国総研セミナー・シリーズ
(93-3)

開発と保全における野生生物種の持続的利用

―Sustainable Use of Wild Species in Conservation and Development―

平成5年7月

国際協力事業団
国際協力総合研修所

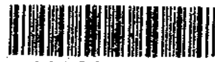
000
59
IIC

総　研
JR
93−70

開発と保全における野生生物種の持続的利用

--Sustainable Use of Wild Species in Conservation and Development--

JICA LIBRARY



1109403[4]

平成５年７月

国 際 協 力 事 業 団
国際協力総合研修所

国際協力事業団
25728

「国総研セミナー」とは……

国総研セミナーとは国際協力事業団国際協力総合研修所において行っているセミナーの略称で、国内外の有識者、援助関係者により、わが国の国際協力にかかわる関係者を対象に開発援助の現状、課題、展望等の情報を提供することを目的としています。

本出版物は、講師の了解を得て講演の要約をまとめたもので、編集の責任は国際協力総合研修所にあります。

国総研セミナー

テーマ：「開発と保全における野生生物種の持続的利用」

日　時：平成５年７月２０日　１０：００～１２：００

場　所：国際協力総合研修所　２階　大会議室

講　師：Stephen R. Edwards

Programme Director, IUCN(International Union for Conservation of Nature and Natural Resources)

（講師略歴）

1974　カンザス大学にて分類・生態学博士号を取得

1983～86　Association of Systematics Collections　理事

1986　IUCN「種の保存計画」に参加

1991　IUCN「野生生物の持続的利用計画」のダイレクター

著書：「両生類とへびの分類学」

「野生生物種の持続的利用」

「開発と保全における野生生物種の持続的利用」
（セミナー概要）

ＩＵＣＮの活動は、絶滅に瀕した動植物を収録した「レッド・データ・ブック」が有名であるが、現在は先進諸国の開発援助機関のパートナーとしても活動している。その活動は湿地、森林、社会科学等多分野にわたり、講演者エドワーズ氏はその中の野生生物の持続的利用に関する分野を担当している。本講演では開発における生態系保全のモデル；持続的利用を取り上げている。

講演はスライドを使用しつつ、１．野生生物種の持続的利用に関する歴史及び国際動向、２．野生生物種の持続的利用のための必要条件、３．過去２年以内のＩＵＣＮでの講演者の活動事例紹介と、それらに基づく野生生物種のマネージメントにおける重要要素の検証、４．講演者の今後の活動、の順で進められた。

１．野生生物種の持続的利用に関する国際動向

世界が野生生物種に注目し始めたのは1972年のストックホルム会議以降である。環境に対して高い評価が与えられ、絶滅に瀕した動植物の国際取引き禁止に関し多くの合意がなされた。1980年ＩＵＣＮは『世界保全戦略』を出版し、自然保護における人間活動の役割について初めて触れている。これが後に単なる自然保護という概念が、野生生物種の持続的利用という概念へと移り変ることとなる。

２．野生生物種の持続的利用のための必要条件

『持続的利用』という概念はまだ確立されたものではない。講演者はこの分野のプログラムを始めるに当たり、次の４つのゴールを設定した。

(1)『野生生物種の持続的利用』という概念を世界的に共有するためのデモンストレーション・プロジェクトの実施

(2)『野生生物種の持続的利用』のための国際基準を確立すること

(3)政府、ＮＧＯ等のこの分野への理解と、実施能力の強化

(4)『野生生物種の持続的利用』のより深い理解のためのコミュニケーション促進

3．過去２年以内のＩＵＣＮでの講演者の活動事例紹介、野生生物種のマネージメントにおける重要要素の検証

講演者は持続的利用のための第１の基準として、生態系の容量を挙げている。人間がある種の生物を利用することは生態系全体に影響する。その影響をすべて把握することは到底不可能であり、持続的利用のためには許容量の範囲内でなければならないと講演者は主張する。

ＩＵＣＮは２つのデモンストレーション・プロジェクトを実施した。ひとつは南米のヴィクニャという動物を保護しつつ、ローカル・コミュニティに収入をもたらす方法の確立であり、もうひとつはニカラグアのある地域で収入源となっている黒イグアナの管理プロジェクトである。この他にも、パキスタン北部での家畜、ヤク管理プロジェクト、ニジェールでのロニエ・パーム管理、南部アフリカでの象や水牛のハンティングとコミュニティの収入との連結など、講演者は自身の体験事例を紹介しつつ、野生種の管理主体をコミュニティに移すこと、地域住民の経験や希望などをプロジェクトに反映させることの重要性について言及している。

講演者は、ある地域で成功した手法は他の地域には転用できず、生物種の管理計画はそれを担当する個人の資質に大きく依存すると考えている。しかし各事例に共通しているのは、生物学的問題であること、社会的問題であること、法的問題であること、経済的問題であることなどであると分析している。持続的利用のためにはこれら４つの側面からの問題解決のアプローチが必要であるということを、講演者は各プロジェクトを成功させた要因を説明することによって検証している。そしてこれらは、野生生物種と共に生活する人々を、いかにシステムの中に組み込むかということを意味している。

かつての野生生物は政府の所管であり、コミュニティレベルでそれを利用し、

管理するといったことはなかった。政府は関連する法体系を持っていなかったりその地域に適応しない植民地時代の法が基になっていることが多い。またフィールドの大きさに比してこの分野の行政に携わる人材も圧倒的に不足している。

また、コミュニティの人々は、それら野生生物種からの産品が、市場でどれだけの価値を持つのかを把握していない場合が多い。これを把握することによって産品の供給過剰による価格の暴落や、なによりも生態系の許容量を超えた利用を防ぐことができる。

さらに殺していた動物を捕獲したり、限定的な保護を加えるなど、すでに先進国や他の地域で確立された技術を転用することによって、よりコンサバティブな野生生物の利用が可能となるケースもある。

持続的利用のためには、政府がその人々の抱える問題や要望を聴取し、意思決定権を含む野生生物管理の法的枠組みを作ること、野生生物の経済的価値を地域の人々が認識すること、種を保存しつつ利用するための技術体系が供与されることなどが必要である。

４．講演者の今後の活動

この分野での将来的課題は次の５つであると講演者は考えている。

(1)野生生物資源の管理権をコミュニティに委譲するモデルとなる法の確立と運用

(2)野生生物資源の適正な経済評価

(3)野生生物資源管理の生物学的、技術的体系の社会学的統合

(4)野生生物資源利用の際の市場へのアクセス確保

(5)この分野での各援助機関、関係団体間のネットワーク形成及び相互協力

Tuesday, 20th July, 1993

"SUSTAINABLE USE: A MODEL FOR CONSERVATION WITH DEVELOPMENT"

Lecturer: Dr. Stephen R. Edwards
Programme Director
IUCN Sustainable Use of
Wildlife Programme

MODERATOR: Thank you very much for coming to this seminar held by Institute for International Cooperation. And it is a privilege for us to introduce today's guest speaker for this seminar.

Today's seminar will be presented by Dr. Stephen Edwards, under the title "Sustainable Use of Wild Species in Conservation and Development". Dr. Edwards is Programme Director of IUCN, which stands for International Union for Conservation of Nature and Natural Resources. And it is an international union founded in 1948, which is working for environmental conservation worldwide. Its members spread over 120 countries, including 61 states, 121 government agencies, and over 400 NGOs in 1989. IUCN is also very famous for Red Data Book, which indicates wild species in danger of extinction.

Dr. Edwards obtained Ph.D. in Systematics and Ecology at the University of Kansas in 1974. And he was Executive Director of the Association of Systematics Collections from 1973 to 1986. And in 1986 he joined IUCN as the Head of the Species Survival Programme in Switzerland. And in 1991, a new Programme on Sustainable Use of Wild Life started, and he has been serving as the Programme Director. He published so far more than 150 articles on, for example, "Status of Wild Species on Museum Collection Management", and the latest article is "Sustainable Use of Wild Species".

