than 120 pure chemical drugs derived from approximately 100 flowering plant species, about 80 come from non-tropical and 40 from tropical (many from tropical rain forest) species. Although the tropical-derived chemical entities are smaller in number compared to non-tropically derived, many of these are very important drugs, such as quinine, quindine, reserpine, deserpidine, tubocurarine, pilocarpine, vinorelbine, vinblastine, atropine, ouabain, chemopapain, etc. In the United States, only 61 or so of the 120 plant-derived drugs are approved for use by the FDA (see Soejarto et al. 1991). Of these 61, about one-third are derived from tropical forest plants. In view of the fact that one out of every four prescription drugs sold in community pharmacies in the U.S. contain ingredients derived from plants (Farnsworth and Morris 1976; Farnsworth and Soejarto 1985), this means that 1 in 12 plant-derived prescription drugs sold in community pharmacies in the U.S. comes from a tropical forest plant. Although this figure seems small, the monetary value of the share is considerable. It has been

estimated that in 1980 American consumers paid \$8 billion for all (at least 61) plant-derived prescription drugs. One-third of this (ca. \$2.7 billion) represents the share of pure compounds derived from tropical forest plants (1980 buying power). This figure does not include plant products derived from more than 500 plant species sold over-the-counter, many of which are derived from plants originating from the tropical rain forest areas (Farnsworth and Soejarto 1985).

The question at issue is, what would we have if a higher percentage of tropical rain forest plants were investigated for their potential medicinal value? Could we expect a greater number of (new) drugs from the currently uninvestigated species? What about their potential monetary value? More importantly, however, would we have the time to investigate these plants, before they disappear from the face of the earth?

Deforestation of the tropical forests, especially virgin tropical rain forests, is going on and is proceeding at an unprecedented rate in human history. Many estimates on this depletion process are available, but the figures of 8-11 million hectares per year (Sommer 1976; Myers 1980, 1984, 1986, 1992) are widely accepted.

From the pharmaceutical point of view, tropical rain forest depletion may have twofold consequences: (1) the disappearance of plant species from these forests through extinction, and (2) the displacement of tropical rain forest peoples and cultures from these forests. The result of species extinction is the loss of genetic resources which may be potentially useful to treat diseases for which we have no treatment or cure at present, while the direct consequence of the disappearance of the human cultures that occupy the tropical rain forests is the loss of information on the uses of forest plants for medicine (Soejarto and Farnsworth 1989; Soejarto et al. 1991).

WHAT NEEDS TO BE DONE?

Conservation of the tropical rain forest biome, as well as of its germplasm, is one of the possible solutions. Perhaps the more appropriate term is conservation for sustainable utilization. More importantly, however, while time is still with us, the immediate action needed for the discovery of plants potentially useful to modern medicine is the exploration of the tropical rain forests in a massive and sustainable manner to collect plant materials to be screened for relevant biological activities, followed by bioassay-guided chemical isolation of the active principles. Fortunately, some actions in this direction have been and are being taken by the scientific community. The NCI's new anticancer and anti-HIV screening program of tropical forest plants which was started in 1986 is one such effort (Booth 1987; Soejarto in press; Soejarto et al. in press). Also, many natural products scientists are carrying out field explorations and follow-up laboratory investigations of tropical rain forest plants worldwide. One can easily find confirmation of this assertion by scanning recent

scientific journals dedicated to publishing papers on results of research on natural products.

Examples of interesting and encouraging recent findings on biological activities of tropical rain forest plants include the following: antimicrobial and potential immunostimulating activity of Okoubaka aubrevillei (Santalaceae) (Wagner et al. 1985), cardiac activity by Dysoxylum lenticellare (Meliaceae) (Aladesanmi and Ilesanmi 1987), antimalarial activity by Brucea javanica (Simaroubaceae) (O'Neill et al. 1987), antisickling activity of Carica papaya (Caricaceae) (Thomas and Ajani 1987), antiviral activity by Aplala roxburghiana (Meliaceae) (Joshi et al. 1987), the isolation of yohimbine potentially useful for the treatment of psychogenic impotence from Pausanistylia yohimba (Rubiaceae) (Reid et al. 1987), the isolation of anti-HIV castanospermine from Castanospermum australe (Leguminosae) (Duke 1989), michellamines A and B from Ancistrocladus abbreviatus (Ancistrocladaceae) (Manfredi et al. 1991) and calanolides from Calophyllum lanigerum var. austrocoriaceum (Kashman et al. 1992).