And we are very glad that Dr. Edwards has kindly accepted our invitation to provide his vast knowledge and experience under today's topic. And I do hope that this seminar will be really helpful and informative for all of us here.

And could you now start, please?

EDWARDS: Well, I have to turn on my microphone and organize myself.

I was interested to hear in the introduction that IUCN's; — the emphasis

is placed on conservation and species survival, and our best known works might be headlined with the Red Data Books. But, in fact, we are something much more than that. IUCN today is a working partner with many development assistance agencies around the world, including Norway, Sweden, Denmark, Switzerland, the European Community, and to a lesser extent, the U.S.A., the United States Agency for International Development.

I think that this partnership is a consequence more of our recognition at the technical and administrative level in IUCN, that we cannot achieve our goal of conservation unless we work in partnership with development agencies; — development agencies are established to, in fact, enhance the quality of life of people on this planet.

IUCN recognizes the importance of working with people. We have many programmes that are directed to that end. Mine is just one of them. I work in the field of sustainable use of wild life. Others include the wetlands programme, or forestry programme, or a programme for social sciences, and so on. In fact, only our parks and protected areas and species survival programmes still remain more focussed on the traditional approach to conservation.

Now, in this talk today, I have chosen a title "Sustainable Use: A Model for Conservation with Development". I have chosen these words carefully, because I want to underscore two points. First, I want to emphasize the relationship between conservation and development. Then, secondly, by using the word "model", I want to underscore the fact that we are still trying to develop a better understanding of what we mean by "sustainable use".

Now, in this talk, I would like to start by reviewing some major international events that have set the stage for the use of this word "sustainable use". I would like to, then, introduce what we call "criteria" and "requirements" for sustainable use of wild species. Then, in that context, I will review my programme and some of the activities that we have undertaken in the last two years, specifically in the area of project development, field projects. And on that basis I would like to examine, if you will, factors that we see are important and actually working with human populations in managing wild resources. And then I would conclude by identifying what I view as some of the major issues we will be facing in the future.

So, with that, let's start with the global perspective, what we are talking

about in terms of major events that have led us to this stage.

Please keep in mind that the international conservation movement really dates to post-World War II. As you have seen, this was noted in the introduction; it was founded in 1948. WWF was not founded until the mid-1970's. Most international conservation has that life span.

In the early days of IUCN, its name was actually the "International Union for the Protection of Nature", I believe, when it was first founded. And that may be one of the reasons why we are still viewed as a protectionist organization, which I can assure you we are not.

But the world pretty much focussed itself on species right up through about 1972 when there was a major event in Stockholm. I notice in JICA's promotion material they referenced the Stockholm Meeting on the Environment. At that meeting, a stage was set, maybe is a better way of saying, a framework was adopted and agreed to by the Governments of this world to, in fact, elevate the environment to have higher profile in our international political and diplomatic discussions. Many agreements were made, one of which led to the formation of CITES, Convention on International Trade for Endangered Species of Wild Fauna and Flora.

Beyond that event, that is, the structure and formation of CITES, and I might say as a footnote that I have attended all but the first meeting of CITES, so I have a fairly broad historical understanding of the development of this organization that we call CITES. I have seen it range from a tent in Botswana with all of 75 participants sitting in the sweltering sun to a major international event in Kyoto in 1992, where most of the states were represented by their Ministers of Environment, rather than the Wildlife officers that were the state representatives in the early days. So, it has undergone quite a change in and of itself as an instrument.

But, I think the next major point in the evolution was in 1980: My Organization, IUCN, published the World Conservation Strategy. 1980, starting in 1948; 1980, we articulated a role for the human beings as part of the conservation equation. We stated that sustainable development was an objective for conservation.

Between 1980 and 1990, we elaborated a programme that involved wetlands, forests, marine and coastal zone environment. We have desks for various regions

of the world; we have become a rather elaborate organization. But there is no constant focus on the human dimension. And the words "sustainable use" had not been researched by my peers, by my colleagues in IUCN.

It was at our General Assembly in 1990, in Perth, that our members formally adopted a resolution calling for IUCN to research and test the concepts of sustainable use of wild life. And as a consequence, my programme was formed.

Now, since 1991, or 1990, a number of major actions had taken place in the world. First, we have the publication of carrying for the Earth by IUCN, WWF and the United Nations Environment Programme in 1991, which is sort of a sequel to the world conservation strategy, but it broadens the scope of the human dimension of conservation. And that was followed quickly by the establishment of the global environment facility, by the world powers, if you will, the G-7 and others, major contribution to the environment. We have the UNCED, the United Nations Conference on the Environment and Development in Rio in 1992. And at the close we have the almost unanimous adoption with the states, except for my own state, of the bio-diversity treaty and the biological diversity convention, I think, is its correct title, and the adoption of Agenda 21.

Now, what is important in all of this is simply that we have gone through a rather remarkable evolution in the last three years based on a stage that we have set in the 1970's leading up to the 1980's. We now place human beings central, like in the center of conservation. They are not peripheral to it; they are part of it. They are not the problem; they are part of the solution.

Secondly, all of these instruments endorse and support the concept of sustainable development, and in some instances, go so far as to actually articulate a role for sustainable use of wild species.

Now, keep in mind, it wasn't until 1990 that we started to research this concept: What does it really mean?

But irrespective of our knowledge, we have a global acceptance of the term. And so we have a conflict where the term is used inappropriately in some circles; there are those that are in industry that would prefer to exploit and say "we are sustainably using something". On the other extreme, we have people such as myself who are very concerned about the concept and the fact that if it is misused, that is, if the term is misapplied, it will lose its value. There is, in my mind, a very important role for sustainable use of wild species as an instrument

for rural community and national development.

Now, as a programme, when I first founded this programme, or established it, started it, I adopted basically four goals. Those four goals were:

No. 1: To develop field projects in different parts of the world that we could use as a means for gaining better understanding about what we mean when I use these words "sustainable use". I am sure all of you have heard of Zimbabwe and its use of wild life in sport hunting and for rural community development; — it's a very, very popular programme to be promoted, called "campfire programme". But very few other countries were actively involved in managing wild life in some structured manner for use in community development. So, the first objective or goal was to develop demonstration projects.

Secondly: We felt that there was a need for a standard. We all use the word "sustainable use". What do we mean by that? What is the international standard? I will come back to that in a few moments.

Thirdly: We see a need for enhancing the capacity of nation's, government's, if you will, Wild Life Departments, and NGO's, in their understanding and actual implementation of the principles of sustainable use. If we take a pool amongst my colleagues even, international, have a meeting, we all sit around and we ask ourselves: "What does 'sustainable use' mean?", often I would get different answers from different colleagues depending upon what culture they were from, what country, what part of the world that they were in, what influences they were under, whether it was a North American influence, in relation to South America, or if they were under an African influence in relation to Europe, or an Asian influence in relation to Japan, and that's basically the pattern you see internationally.

The last objective was to provide mechanisms for communicating our greater understanding. It's one thing to develop this understanding; it's another thing to get it communicated internationally. And I might say that that's one reason why I am here. But we, practically speaking, are doing our best to publish articles, to do reviews of the concept, to circulate as broadly as possible what we are learning as a result of our investigations.

Now, with that, let's turn off the lights and enjoy ourselves here for a moment. Everybody likes talks with slides. And I must admit that I have an optical problem, which means that simply to see it distances, somebody will need

to turn on the machine.

All right. We are now ready, again. This is like working in a developing country village; — this idea with all of the electronics, anyway, in middle of all of this! — I have an eye problem, which means that I have to take my glasses off to read at times, but to see distances, I have to have my glasses on. So, pardon me as I get into my pantomime to go through this.

But, I mentioned the demonstration projects. They have let us to prepare what we are calling "Guidelines for Sustainable Use of Wild Species". And today, as a result of the committee, the title is slightly changed, and I will read it slowly, or repeat it slowly. They are: "Guidelines for the Ecological Sustainability of Non-consumptive and Consumptive Uses of Wild Species"; short version, "Guidelines for Sustainable Use". What do we mean by that?

We mean, first, as a criterion: We must limit our concerns to the biological capacity of species. When we say "sustainable use", in general, what we are saying is: beasts and plants on this planet reproduce. They produce more babies; they will live to old age. And it's appropriate to reach in there and take out of that pile of babies a certain number that we can use for our benefit. We, as human beings, have been doing that from the dawn of time, since we stood up right from our sisters on this planet and started actually developing as a species our own capacity. We are totally dependent upon uses of wild species.

So, as a principle, what we are saying is: The future use potential is not reduced. You don't take so many things that the total number of young is reduced within that population. We have used the word "target population" fairly carefully here. It is that group of organisms that are being harvested.

We also say that we do not want to impair the long-term viability of that population. Two sides of a coin. We are saying: You don't want to take more than you need today, because if you do, in a long term, our grandchildren will not be able to use that same resource.

Now, it's just simply a matter of extending that concept to an area or a habitat, or to an ecosystem. If you are taking one species out of a forest, that species is dependent upon other species, and in fact, has an influence on a broader ecosystem. And we have just in our criteria extended the same principle to the other two, if you will, tiers of this equation, levels.

Therefore, requirements will become much broader. The requirements are

based on the biological principles that I have just described, but they obviously involve a broader area of concern. If you are going to use a species, no matter what it is, a plant, an animal or an insect, or if you are going to use a habitat for eco-tourism, you have to have some information about it before you start. In a business context, you do not start to manufacture shoes, or chewing gum, unless you know something about the product you want to produce. That is what we are saying.

We are saying that you need to have an adaptive management programme; — "adaptive", a key word. "Adaptive". It means that you may not know everything. If we require that we knew every last piece of information about a species before you used it, we would all be sitting in the cave, so to speak. It is not possible.

The white-tailed deer of North America probably is the single most studied vertebrate in the world. The volumes of literature that has been produced would fill this room and probably another, and we still don't know other areas to know about the white-tailed deer. So, what we are saying is: If you are going to use this species, you do it adaptively. You make decisions that have feedback loops to give you further information, so you adjust your management to compensate for new information as it comes along.

Wild life, in particular, in most countries of the world is the property of the state. It does not belong to us, the citizens. It belongs to the government, if you will. And as such, if it is going to be used, there has to be a proper legal framework within which that use takes place.

Social and economic incentives, be it a landowner or a person from a rural community, if I am going to be encouraged to conserve something for the future, or to manage a resource so it is available over time, — I am saying the same thing using different words, — I need to recognize to get, to receive some benefits for that. That's why people go into business. You don't do it because it's fun or you might like it, but you do it because you want to make money. Practically speaking, the world over, I have not been in a village, from the deepest part of the Amazon to the highest part of the Hindu Kush in Northern Pakistan, where people don't want to make money. It's there. It is a myth that people want to do things because it's fun or because it's a traditional way. Yes, they may want traditions. But they also want money. The reason is our society globally is

different today.

And lastly, what we are saying in this sentence of "Gavley Grook: Precautionary principle and safeguards." What we are saying is: Be conservative with what you do. Don't go for the total profit in one year. Don't go for the full development in one year. Go for something on a conservative level. Because, like it or not, most biological systems are not well understood. Biological systems remain in mystery to most of us, even those of us that have been studying it our lifetime.

So, in short, be conservative.

Now, I mention that we undertook certain demonstration projects, and I want to go through a couple of them and describe them a little bit, so that it will make the rest of the lecture a little bit more clear.

One project that we undertook, the subject of it was the vicugna; — absolutely remarkable animal from Chile, Peru, Bolivia, Argentina, Southern Corn of South America. This animal was quite endangered some twenty years ago; the Government of Chile listed it as "protected", "cease to all harvest". Its value is in its fur, its fiber. Fiber, cloth woven from the fiber of this animal today sells for 1,000 dollars per meter. Vicugna content in the neighbourhood of 1 percent; — 1 percent, and they still get 1,000 dollars a meter. It's the most valued cloth in the world.

We had a little conflict here. This animal co-exists with people, a local Indian community called "Aymara". They raise llama and alpaca as livestock. — These are camels, by the way; they just don't have a hump. So we call them "South American camels" to discriminate from the Asian ones, and the African ones. But anyway, this is a South American camel. And it has two cousins that are livestock. One of them is called alpaca, the other one is llama. They live in the same area. The people derive their income from alpaca and llama. They are not allowed to touch this, and yet it's so valuable.

Now, they are either going to do one of two things. They are either going to get value from this, or they are going to kill it. Because it's competing with their livestock from which they get money. The Government of Chile came to us and said: "Will you help us find a way to share the value of this species with the local community and at the same time ensure that it's conserved, because that is our responsibility as a government?"

Second project is in Nicaragua. This is a country in Nicaragua.

This is Leon in Nicaragua: Managua City is right here, the Capital. In Nicaragua, there was a community that likes to eat what they call "Black Iguanas". They love it. It's a big lizard; lives in the ground. They have been eating it for generations. They came to us and they said: "We would like to ensure that there is a harvest of these iguanas for a long time." I might also add that they sell them. They sell them through the back-door to El Salvador the eggs. El Salvadorians love iguana eggs, and they picked quite a bit for me, actually. And there may be some potential for long term of selling the animals, the pet trade, right? Because people like to keep lizards, I guess, in America, anyway.

But the real intent of this project was to develop a management programme for these Black Iguanas. And I should say that in all of our projects, we work through local agencies, local NGOs or the government. Usually we provide a partnership, relationship between them. And the actual development of the activities are the responsibility of the rural people; not us. So, when I talk about later about the management plan that this community developed, it is their plan; it is not ours.

This is the setting in the center of a village in Guatemala. It's rather unusual. They have in their front door a Mayan ruin. This community has been traditionally harvesting, and their principal income is from a series of wild harvest. One of them is wild gemmate, which they hunt, which they sell to restaurants. If you go to the Peten, a tropical region of Guatemala, you will find that virtually every restaurant sells a "goodie", which is a rodent, a large rodent, and it comes from rural people like; — they live in a village like this; they go out and hunt. And they shoot it, and they sell so much to the local restaurant, and they eat so much for themselves.

They also, people in this village, harvest chicle. We all chew gum; gum has chicle in it. It comes from this part of the world among others. They also harvest a substance called Old Spice. If you ever smell, they have to shave cologne Old Spice. That is the aromatic ester, but it is also used in food preservation.

Thirdly, they harvest what they call "Chattae". It's a floral — it's small palm leaves that they sell for the American florist trade.

Now, mind you, they are doing all of that while they are sitting on top of

a gold mine. They are sitting in middle of the ruin that has tourist attraction. It's about 20 kilometers to the next city, next village. It took an average of 12 hours to drive that road; 20 kilometers. You would literally go down into the sikh, you put your cable up to the next tree, and you would pull yourself to the top of the next rise.

A man's son died because he couldn't get his son to the doctor, in that village, with that ruin. He did not have enough money to pay for a vehicle to take him out. He died of a snake bite.

In Pakistan, we have a national programme in the northern; — this is the Hindu Kush, K-2, second highest mountain in the world. We are sitting over here. These are native upper-cut trees. And that must be a yak. We are high in the Hindu Kush. We met with over 25 villagers throughout Northern Pakistan; talked to them about what they wanted in terms of management needs of wild resources. It's an extremely poor part of the world. It's a little hard to grow crops, on rock. And that's what they have to live with.