PROBLEMS TO BE FACED IN DEVELOPING DRUGS FROM A TROPICAL RAIN FOREST PLANT

The field work to collect small-scale samples for preliminary biological screening is only the first or initial phase of three exploratory stages in discovering and developing new drugs from plants. When a sample is shown to be active in preliminary bioassays and is considered to be of interest for further development, a larger quantity of sample (10 kg or more, dry weight) must be recollected for further isolation and structure elucidation work, as well as for further bioassays. If the isolated compound turns out to be promising in preclinical studies, and synthetic efforts failed to provide the desired compound, even larger quantities, e.g., up to several metric tons or more of plant material will be needed for clinical trials. If a compound finally achieves new drug status, then, truly massive amounts of the source plant material may be needed. For example, with taxol, the current need of raw material for drug production is anywhere between one and twelve million kg (12,000 tons) dry weight of stem bark (Anon. 1993).

The main logistical challenge in collecting such amounts of plant material in a tropical rain forest setting lies in finding a large enough species population that will permit the collection of the required quantities, especially in the case of shrubs or herbaceous plants. Also, for rare tree species, the necessity of re-locating the original tree that gave the positive test result(s), to be used as a field reference, is another challenge. Because of the high biodiversity of the tropical rain forests, a "pure stand" situation is not found, and the environmental impact of harvesting such a huge quantity of plant material of a single species may be devastating.

Then, there is the problem of variability of the distribution of a specific chemical compound in various plant parts and within a species population. This problem is real (Tetenyi 1970; Harborne 1984) and must be faced and overcome.

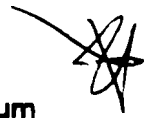
Another type of challenge to be faced are the socioeconomic implications of a large-scale harvesting of a particular species, such as, demonstrated clinical efficacy, creation of jobs in local communities, maintenance of sustainability of harvest and of the ecosystem for future generations.

PROBLEM OF CALOPHYLLUM LANIGERUM VAR. AUSTROCORIACEUM: A MODEL

Calanolide A (Kashman et al. 1992) (Fig. 1) discovered from Calophyllum lanigerum Miq. var. austrocoriaceum (Whitmore) P.F. Stevens (Guttiferae) is a compound that, in laboratory tests, is 100% effective in preventing the replication of HIV-1 and the killing of human immune cells by the virus. HIV-1 is the major form of the virus responsible for the burgeoning worldwide epidemic of AIDS. Calanolide A provides us with a real and highly contemporary example of the problems to be faced in the development of a drug from a tropical rain forest species. 

As part of our Southeast Asia plant exploration program to collect plants for anticancer and anti-HIV screening (Soejarto et al. in press), a twig plus fruit sample of this plant was collected in 1987 in a swamp forest in Sarawak, Malaysia. Subsequent laboratory anti-HIV tests indicated that extract of this plant showed promising anti-HIV activity. Further chemical investigation led to the isolation of a novel anti-HIV compound, calanolide A, a coumarin derivative, which prevents the HIV-1-induced cytopathic effects in human T-lymphoblastoid cells, essentially halted HIV-replication (Kashman et al. 1992). After a scientific review of this compound and its biological activity, the NCI Decision Network selected calanolide A (identified as NSC 650886) as a candidate for stage A pre-clinical drug development, based on the following characteristics:

- a. Calanolide A represents a novel new anti-HIV chemotype; a non-nucleoside HIV-1 specific RT (reverse transcriptase) inhibitor which is fully active against both the AZT-resistant and pyridinone-resistant strains of HIV-1.
- b. The compound, in very low concentrations (in the 100 nM concentration range), is capable of complete cytoprotection and inhibition of HIV-1 replication.
- c. It is an outstanding candidate for synergy studies.
- d. It has favorable physicochemical properties for drug development.

When a team of collectors returned in 1991 to the site of the active plant to recollect more material in a larger quantity for further testing and preclinical studies, they discovered that the original tree was gone, having apparently been cut shortly after its collection in 1987. A new search was implemented, but Calophyllum lanigerum 

var. austrocoriaceum turned out to be rare in this locality and samples of other related and non-related species collected in the same site did not yield calanolide A. A systematic sampling of Calophyllum species, from other localities and different habitats was then implemented in three different occasions in 1992. Trees were marked and numbered to facilitate re-location in the future. Extracts of one of these trees showed activity against HIV, but attempts to re-isolate calanolide A failed and, instead, led to a related but considerably less potent derivative. The search for calanolide-A-containing trees was extended to Singapore, where a population of Calophyllum lanigerum var. austrocoriaceum was located in the jungle of the Singapore Botanic Gardens. Samples of eight different trees were collected, however, none contained calanolide A. Samples of Calophyllum lanigerum var. austrocoriaceum from the same swamp forest and from other localities in Sarawak were eventually collected, but, likewise, were devoid of activity against HIV.

Of interest now is to search, characterize and assay for the presence or absence of calanolide A and/or related derivatives, in the field, plants belonging to Calophyllum lanigerum var. austrocoriaceum that, based primarily on morphology and habitat, would be expected to give activity in the anti-HIV test [namely, containing calanolide A]. Actually, this is both a field, as well as a taxonomic/chemotaxonomic problem. Aside from a wide-ranging search, a more focused search is currently being implemented.

Additionally, an in-depth field study has now been initiated to investigate the morphological variability problem of Calophyllum lanigerum var. austrocoriaceum and to determine the exact nature and taxonomic characteristics of plants that would give active anti-HIV tests [contains the compound(s) responsible for the activity]. Basically, we are now searching for individual chemotype/genotype tree(s) which contain calanolide A and/or related derivatives. The discovery or re-discovery of such individuals or populations of the taxon will allow us to plan for further action, such as conventional clonal propagation, tissue culture propagation and compound production, and further field search for a higher-yielding individual(s) or strains. A plan is also in place to estimate the abundance and population density of trees that would give active test results, to study the phenology of the taxon in question, and to obtain a month-to-month chemical profile, among others, once a calanolide-containing tree(s) is(are) re-discovered.

In view of the fact that Calophyllum species have a latex, the further search for calanolide-containing plants is now being attempted by chemical assay, in the field, for the compound in latex samples. The collecting method is simple, quick and non-destructive. The idea of latex as a raw material source, instead of other parts (e.g., leaf, twigs, stem bark, roots, fruits), is very attractive, because of the prospect of sustainable, non-destructive harvest. Such a harvest method could allow the sustainable utilization of the forest resource and the ecosystem. Conceivably, if a plant source of calanolide A is re-discovered, the yield of the compound might be higher

from the latex in comparison to the twig or other parts; in the original active sample, the yield from the twig and fruit sample was actually a rather modest 0.11% w/w. Thus, special effort is being made to collect latex samples from Calophyllum lanigerum var. austrocoriaceum trees, as well as from other Calophyllum species, by scraping the exudate (latex) that seeps out and collect on the cut surface of small slashes made on the side of the tree trunk at breast high. A latex-collection experiment on five large-sized trees of a Calophyllum species in the same general locality of Calophyllum lanigerum var. austrocoriaceum in Sarawak yielded samples presented in Table 1. Latex samples from these trees will continue to be collected from the same slashes on the same tree, periodically for a period of several months, to ascertain the sustainability of latex harvest. It must be pointed out that the term "tapping" in harvesting the latex from these Calophyllum plants should not be used. The latex in these trees is scanty and exudes in the form of tiny droplets or en masse and collects on the cut surface of the bark; typically, it is scraped, using a pocket knife, into small polyethylene bags.

CONCLUSIONS

The tropical rain forests have provided modern medicine with many important and life-saving drugs, for which, in the United States alone, the monetary value is estimated to be at least \$2.76 billion, in 1980 buying power. Yet, only a small fraction of the biodiversity of the tropical rain forest plants has been studied for medical potential. In view of the need for new drugs to treat diseases for which no effective treatments or cures presently exist, it is imperative that vigorous plant exploration programs be established and speeded up for collection and biological testing of plants from these forests. The urgency for such effort is made even greater by the accelerated rate of tropical rain forest depletion which has been taking place during the last decade and is still continuing. This tragic destruction threatens the continued existence of a large number of plant species found in these forests, whether known or still unknown to science, and which potentially could give us the medicinal products we are seeking. Only with such a massive effort, while time is still available to study whatever remains of this great biome, will the potential value of this forest resource to medicine be realized.