As a result of our discussions with those villagers, we have developed a regional programme in Pakistan, that has been approved under the global environment facility. And by the end of five years, we expect that over 100 demonstration villages will actually be managing wild resources in conjunction with their villages. Probably, the most important lesson we learned with this project was how to work with rural communities in terms of organizational structure, decision making processes, and the like.

We are now in Niger, West Africa. Niger has probably the most deprived environment I have seen in the world. It has been totally eroded. It is at the southern edge of the Sahel. Desert is advancing on them daily. On this trip, I drove a road; one day it was solid; I came back a day — three or four days later, and it was sand. It's a dynamic real process. And these people are losing as a result.

We have just finished developing a project there in managing a palm tree. It's called "Lonier"; — "Lonier Palm" has more uses than I could ever imagine, ranging from taking fibers from the leaves, which they make fish traps, to the use of the fronds for making thatch for the roofs, using the spine of the leaf to making furniture, fencing. They eat the fruit; they use the tree for livestock fodder as well as for construction.

So, again, we have a case where: — we went into the villages; we listened to them, we have heard what they wanted, and we have developed a project around that. I have to say that three weeks after we developed the project, the Swiss financed it.

In Southern Africa, this guy is one of what they call "big ten" or "big five", I never remember, but it's a sport hunting animal, that's a water buffalo, Cape buffalo. The animal, for a Western hunter, and some Asians, feel quite comfortable in shooting this animal, and they pay quite a bit of money for it. What's maybe more important is to shoot one elephant, they will pay 25,000 American dollars.

Programme in Zimbabwe called "Campfire", — we will talk about it later, — has emphasized the use of sport hunting animals as a way of generating cash income into the communities. And it has done an outstanding job of that.

So, now, what do we mean with that sort of introduction to our projects? What do we mean about the different parts, the different factors, that go into examining sustainable use? And I have broken them down into four areas. The first of it, which is biological; we will then talk about social; we will talk about legal; and then we will conclude with economic.

I want to also say that this list that I am providing is not exhaustive. I was asked once; — I am at a task force in China. And my colleagues, Chinese colleagues, asked me: "What rules do you operate on?" And I said: "Well, no, there are none." And they kept pushing and pushing and asking me, you know: What rules did I use to make my decisions? And finally, under that pressure I paused, and I said: "Well, I guess I can only think of two.

The first one is: There are no rules. You develop your projects based on the conditions, the situations, the resources, where you are working. It is extremely difficult to take the principles that I learned in — well, the facts, the specifics that I deal with in Nicaragua, and transfer them to Niger. They don't work. They are in different parts of the world. They don't think alike. One place they love lizards, and the other place, chameleon, and in Niger, it's a taboo. They wouldn't touch it if their life depended upon it. It may have economic value, but for me to convince a villager to manage it as a resource would take an act of faith way beyond me.

My second rule is simply success or failure depends upon the individual that

does the work; has nothing to do with the ideas. If you have a good person administering and managing a project, you can have an absolutely terrible idea and it will work; it will become a jewel. You can turn an inside out and have a beautiful idea, and if you have an incompetent, incapable person on the ground, and it's going to turn out to be garbage. So, with that said, what you are seeing, please, you can draw certain lessons from it, but they are not global lessons. We are going to continue to learn as we go.

And this list is not exhaustive. But they do highlight the major points that I will make. We need to know something about the status of the population, its reproductive requirements, something about its food, what it needs to have as a habitat, and in some cases we have to actually take into account the nonbiological parts of its habitat, which we call "ecosystem"; — rainfall, whether it's subject to earthquakes, that sort of thing.

Let's go back to our vicugna, wonderful animal. I love it. Well, in 1972, there were 2,000 animals, and in 1991 when we started, there were just under 30,000 animals. One of the benefits of this project is that the Government has been studying the animal for twenty years. They knew where it moved; they knew what it ate. They knew something about its behaviour patterns that forms bachelor herds at different parts of the area, and then, harems where one male associates with a certain number of females. So, the biological side of this question was very very well known. What was missing was the social side, because all the time that they have been working on the biology: The Aymara people were sitting there watching them, and not part of the process at all. They didn't know one thing about it. And if I said CITES, which is as listed under and controlled under, the local chap wouldn't have the faintest idea what we were talking about.

I mentioned in Guatemala they harvest chattae. This substance is delivered to the flora market. This has been going on for years. In this case, we don't know anything about the reproductive behaviour of that particular plant. Does it need an insect in order to reproduce? Are they over-harvesting? What is the law? This is one species, the second species, and I think this is the third species, and there are actually four that they are now harvesting.

One question, when you link biology with marketing is: Do they need those four species? Are those market demands that they are responding to? If there is

a biological question with one of them, let's say that one has a very peculiar life cycle that requires some animal to disperse its seeds. All right? And what happens if that animal is rare? Well, you know, maybe the marketplace could shift its demand to compensate for that.

So, these are some fairly sophisticated questions that we are beginning to learn. But in this case, we definitely need to learn more, and we have set up a process working with the community to set up a quadrats, and this sample, within those quadrats, the density and to determine the actual status of these four species in the wild.

Interestingly enough, we were able to do that. At the same time, we are looking at the gamete problem, because we are using the same quadrats to do the surveys.

We are back in Pakistan. This is how they solved their agricultural problems. Each one of their stones is laid by hand. This is a terrace. It goes up several meters into the valley. In this case, most wild species are diplopod. What we learned from the villages is, even though there aren't good data, within each village there is a hunter, or two or three hunters, and those hunters were able to give us a fairly good idea of the status of ibex; — it's a mountain goat, which they particularly like, and they were able to tell us something about why the population was depressed. In this case, it's because of the government: Military people like to shoot ibex and they use automatic weapons.

Now, this, you know, this is a rather sensitive issue when one is talking with the government about a national programme, but we have been able to deal with that.

But it was also clear to us, when we started developing this project, that if every village wanted to do, let's say, sport hunting, for ibex, it would be rather silly. It means that neighbouring villages would be competing with each other. And No. 2: I doubt if there are enough hunters in the world to satisfy the demand.

So, we had to come up with the way, when we developed this project, of looking at alternative uses in adjoining valleys. And we have done that. Some valleys will be tourist oriented. Some valleys will be sport-hunting oriented. Some will be fishing oriented. Some will be honeybee management oriented. In each case, the villagers will make the decision, but we will provide some gentle

guidance as to what options are available within a certain area, so that we can avoid the conflict between adjacent villages.

This is the baobab tree. As we were looking at our Lonier Palms, we have also discovered that the same villagers use this tree for a number of things. We happen to know a lot about Lonier Palm distribution. We didn't know a lot about the reproduction of the baobab tree. I can tell you it takes a long time for that tree to get to that size. But you will note that this tree has got kind of a lighter area here, and that's because the local villagers have been stripping off fiber part of the bark that they use for weaving with.

So, in this programme, when we are going to start with Lonier, from a biological standpoint we are also going to be looking at the need to gain more information about the reproduction of that species.

Now, probably one of the easiest to grasp in terms of ecological relationships is the African savanna. I am cheating a little bit. These photos actually came from Namanga, which is in Kenya, and not from Zimbabwe. But just believe for a moment. We are thinking Zimbabwe. The same animals are there.

This is the King Abyss, pap and mom. She is the hunter, by the way. Under the tree after a hunt, they have eaten and they are happy. But we know something. We know an awful lot about the behaviour of this animal. This also is subject for hunting. But I am underscoring — using this to underscore the fact that we need to consider the status of the prey species that this animal was dependent upon. If the prey disappears, it will disappear.