Because of the nature of drug discovery from plants, with the eventual prospect of the need for collection of huge quantities of plant material of the same species, one challenge that has to be met is the procurement of such quantities without serious detriments to the individual species, as well as more generally to the tropical rain forest environment. The discovery of calanolide A, a potent anti-HIV compound from a Sarawak's (Malaysia's) tree Calophyllum lanigerum var. austrocoriaceum, provides us with a striking, contemporary model on the problems that must be faced for the further follow-up preclinical and possible clinical drug development, from the discovery of a new active lead compound from a tropical rain forest species. Among the specific problems to be overcome in case of a confirmable biological activity of a new

compound are: (1) the relocation and demarcation of species populations of the active plant; (2) the confirmation of the biological activity and the occurrence of the lead compound in the species population; (3) the determination of the ecogeographic parameters of the species (abundance, life cycle, macro- and microclimatic requirements, geographic distribution, seasonal profile of lead compound, variability of lead compound in the species population, etc.); (4) the development of a harvest method from the wild population with least disturbance or damage to the environment as a whole; (5) the determination of an alternative method of harvest of the raw material (conventional cultivation, tissue culture propagation, drug production); (6) the industrial scale collection and production of the drugs; and, eventually, (7) the sustainability of harvest of the raw material and the continued existence of the biome where the drug-yielding species grows naturally.

ACKNOWLEDGEMENTS

Plant explorations and collections in Sarawak (Malaysia) were undertaken as part of a Southeast Asia plant exploration program under contract with the United States National Cancer Institute (Contracts NO1-CM-67825 and NO1-CM-17548) to the University of Illinois at Chicago.

Field work operations in Sarawak were carried out with the cooperation of the Sarawak Forest Department. The authors want to express special thanks to Mr. Lee Hua-Seng, Assistant Director for Research for the Director General, Sarawak Forest Department, Kuching, for his gracious and generous cooperation which has permitted the original collection and follow-up surveys of Calophyllum lanigerum var. austrocoriaceum in Sarawak. Thanks are also due to Abg. Mohd. Mohtar b. Abg. Pawozan, Curator, and Haji Othman Ismawi, Staff Forester of the Sarawak Herbarium, who have kindly provided collaboration (to DDS) in the field work survey in Sarawak. To Ms. Marian Kadushin, a graduate student at the Department of Biological Sciences, University of Illinois at Chicago, and to Mr. Dami Jude, herbarium technician at the Sarawak Herbarium, who provided assistance in the latex collection presented in Table 1, our thanks are also due.

The sampling of latex and other parts of Calophyllum lanigerum var. austrocoriaceum in Singapore was made with the kind permission and cooperation of the Director, Dr. Wee Kiew-Tan, and the Senior Research Officer of the National Parks Board, Mr. Tay Eng-Pin, for which we want to express our thanks.

To Dr. Peter F. Stevens, Arnold Arboretum, Harvard University (Cambridge, Massachusetts), we want to express our special thanks for his kind assistance with the determination of a number of Calophyllum specimens.

LITERATURE CITED

- Aladesanmi, A.J. and O.R. Ilesanmi. 1987. Phytochemical and pharmacological investigation of the cardioactive constituents of the leaf of Dysoxylum lenticellare. J. Nat. Prod. 50:1041-1044.
- Anon. 1993. Draft Environmental Impact Statement, pp. S3-S4. USDA Forest Service, USDI Bureau of Land Management and USDHHS Food and Drug Administration, Portland, OR.
- Booth, W. 1987. Combing the earth for cures of cancer, AIDS. Science (U.S.A.) 237:969-970.
- Duke, J.A. 1989. Castanospermum and anti-AIDS activity. J. Ethnopharmacol. (Letters to the Editors) 25:227-228.
- Farnsworth, N.R. 1988. Screening plants for new medicines. In: Biodiversity, E.O. Wilson and F.M. Peters (Eds.), pp. 61-73. Academic Press, New York.
- Farnsworth, N.R. and R.W. Morris. 1976. Higher plants: the sleeping giants for drug development. Am. J. Pharm. 148:46-52.
- Farnsworth, N.R. and D.D. Soejarto. 1985. Potential consequence of plant extinction in the United States on the current and future availability of prescription drugs. Econ. Bot. 39:231-240.
- Farnsworth, N.R. and D.D. Soejarto. 1991. Global Importance of medicinal plants. In: The Conservation of Medicinal Plants, O. Akerele, V. Heywood and H. Synge (Eds.), pp. 25-51. Proceedings of An International Consultation, 21-27 March 1988, Chiang Mai, Thailand. Cambridge University Press, Cambridge (England).
- Farnsworth, N.R., O. Akerele, A.S. Bingel, D.D. Soejarto and Z. Guo. 1985. Medicinal plants in therapy. Bull. World Health Organiz. 63:965-981.
- Harborne, J.B. 1984. Chemical data in practical taxonomy. In: Heywood, V.H. and D.M. Moore (Eds.), Current Concepts in Plant Taxonomy, pp. 237-261. Academic Press, London.
- Joshil, M.N., B.L. Chowdhury, S.P. Vashnoi, A. Shoeb and R.S. Kapil. 1987. Antiviral activity of (+)-odorinol. Planta Med. 53:254-255.

Kashman, Y., K.R. Gustafson, R.W. Fuller, J.H. Cardellina II, J.B. McMahon, M.J. Currens, R.W. Buckheit, Jr., S.H. Hughes, G.M. Cragg and M.R. Boyd. 1992. The calanolides, a novel HIV-inhibitory class of coumarin derivatives from the tropical rain forest tree, Calophyllum lanigerum. J. Med. Chem. 35:2735-2743.

Loub, W., N.R. Farnsworth, D.D. Soejarto and M.L. Quinn. 1985. NAPRALERT: Computer handling of natural product research data. J. Chem. Inform. Comp. Sci. 25:99-103.

Manfredi, K.P., J.W. Blunt, J.H. Cardellina II, J.B. McMahon, L.L. Pannell, G.M. Cragg and M.R. Boyd. 1991. Novel alkaloids from the tropical plant Ancistrocladus abbreviatus inhibit cell killing by HIV-1 and HIV-2. J. Med. Chem. 34:3402-3405.

Myers, 1980. Conversion of Tropical Moist Forests. National Academy of Sciences, Washington, DC, 205 pp.

Myers, N. 1984. The Primary Source. Norton, New York, 399 pp. Published and updated as a paperback, 1992.

Myers, N. 1986. Tropical deforestation and a mega-extinction spasm. In: Conservation Biology, M.E. Soule (Ed.), pp. 394-409. Sinauer, Sunderland, MA.

O'Neill, M.J., D.H. Bray, P. Boardman, K.L. Chan and J.D. Phillipson. 1987. Plants as sources of antimalarial drugs. IV. Activity of Brucea javanica fruits against chloroquine-resistant Plasmodium falciparum in vitro and against Plasmodium berghei in vivo. J. Nat. Prod. 50:41-48.

Reid, K., D.H.C. Surridge, A. Morales, M. Condra, C. Harris, J. Owen and J. Fenimore. 1987. Double-blind trial of yohimbine in treatment of psychogenic impotence. Lancet 2:421-423.

Sommer, A. 1976. Attempt at an assessment of the world's tropical forests. Unasylva 28(112/113):5-27.

Soejarto, D.D. In Press. The other end of the spectrum: role of logistics and politics in plant drug discovery. In: Human Medicinal Agents From Plants, A.D. Kinghorn and M. Balandrin (Eds.). Proceedings of the ACS Symposium, San Francisco, April 8-10, 1992.

Soejarto, D.D. and N.R. Farnsworth. 1989. Tropical rain forests: potential source of new drugs? Perspect. Biol. Med. 32:244-258.

Soejarto, D.D., C. Gyllenhaal, C. Lewandowski and N.R. Farnsworth. 1991. Why do medical sciences need tropical rain forests? Transact. Illinois Acad. Sci. 64 (nos. 1 and 2):65-76.

Soejarto, D.D., C. Gyllenhaal, P.S. Ashton and S.H. Sohmer. In press. Plant explorations in Asia under the sponsorship of the National Cancer Institute 1986-1991: An overview. In: Research Topics in Tropical Medicinal Plants, M.J. Balick, E. Elisabetsky and S. Laird (Ed.). Columbia Press, New York.

Suffness, M. and J. Douros. 1982. Current status of the NCI plant and animal product program. J. Nat. Prod. 45:1-14.

Tetenyi, P. 1970. Intraspecific Chemical Taxa of Medicinal Plants, 225 pp. Chemical Publ. Co., New York.

Thomas, K.D. and B. Ajani. 1987. Antisickling agent in an extract of unripe papaw fruit (Carica papaya). Transact. Roy. Soc. Trop. Med. 81:510-511.

Wagner, H., B. Kreutzkamp and K. Jurcik. 1985. Inhaltstoffe und Pharmakologie der Okoubaka aubrevillei-Rinde. Planta Med. 1985: 404-407.