In fact, throughout the whole of West Africa, I met a man in several — two or three men in several villages in Mali about a month ago, and in separate dialogues with them, discussions, I heard from different individuals that they had killed the last lion or the last leopard in their district. You think about that. I mean, this is an old man, but he is saying that in my lifetime, in his lifetime, he killed the last one. Now, once he killed that last one, that really changes the relationships between the animals in that area. If you have an increase of another predators, by the way, you get a lot of avian and fox moving in; — eagles, predators of that nature, snakes go up, the rodents go up, because you don't have the predators to keep the rodent populations down. You get the whole dynamic changes.

I use this slide because it kind of illustrates when you have to package all of this together and you think about it, biologically, we now have a species, we know a lot about the biology of it. We have to now integrate that species with its environment; — grasses, the water.

In this case, that is a high mountain lake. In this region of the world, the amount of rainfall is virtually zero per year. It's a matter of maybe 50-60 millimeters in this high plain. It all happens at a fairly low period of time. Most of the vegetation survives on the basis of fog that comes in periodically, and they get the moisture from the fog.

I got my slides a little out of order. Here is our guy from one of the food subjects of the lions. It's a Thomson's gazelle; another food source, warthogs; — great animals to watch.

Now we are back on track. If we are talking; — this is in Niger, a wet land in Niger. I mentioned the baobab, I mentioned the Lonier. Another resource that the locals harvest is a fish. When this dries up in the dry season, you will find that fish in capsules of mud in the ground, and it stays that way for several months at a time.

Now, the locals have a rather strong ritual, rules, if you will, on how to win and how many they can harvest of these aestivating fish that blew into the mud from these bowls, and they stay there during the dry season. In talking to the locals, they had very strong rules about how they could be harvested, based in part on an understanding that that animal was part of the dynamic of this whole ecosystem that we call the "wetland".

When we take this concept; — this is, we are back in Guatemala, and I use this slide: These are temples; — different part of the region in the village where we were working with. But if you think about the entirety of what we are trying to deal with here, manage as an ecosystem, this is a tropical rain forest. It's very complex, very diverse. If we think about the fact that we are trying to maintain this whole system, it becomes rather mind-blowing, if you will, in my American slang. It's such a huge problem: Where do you start?

And I think the answer is we start at the bottom; not at the top. We don't look at the ecosystem first and then work our way down; you start by working with the individual resources that are used by these communities. You work out the reproductive, the biological aspects of the management of that species,

through the literature in some cases, in other cases through direct research. But all of that needs to be packaged and delivered for social; — in a social context.

If you recall in my earlier introduction, from IUCN's perspective, "sustainable use" means involvement of people that live with the resource. If they are not involved in the process, we do not have a connection to conservation, be that a landowner or a rural community.

We talk about incentives, benefits that they recognize. If they recognize benefits, they will, in fact, make commitments. Often, in order to fulfill those commitments we need to look at capacity building. They may not have the technical knowledge, the technical skills, to actually do things. And finally, there needs to be some mechanism within communities, or even in landowners, to make decisions in organizational structure.

That's me, one of the beard. It's Aufain in Pakistan, that we are here. I said; — we needed to learn something about the people and what they wanted. And often, that's the hardest, and it seems to be the most avoided part of this whole area of development. I have been in too many villages where outsiders deliver the answer, or define that the locals really didn't ask the question. What you have is the case of people being told what to do by outsiders without much understanding of what the real problems are at the local level.

Sometimes it takes a little bit of work. We are going across this river by a boat. These are goat skin, cow skin and yak skin, bellies, I guess, that they use to float it. Sometimes you have to climb in rather arduous places. This is about a 2,000-foot cliff that we had to climb to meet with the village.

This is in Guatemala, I believe. We were meeting with various villagers, to talk to them about what they want to do.

Back in Pakistan. I am sitting on the roof of a man's house. These are the village elders. I always work with counterparts from the communities. They are learning from this community what they want. I didn't come to tell them what to do. I came there to listen and to hear what their objectives were.

You can see that they are rather interested. They came from all over, in certain villages, as our presence was known, and became more public. Higher people come to the hotel. I had villagers actually come to me and tell me that they had banned sport hunting in their valley; — had stopped it. They had sent a delegation at a local radio station to inform everybody that hunting was no

longer allowed in their valley. And if you came to their valley, they would confiscate your gun, and they would fine you.

And I looked at the man, and I said, "Well, have you done it?" And he said, "Oh, yes, twice." And I said, "Well, what, you know, did you collect a fine?" He said, "Oh, sure." I said, "Well, how?" He said, "Well, we just keep them," and you know, one of the family members brings the money. And they are serious about it.

What I am saying is; — Oh, I also asked them what they did with the money, what did you do with the 10,000; — the fine in that case was 10,000 rupees. Now, 10,000 rupees in this economy was a huge amount of money. And they looked at me and they said, "Well, we bought trees and we planted them." All right.

Now, nobody told them what to do. This is a community in the farthest point in Hindu Kush. This was opened for the first time to outsiders in 1976. Part of that; — this region was ruled by a Raj. Even though it was within the territorial borders of Pakistan, a king who extracted donations, if you will, from these people, every month of their lives. One of their donations was silk, one village where they were working with. The day the Raj was kicked out because there was a rout, the village went out and chopped down every mulberry tree within the walking distance, because mulberries are used in the production of silk. So, there was a very very strong feeling amongst these people. They are very proud, very independent, and they are surely not going to be told what to do.

The same story in West Africa. We are sitting with a group of Nigerians talking about what they want. I was there again a few months ago. The same process. It's slow.

In Southern Africa, the same process. Another baobab tree. This is a village in Zimbabwe, talking about what they want to do. But out of that talking, we get an idea what really they want, and what benefits they will recognize; and if they can recognize those benefits, how we can turn that into a commitment. Often it takes training.

In this case of technical development; — and this is back in the vicugna, the camels from South America. One of the problems we have; we didn't want to kill these animals because they are rather cute and cuddly. And all I need is; — we have an animal welfare organization take a picture of an animal being killed. In vicugna, it would be all over.

Secondly, there is no reason to kill it. They don't particularly want it for its meat. The local people really only wanted to share the wool, the fiber.

So, what we did was we researched the traditional Inca way of harvesting or catching these animals. And they used the stone corral, very much like the shape of this room. If you just bend these desks a little bit, and spread them out about a kilometer, made out of stone, and then ran it down like a funnel until they got to a narrow neck, and then it opened up into a big balloon, in which the animals were trapped. And then, they would jump over the wall, if you will, grab one and shear it.

That's basically what you are seeing here. This is a netting that we have set up in a large arc. It's below the crest of the hill, and the wings of that arc go out for about two kilometers. And we ran the animals across this high plateau until they are caught in the bottle, in the wings of this trap, and they gradually get narrow and narrow and narrow. They have very good eyesight, hence the back of the trap is below the crest of the hill, and so they come across the crest, drop down, and then, they are in the bowl of the trap.

That way we had a little problem with animals running up against the back of the fence and hurting themselves, or in a few cases, killing themselves breaking their necks. So, we have added to this a certain devise, so that animals would not hurt themselves.

We provided local people with certain technical information that they were incapable of getting themselves. And we will continue to work with them. By example, they get a produce of a cloth. They can't weave it. Under the rules of CITES, local people cannot weave that cloth. It has to go to a textile factory. We are going to have to help electric textile factory. What's going to happen to the product? I will talk more about that in evaluations or economic section. But we have made a standing commitment to continue to advise and assist this community.

We are back in Nicaragua. This is their plan for managing iguanas. They said, "Okay, we are going to build a corral and put two thousand babies into this corral." That's the corral. It's the cage, an enclosure. We paid for this. We paid for some survey work to establish the status of the wild population. We paid for a map. We provided consultants from the local university. All of that

information were to the community. They made the following decisions.