TABLE 1
TRUNKBARK-LATEX YIELD OF CALOPHYLLUM sp. 1^a

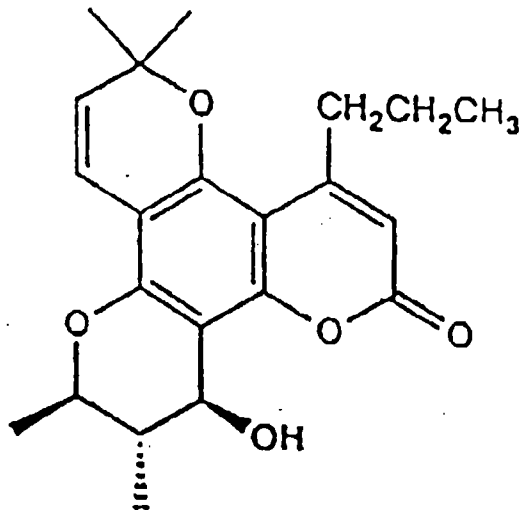
Collector's # (NCI Barcode)	Tree DBH	Number of Slashes ^b	Scraping Day/Time ^c				Total
			Jan 7/am	Jan 7/pm	Jan 8/am	Jan 10	
Soejarto et al. 7853 (U44Z-6117-K)	16 cm	7 (3 - 6 cm x 1 1/2 - 2 cm)			1.5 g		1.5 g
Soejarto et al. 7854 (U44Z-6118-L)	37 cm	4 (8 - 20 cm x 1 1/2 - 3 cm)	2.5 g	2.4 g	3.8 g	10.0 g	18.7 g
Soejarto et al. 7899 (U44Z-6996-P)	37 cm	9 (6 - 15 cm x 1 - 4 cm)	1.1 g	3.4 g	5.8 g	10.0 g	19.5 g
Soejarto et al. 7900 (U44Z-6997-Q)	32 cm	9 (8 - 13 cm x 1 - 3 cm)	1.1 g	2.0 g	4.4 g	8.0 g	15.5 g
Soejarto et al. 7901 (U44Z-6998-R)	35 cm	7 (5 - 15 cm x 2 - 6 cm)	0.5 g	2.1 g	7.7 g	7.0 g	17.3 g
Soejarto et al. 7902 (U44Z-6999-S)	45 cm	9 (8-25 cm x 2 - 5 cm)	2.6 g	9.2 g	2.0 g	8.5 g	22.3 g
Total Trunkbark-LateX Yield From 5 Trees With DBH > 30 cm in 4 samplings							94.8 g

^aIdentity awaits the collection of flowering/fruiting specimens. The five trees with DBH > 30 cm are found in a lowland mixed Dipterocarp forest (Ilexang) and positioned in a more or less straight line along a slope, each tree separated from the adjacent one by 50-100 m distance.

^bSlashes were made using a large cutting tool ("parang"), with angles from horizontal to 45°. In most cases, the slash did not damage the cambium layer. Latex exudes from the cortical zone of the bark.

^cLatex (resinous exudate) is very scanty, of clear-yellowish color that exudes in tiny droplets or ~~as masses~~ and collects on the cut surface of the trunkbark. Exudate from each slash was scraped 5-20 minutes following the incision. Latex does not flow freely, hence must be scraped. The term "tapping" is not appropriate for this operation. The four samplings (Jan 7/am; Jan 7/pm; Jan 8/am; January 10) were made from the same slashes.

^dLatex yield includes impurities, such as fibres from the bark.



CALANOLIDE A

A coumarin class of compound isolated from *Calophyllum lanigerum* var. *austrocoriaceum* (Guttiferae).

- * Stops viral replication of HIV-1 and completely inhibits the virus' pathological effects on human immune system cells, without causing damage to the human cells, *in vitro*. (Therapeutic index *in vitro* is 200.)
- * Blocks activation or release of HIV-1's reverse transcriptase enzyme.

***** 103RD CONGRESS *****

ALL

DATE INTRODUCED: 05/06/93

S.921

SPONSOR: Baucus

REFERRED TO: Senate Committee on Environment and Public Works

COSPONSOR(S): CURRENT (13)

Chafee; Graham; Moynihan; Mitchell; Lieberman; Boxer; Sarbanes;
Pell; Kennedy; Leahy; Kerry; Akaka; Durenberger:

LATEST OFFICIAL TITLE:

OFFICIAL TITLE AS INTRODUCED AS OF 05/06/93:

A bill to reauthorize and amend the Endangered Species Act for the
conservation of threatened and endangered species, and for other purposes.

LEGISLATIVE ACTIONS:

May 6, 93 Read twice and referred to the Committee on Environment and Public
Works.