First, they built a corral; they put two thousand babies in. They have about 600 hectares of natural habitat next-door to the village. They would set up half of that, 300 hectares, as a no harvest zone. When the babies reached about six months age, they would take three/fourths of the babies out. When they put them in, they were about like this. When they took them out, they were about like this. Now, when they are this size, they are very vulnerable to predation. Other things eat them. But when they reach this size, they are pretty much on their own. They will grow up to adults. So, they were compensating for predation, stopping the predation on the babies by keeping them in this corral, protecting them, and then, releasing them into the no-hunting zone.

And then they cleverly thought, "Okay, we will move into a hunting zone the other 300 hectares, and that's where we will harvest, and we will set our harvest level at the number that we have introduced into the no harvest zone."

Now, what they have done is they have set up a sort of a species pump. They take these animals, and they put them into no-harvest zone, until it becomes super-saturated with that species and they cannot support it any more, and they begin to disperse out into the hunting zone. And that's where they hunt them. And that design, that model that I have just described, is that village based on the information that we provided.

To reinforce that, to give the government confidence, we invited specialists from the University of Guatemala. This is in Nicaragua, so we invited specialists from the University of Guatemala, to come over and look at it and evaluate it. They said it was a great programme; again, technical capacity that we have provided.

Organizationally, I mentioned that the Pakistanis are probably the most sophisticated. In this case, they build a house, a building, just to make these decisions.

This village that I am sitting in has actually constructed a school. It's very highly sophisticated; an English speaking school, voluntary amongst the people in the village. And the latest endeavour was to; — they have their own power station that they have put in, and they are looking forward to charging neighbours for power. They have a generator, so they have got a billing system that they have set up for actually selling their power elsewhere. But they are very

interested in managing wild life.

Here we have got a case in Zimbabwe. And they are actually looking at the mechanisms for establishing quotas for harvest. The community is sitting around at this discussion; they are making decisions about how many animals of different species will actually be sold as sport hunting animals. And you need to understand, when they do that in Zimbabwe, they are selling individual animals. They know which one, and they sell it at a wholesale right to a safari operator. So, this rural community is making their decisions about how many of these different species they will actually make available from their region for sport hunting.

Legal factors. National policies: Well, that really is, sort of, in a way, a benefit, and yet it's a problem. Virtually every country I go to will be quick to say, "Yes. We endorse sustainable use. It's a national policy." But when I ask them about their laws, most of them do not have laws. In fact, only two countries that I am aware of in the world have laws that express lease, grant rights to users, local people, landowners. In most states, ownership is in the hands of the Government. Or, in the case of Zimbabwe, it's still in the hands of the Government, but they, under law, allow people to use it.

Most of what we see of law in developing countries in regards to wild life is a product of the colonial era. If you go to Indonesia, what you see is Dutch law. If you go to West Africa, you see French law. If you go to Latin America you see American law or Spanish law; it isn't a case in a British law in Africa. And in northern developed systems, wild life historically was the property of the King, not the people. And that has just been converted into local legal systems.

So, there is very much of fundamental need to look at this relationship between user rights, access rights, and the legal system of the country.

Second point: Enforcement. We, sitting in our ivory tower of, — I don't know — Washington, London and Tokyo, possibly, have this image of enforcement. It ought to be easy. It's a snap. It is here. But if you are sitting in Niger, and you are thinking about; — you have a Wild Life staff of five, or Guiana in South America, two people for the entire country, any percent of which is still natural, one of the largest producers of wild life products in the world, or Indonesia, where they may have 3,000 people but they have got 17,000 islands, 13,000 of which are occupied — distributed over an area wider than the

United States of America, three time zones. How are they going to control things, enforce activities?

And finally, they have to have some administrative capacity to actually do this. They have to have a record keeping; they have to be able to review things; they have to give licenses; they have to review processes.

Coming back to our fuzzy friends of vicugna, what we have learned in this was, in fact, the local people don't have a right to use it. And we have had to go through a rather elaborate process of forming a collective, where legal consultants advise us, or advise the village, I should say, and they will be setting up a collective of the Aymara people, and that will be granted legal rights to use this resource. Traditionally, the legal system stopped at the point of saying "you can't touch it." "It's fully protected." Today, the legal system in Chile is being examined to allow local use of the species.

Another traditional way of handling things is to designate a refuge. It's a national park, and it's protected. — Well, I have been to a lot of national parks around the world. And most often they are not really a form of protection. They are not adequately supported.

In this case, because we have got IUCN as part of the government agency arena, we are working together, and in fact, the local people are becoming part of the police force. They are enforcing the rules themselves; they are stopping the neighbours from taking things.

But if you think about it; — you know, this is out in the middle of nowhere. It's just a village some place. Do you think a government can get to this place to stop somebody? Most Wild Life Departments are police-men. If they do get there, and they find that somebody has done something, they arrest them or give them a fine, and there is no relationship existing between Wild Life people and these villages. They don't have a sense of extinction, a sense of helping these people. They have only a sense of policing them.

This is in Niger. We are in the middle of nowhere. I mentioned the desertification. One of the problems causing the deserts is the loss of trees. This guy is a poacher. That's his load of wood. He is about 200 kilometers south of the Capital, and that load of wood is going to go to the Capital where it's going to be sold for firewood, to cook with, made into charcoal.

During about three hours while we were in this place, I saw four of those

trucks go by. There is no way in the world that Niger Government can control that. Because somebody is making money, and the sad part actually is, — I was sitting in the village over here; that's our vehicle, and they are scooting around the side, and I have turned around and took this picture. That village is getting nothing from the value of that wood. All of it is going into the pocket of this guy and probably the guy that owns the truck.

And yet, the consequence of this act is: That village will be poor, not just because it didn't get money from this, but because its environment is degrading as a result of this. The Government of Niger is not capable of policing it. And they didn't have a law at the time. I am pleased to say that in Niger, they now have a law that actually does grant rights of people to use it.

Now, probably, one of the more interesting elements of this equation from your perspective in JICA is the economic side. Valuation: — Most of us, when we think about wild life harvest, kind of think in the terms of CITES, international trade. But in reality, that probably is less than 10 percent of the total harvest that are taking place in the world. In most developing countries, rural communities to this moment are highly dependent — 75, 80, 90 percent of their use, their subsistence, survival, if you will, is based on harvest from the wild.

If you go into the markets in Mali or Nicaragua or Guiana and you look at the things that are being sold, in those countries, in the rural markets, not in the downtown city markets, if you go out into the field, into those villages, and look at the things that are being sold, you will find that a large number of those are wild harvested.

And yet, the governments do not recognize natural production systems as having value. What they see as value is rice production, livestock, millet, corn, maize, whatever. Those are traditional value systems. But that natural habitat that's producing all of those things that those people rely on is not value. And it gets rather complicated when you look at the detail of that question. Markets; — often the market is local. It's village to village within a village. It's not even national.

I believe that — well, I will get to that later — supply and demand: If you are looking at wild harvest; — well, let's take the elephant, for example. That's a good example where demand got ahead of the supply. There was no mechanism

internationally by which one could put the brakes on the demand to affect — enhance the supply. If you are dealing with the wild resource, you need to consider in fact, particularly when that product is going into the international arena, how you can ensure that that demand will not outstrip the supply. Remember our criteria. You can't go beyond its biological capacity.

In Japan, you have the BEKKO industry. People have traditionally carved things from sea turtle. They are virtually out of business today, because the supply has been over-extended.

Now, I think that internationally we can play a lot with that. We can increase — if demand is high and supply is low, consequence in economics is we can keep a higher value. Now, the problem is: Is the world prepared to pay some of those prices? And I am going to tell you that one of the problems we have in this entire economic argument is the fact that we have been getting something for nothing for a long time.

If I am growing a chicken, and I am selling eggs, I can absolutely guarantee you that I will recover all of my costs in that egg plus my profit. That cost includes hatching the chicken, feeding it to get it to grow up, giving it medicine, taking a veterinarian to come and see it, building a hut, everything. But if I am out in the bush, and I catch a parrot, or a cockatoo, or a snake, and I am going to sell it, what do I recover? My time, energy, the transport to get it to the market. I have not paid one penny for its production.

And the reality is, internationally, we are going to be putting a lot more into managing these natural resources. Capital requirements are going to be part of the equation in managing natural systems.

Often, one of the more important elements to take into account is simply, local people already have actions; they are dealing with other things; they need to be involved in using that.

This is a greenery in West Africa. The local people know quite well what the value of that is. Under Niger law, they are obliged to grow enough millet to feed themselves. It's not a very good policy, because as the population grows in the village, they plant more millet. They plant more millet at the expense of the natural habitat. One thing that happens ecologically in this situation is, you plant millet, it's a nice grain that attracts birds. Birds eat the millet. Birds nest in trees. Don't want birds, chop tree down.

So, all you have is a cycle that is in fact enhancing desertification, or because the Government has in fact placed its value on food production, self-sufficiency at the village level. I am pleased to say that this has changed, by the way. Early this year, the Government of Niger adopted a new policy that has done away with this. But it's typical throughout West Africa. I mean it still continues in Mali, Chad and in many West African States.

But locals have a sense of value. They know where things go to the market. This could be in market any place in the world. And these are pieces of wild harvested. Some of this is commercially produced; some of it is not. And they barter it away. You know, I will give you two of these for that, or they change money.

So, the introduction of the concept of value at local level is not unusual. But what is unusual is that the local people really understands the true international value. If you have a thing, an item that is being harvested for international trade, a cockatoo, skins for the leather industry, fibers, it's very normal for the harvester, the chap at the bottom of the pyramid, to get about 1 percent of its total value. There will be a person that transports that from the point of harvest to the point of export, and they will get about 10 percent of that value. All right? You then move to the exporter, and he gets about 50 percent, and then, the guy at the importing end gets the rest. So, if you take 5 dollars, 50 dollars, 500 dollars, and then, it sells for a 1,000 dollars at the importing end.

So, that is a typical pattern that we see in virtually all wild life. But the guy in the village doesn't know it's worth a thousand dollars.

We are back to Southern Africa, in this village, where they were making decisions about harvest rates. This is the first village, actually, that approached the Government of Zimbabwe and asked to be part of the programme. Others had been encouraged to join the programme by NGO's or by development assistance agencies. In this case, they wanted to be part of it. And when they did, in the first year, they sold their hunting rights to a safari operator for 85,000 Zimbabwe dollars.

In the course of one year, the man you see there, his name is Brian Child; Brian worked with them and talked about negotiating skills. And he talked about their values. In order to do sport hunting in this region, that village had to move houses, families, from one area to another. They had to actually move

completely off of an island, in a river that goes by here. That village had to do a number of things to accommodate the sport hunting. And he said: Well, that's part of your debate, when you negotiate.

A year or two came along. These same chaps, after one year of gentle encouragement, training, sold the safari rights for 350,000 Zim. dollars, and on top of that, they sold photo safari tours access to their area for 450,000 Zim. dollars. This village went from zero to 85,000 dollars in Year 1, to 800,000 dollars in Year 3.

Now, you might be a little frightened what happened to the entrepreneur at the Safari end. Nothing. He made just as much money. Reason? He has a better quality product. He has more to sell. He is making more profit.

These guys took their money, I might add as a footnote. This is the first village also that actually received the money in cash at the bottom of the pile. Normally, this goes through a filtering process, but this one didn't. They said, "No, no. We want the money on the table. Thank you very much." And they did.

Before it arrived, this village made decisions about sharing the wealth with all people physically within the region, within their village area. Villages in Africa are just very disperse, so you can cover several kilometers. They, in fact, agreed that non-married women, divorced, or women whose husbands have died, would receive her share, and that old people. And those are traditionally in African cultures: — two parts of the village system that are most often left out.

If you are divorced, if you do not have a man to take care of you, tough look. This village said, "No. We will include them." And they shared equally. They divided their money between three activities: One: Cash in their pocket; each one got some cash. No.2: They built a greenery; established a committee to manage it, and raise money from it. So, other villages now come to them to get their grain ground. And No. 3: They, in fact, I think, hired either finished construction of a school, or they hired a teacher to teach at the school. They put money into education.

We are back to our friends; — this is a llama, by the way, — our friends in Chile. And we are talking; — I am going to use this to highlight co-management needs. There is no way that the local people are going to give up their tradition; — economic tradition, cultural tradition, on managing the species. It's worth a lot of money to them. In the middle of all of that, we still have our vicugna, and

we have alpacas. They are slightly smaller; the wool is finer.

As part of their management plan that they developed, it has been agreed that they will actually target 20 percent fiber content of vicugna with 80 percent alpaca, llama. Thousand dollars a meter value at 1 percent vicugna. That's what's available right now, in London. Vicugna cloth is less than 1 percent, 1,000 dollars a meter, 500 dollars, or 700 pounds sterling.

In this case, interestingly, that reflects the proportion of animals in the wild, if you look at productions from each side. You know, a llama produces so much wool per — a fiber per animal of alpaca, and if you look at vicugna, and if you mix all these ratios, you come up at about 20 percent. And it's a natural reflection of maintenance for the wild population. And we can maintain that status quo in the region.

Now, in this project, sort of an extension to the capacity building questions that I have mentioned, as well as the economics, we are now looking at the market side of things. Under CITES, the product of this enterprise has to go through certain — must meet certain restrictions. And that is our job to tell them what that is.

One thing is it has to be woven in a textile mill. But, who is the textile mill? Do we sell the fiber to the textile mill and let him make the profit? Or, do we go to a textile mill and pay him a fee to weave it, and we still own the cloth? To the Aymara people, have the technical people the role to find a market external, to Chile? I think Japan ought to be the principal target market, for a variety of reasons, and it's not just wealth. That has to do with the fact that England has stockpiles of what they call vicugna cloth, and it would mix up the whole problem. Japan does not have that problem, and it's clear they could make the value and they could still not deal with the other problem. And it would be a leverage to get the English to clean up their act.

But in the final analysis, we are going to now undertake a pilot shearing of 500 animals; we will produce about a thousand meters of cloth.

I will conclude. We have talked about biological, social, legal and economic issues. Sustainable use obliges that we balance all four. If you remove any one of those elements from the equation, it will fail. As simple as that, it is not a simple concept. It is one that will require our diligent management.

Then, I indicated in the beginning of my talk that I would like to now sort

of summarize what I see as the future. I see five principal objectives for the future in this area.

The first is the legal instruments. We need to have model laws that allow rights users to access and manage resources, but at the same time carry with it, if you will, penalties to ensure, and conditions to ensure, that resources are not over-exploited.

Secondly, we need to address the valuation question. The Minister of Agriculture in Senegal told me when I was there a month ago, "Natural habitat has negative value to me." And he, kind of, shook my hands. "Mr. Minister," and he said, "Well, I have to run a bulldozer to plow it on you before I can plant my rice."

And yet, at the same moment, I had been in the villages adjacent to that natural habitat, and I knew that those villages were dependent upon the production that is coming out of that habitat. If you find a mango in a village, it's produced in the natural forest. You drive by mango orchards, what happens to those mangoes? It goes to the processor for foreign export, foreign exchange earning. Local guy doesn't get it. Cashews; — anything else that is produced in mass.

Training: Point No. 3. We need to find ways to integrate social science skills with biological, technical understanding of management of resources. You cannot presume to undertake this type of activity unless the people that are working in the field have a clear understanding of the need to work with people on a one-on basis. I mentioned Wild Life officers tend to be law enforcement people. If you want to see a village disappear, drive into that with a Wild Life officer in your vehicle. I mean, he would just evaporate. Well, that isn't going to help. They have to become extinction agents in managing resources, rather than policemen.