PAGE 1 OF 1. READY FOR NEW COMMAND OR NEW OPTION:

News From
SENATOR JOHN CHAFEE
RHODE ISLAND

567 DIRKSEN BUILDING WASHINGTON D.C. 20510-3902 (202) 224-2921



For Immediate Release
May 6, 1993

For Further Information
Ed Quinlan 202/224-2921

**CHAFEE OFFERS LEGISLATION TO
RENEW, IMPROVE ENDANGERED SPECIES ACT**

WASHINGTON -- Sen. John H. Chafee (R-RI) today joined in sponsoring legislation to reauthorize the Endangered Species Act, renewing and improving the 1973 law to conserve threatened and endangered species and the ecosystems upon which they depend. Chafee announced the introduction today at a Capitol Hill press conference with Sen. Max Baucus (D-MT) and Rep. Gerry Studds (D-MA). Chafee, ranking Republican on the Senate Environment and Public Works Committee, co-authored previous reauthorization bills in 1982 and 1988.

The new legislation would:

- encourage earlier, more comprehensive species conservation to avoid the high cost of bringing species back from the brink of extinction
- improve efforts to recover species by requiring recovery plans to be completed in 18 months
- requires recovery plans to minimize economic and social impacts
- create incentives for private landowners to conserve species by authorizing federal assistance for land planning
- build a stronger partnership with the States by providing interest-free loans to states to develop habitat conservation plans

"Twenty years ago, Congress acted to stem the loss of living species and to protect our natural heritage," said Chafee at the morning press conference. "This legislation recognizes a fundamental truth that the faster humans extinguish other forms of life the more we imperil ourselves.

"The Endangered Species Act has proven to be one of our most effective conservation tools and a model for similar laws that have been adopted around the world. Species, including our nation's symbol -- the bald eagle -- as well as the peregrine falcon, the whooping crane, the brown pelican and the American alligator (among others) have made dramatic come backs due to the protections afforded by the Act.

"We have worked to craft legislation which builds upon the strengths of the existing Act and places new emphasis on the conservation of ecosystems rather than individual species. This multi-species approach will enable us to conserve more species at a lesser cost than the current species-by-species method.

"The lesson of the last 20 years has been that the longer we wait to protect species, the more difficult and costly it is. Therefore, the bill encourages federal agencies to identify and take steps to protect declining species and groups of species that depend upon a common ecosystem before they are listed.

"Why is it important that we preserve the widest possible variety of living species? Consider the benefits that humans derive from natural diversity. More than half of all medicines today can be traced to wild organisms. Biological resources are important to the development of hybrid crops for farming as well as to other economic activities including fishing, hunting and tourism. Each species that becomes extinct means knowledge forfeited and opportunities to improve our way of life lost. The presence of one or more endangered species in an area may indicate that an entire ecosystem -- consisting of hundreds or possibly thousands of species -- is in decline. Today we reaffirm our commitment to conserve endangered species in a manner that is more efficient and less costly for private landowners and local communities.

FAX from the office of
CONGRESSMAN GERRY E. STUDDS
Washington, D.C.

Date:

5/10

To:

PAM McElwee, Special Asst.

From:

B. Daly

Number of pages which follow:

(2)

Here's our press release about Endangered Species
as well as a list of co-sponsors.

For further information:

Phone (202)225-3111 Fax (202)225-2212

Washington
237 Cannon Building
Washington, DC 20515
202-225-3111

South Shore
1212 Hancock Street
Quincy, MA 02169
1-800-794-9911

Cape Cod and Islands
146 Main Street
Hyannis, MA 02601
1-800-870-2626

Merchant Marine and Fisheries Committee News

Gerry E. Studds, Chairman

FOR IMMEDIATE RELEASE
Thursday, May 6, 1993

Contact: Sue Waldron
202-225-4047

STUDDS BILL GIVES GO AHEAD FOR ENDANGERED SPECIES ACT

Washington, D.C. — "It is supreme arrogance to underestimate the value of even the most humble of life forms."

With this admonition, Gerry E. Studds, Chairman of the House Committee on Merchant Marine and Fisheries, today introduced legislation reauthorizing the Endangered Species Act (ESA).

Studds announced the bill's introduction at a morning news conference with the Senate sponsors of the ESA reauthorization, Max Baucus (D-MT) and John Chafee (R-RI), the Chairman and Ranking Member of the Senate Environment and Public Works Committee. The event also commemorated the 20th anniversary of the enactment of the ESA.

"In 1973, we thought there were probably 100 species threatened with extinction. Now we list that many each year. More than anything else, this tells us our other environmental laws aren't working as well as they should. Real, honest-to-goodness environmental protection — protection that maintains a healthy environment for all creatures — is still a goal, not a reality. Until we can achieve this goal, more than ever before, we need the Endangered Species Act," said Studds.

Studds noted that while the ESA has been the subject of considerable controversy over the years, problems have been with the implementation of its provisions, not the law itself.

"There is a misconception that the Act is somehow broken and needs fixing. Nothing could be further from the truth. The crises which have marked the ESA of late are the direct result of profound mismanagement by those whose mission was to undermine the program rather than implement it. Thankfully, they are now long gone and Secretary Babbitt has already shown he will be a real partner in making the Act work as Congress intended," said Studds.

At introduction, the bill has over 50 cosponsors, including Energy and Commerce Chairman John Dingell (D-MI) the original sponsor of the Endangered Species Act in 1973.

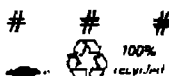
The major objectives of the reauthorization bills are:

- o Encouraging earlier, more comprehensive species conservation;
- o Improving efforts to recover species;
- o Helping reduce social and economic impacts while providing for species recovery;
- o Create incentives for private landowners to conserve species;
- o Build a stronger partnership with the States;
- o Improve scientific review; and
- o Lead by example by requiring federal agencies to be better land stewards to conserve and protect species on federal land.

In addition, the bill recognizes that for the Act to be truly effective, it needs a lot more money, so it doubles the authorized level of funding.

Finally, Studds noted that the overriding importance of the Endangered Species Act is that it leaves open possibilities. "When a life form ceases to exist, its potential to contribute to the richness of our world forever vanishes. We all now know that the Pacific Yew Tree has proven effective in the fight against ovarian and breast cancers. But how many are aware that scientists discovered a tree in the Malaysian rain forest that contains a compound that, in laboratory tests, has been effective in preventing the replication of the HIV-1 virus? Tragically, when they returned to the rainforest to collect material for further testing, the tree was gone and they were unable to find any others. We will never know if this tree held the cure for AIDS," said Studds.

"The concept of sharing this planet with other living beings is one that most of us understand at a very basic level and embrace wholeheartedly. This bill represents the first step in our renewed dedication to preserve and protect our fellow creatures, large and small. It is a challenge to all of us to make the Act work as effectively as we can — and must — for the generations that follow us," concluded Studds.



103rd CONGRESS

1st Session

(Original signature of Member)

H.R. 2043Insert
this
here
EOP**Endangered Species Act Amendments of 1993****IN THE HOUSE OF REPRESENTATIVES**May 6 1993Insert
sponsor's
name
here
EOP

Mr. STUDDS (for himself, Mr. DINGELL, Mr. SAXTON, Mr. BONIOR, Mr. MILLER of California, Mr. FORD of Michigan, Mr. DELLUMS, Mr. CONYERS, Mr. HUGHES, Mr. MANTON, Mr. PALLONE, Mr. ANDREWS of Maine, Ms. FURSE, Ms. ESHOO, Mr. RAVENEL, Mr. BEILENSON, Mrs. SCHROEDER, Mr. VENTO, Mr. FRANK, Mr. PETERSON of Minnesota, Mr. STOKES, Mr. TOWNS, Mr. MARKEY, Mr. JEFFERSON, Mr. ABERCROMBIE, Ms. COLLINS of Michigan, Mr. EVANS, Mr. McDERMOTT, Mr. LEVIN, Mr. SHAYS, Mr. BERMAN, Ms. MORELLA, Mr. WALSH, Mrs. MINK, Mr. COLEMAN, Mr. MEEHAN, Ms. MALONEY, Mr. TORRES, Mr. MORAN, Mr. OLVER, Mr. NADLER, Ms. PELOSI, Mr. GILMAN of New York, Mr. PORTER, Ms. WOOLSEY, Mr. PAYNE of New Jersey, Mr. BLACKWELL, Mr. SANDERS, Mr. CARDIN, Mr. SABO, Ms. SHEPHERD, Ms. SLAUGHTER, and Mr. HINCHEY)

A BILL

To reauthorize and amend the Endangered Species Act of 1973.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the "Endangered Species
5 Act Amendments of 1993".

6 **SEC. 2. AMENDMENT OF ENDANGERED SPECIES ACT OF**
7 **1973.**

8 Except as otherwise expressly provided, whenever in
9 this Act an amendment or repeal is expressed in terms

S.921

**** 103RD CONGRESS ****

ALL

DATE INTRODUCED: 05/06/93

SPONSOR: Baucus

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KM - Thought you'd like to see --
House version of the
actual bills to follow today.

-Paul-

Yes -- would very
much like to see.
Jef.

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