Fourth: We need a more sophisticated approach at developing and monitoring and managing markets for wild life products. Put this in simple terms. If I take one — let's say, I have 10,000 hectares, in Indonesia. In Indonesia, they grant what they call "forest concessions", "logging concessions". Under their law, 20 percent of a concession areas holding is to be left for community development. Twenty percent of the logging activity is to go towards community development.

Now, right now, what happens is that they cut that 20 percent down, give the people a money, and that's the end of it. But what if we had that block of 20 percent? Let's roughly say it's 10,000 hectares. What if we were to come up with mechanisms to actually harvest and market the full spectrum of wild products that are produced in that forest; — fibers, spices, medicinal plants, animals, their skins as well as their meats, for local consumption and international; — butterflies, mushrooms, plants for the floral trade. You can go on and on and on and on.

The accumulated value that we see in that today, in that forest, one of the main problems we have is we don't have markets for it. We don't have ways to deliver it. Because one village only produces a small amount. So, you need ways of aggregating village production. You don't want villages to compete with each other. So, you want to put them in different cycles. In marketing, we have to have a constant supply. So you can't take one village. Maybe what you do in that area is: Village 1 harvests Item One, or A, in Month 1, and then in Month 2, the second village does it, and the third, so you maintain a constant production level in light of the market demand.

There is no place in this world today where we are looking at those questions, the marriage between harvest and market.

And lastly, I think that the most important; — all of these are important, — probably one of the more important activities we need to do is coordinate our work. I am working out of Washington as part of the Secretariat of IUCN. I report to Switzerland, by the way, not to direct from Washington. But, there are work here, the Global Guardian Trust, as a new group that's formed here to work as sort of an interface between trade industry and international development circle. In Southern Africa we have groups that are formed and fairly well organized, the Center for Applied Social Sciences, in Harare, Zimbabwe, as an example. There are training centers being established in other parts of the world.

We need a way of networking and coordinating our activities so that all of us are on an equal plane of understanding and awareness. For example, in Japan, as issues develop in the United States or in Europe, you are aware of those issues in regards to our life use and management.

I think that at this moment I will conclude, and simply say that "sustainable

use of wild life", when we reduce to simple terms, is "don't exhaust our supply". We have a big market to serve, and we want to ensure that we can do that.

Thank you, and if there are any questions, I would be glad to take. And we will turn off the machine.

QUESTION-AND-ANSWER SESSION

MODERATOR: Thank you very much, Dr. Edwards, for giving us really a wonderful lecture with interesting examples and beautiful slides.

And we still have some time for questions and answers. So, if you have questions, please raise your hand, and before asking questions, please tell us your name and division or organization.

EDWARDS: You are like my students when I was teaching.

Raise the hand; come on. I don't bite! Yes.

QUESTIONER: My name is Tsukada of Planning Department, Division of Environment, WID and other global issues.

Thank you very much for your interesting lecture, particularly, interesting projects you have explained to us showing the pictures. And I have one question, that is, how did you find these interesting projects?

EDWARDS: Well, IUCN has an advantage. We have what we call a Regional/ National Office Network. We have national and regional offices. Every project that you have seen here was developed in cooperation with one of our offices. They alert me to the projects.

The second way we have developed projects is that people know me and have called me and asked me if I would come and help them. By example of vicugna project, the Government of Chile approached me and asked if I would come down and take a look at their problem. It didn't become a project until I had arrived and actually looked at the situation. And my recommendation was that the Government; — they needed to find a mechanism to finance Government, Aymara, and some specialists to sit down and write a management plan for that species. And that's what we did, and I then raised the money for that, to actually pay them for that process.

But most often, the answer is through our network. They alert us to the problems and the issues. I have more problems; — this is only the tip of the iceberg. And I should know that all of this has been done since December; — excuse me, since January of 1991. All of the projects, and the list goes on. We have a project in Kamysheye, Russia, to manage saiga, where we were invited by the Academy of Sciences to actually work with the people in Kamysheye. We have projects in El Salvador, with whistling ducks, or one in Panama with

managing a rodent, agouti. We have one in Costa Rica managing caiman.

And I have just finished developing a project in Mali, where we are going to be just actually turning the whole problem inside out. We are going to be managing — designating areas adjacent to each village called "Resource Management Zones". And each zone will be managed by the village for harvest, but it will be a small, relatively small area. And that was developed at the request of the German development agency, GTZ.

QUESTIONER: Your network then uses many local organizations or people?

EDWARDS: Absolutely.

I mean, the concepts of; — people use the cliche, bottom-up versus top-down; top-down development we think of it here, and then sort of extend it out to the people.

What you are seeing in this activity is sort of a hybrid. I come from the top; — I don't deny that. I have global experience, understanding. I know the issues. At the same time, we are very sensitive and are very careful to hear what people want at the local level.

I mentioned the GTZ Project in Mali. They first contacted me and asked me to go to a village and develop a management programme for an endangered species. And I, kind of, shook my head and said, "Well, I really don't think that's possible." And of course, they said, "Well, you know, we want you to do your best." And I was very honest and frank with them. I said, "Look, and understand." The concept of "endangered" is our concept; not a villager in Mali. He doesn't know what the word "endangered" means. It either is here or it's not here; either you grew up with it or you didn't grow up with it. It's as simple as that.

And to impose upon them a Western concept, frankly, from a development standpoint, they probably would have taken the money. If I went to a village and I said, "Will you manage cub?" — cub is an antelope that's endangered in the region, and there are a plenty of them in Niger, next-door. We can take them on in an airplane, fly them to Mali, and big publicity, you know; — airplane pictures, newspaper, press, everything, and then we truck them up to this village in the habitat zone, at the base of the Sahara Desert, and release them. I guarantee you that about two weeks later we'd have barbecued cub, and that would be the end of it. I mean, they'd see, "Ha, ha. Dinner is on the plate." Right?

Now, if you paid them, you delay that. As long as you paid them, they'd watch them. As soon as the money ran out, maybe a year or two years, then they'd have the barbecue. Right? Because the animal is there, because they are there, it doesn't mean that they understand what we warn.

Now, in that village, what they get is 500 millimeters of rain in two days a year. And they have a terrible problem. 500 millimeters in two days out of 365 is a lot of water, but they can't keep it. It flows away. What they need is micro-management of water. They need grasses. They use grass for the livestock. They need the grass to hold the water, and they use it for fiber and making their houses. When I talk grass, we are talking about 6-7 foot; — it's not grasses in America.

And they have Acacia tree. Acacia has produced a gum, that is used in industries all over the world. That gum, the UNDP — the United Nations Development Programme — gave this village money to harvest it. There isn't any money in the budget to help them market it. So, they are 200 kilometers north of the capital of the country. They can collect all of the gum arabic, if you will, that they can, in buckets, but they don't have any way to sell it.

The same moment, migrants have been collecting gum arabic from the acacia tree for generations. And because they move; — they are pastoral people; they move, they carry the gum with them. When they get to a point, they sell it. They know the market very well.

So, we have the case where development assistance agency, with all its best intentions, has put money on the table to help people use the resource, which is appropriate, but they haven't given them the way with all that to market it. Right? That's what those communities need.

And it's not uncommon for me to hear when I go to a village the following sentence: "We really appreciate your coming to listen to what we have to say." Normally, people come here to tell us what to do. And so, I'm, sort of, elaborating on you — on your question that I should; — I tend to talk too much, even though I am listening.

But what I see is a greater need to extend the network at the lowest possible level, and then, in our good offices, whether it's something like JICA, with the international development assistance objectives, or IUCN, we need to exercise them. We have a perspective that the local people will never have. And they have

to appreciate that just as much as we need to appreciate their input when we develop projects.

QUESTIONER: My name is Christine Dotchery. I am from the Wild Bird Society of Japan.

You mentioned early; — you just sort of mentioned that for the IUCN people they aren't the problem. They are part of the solution. And I think that's sort of a new and hopefully blossoming concept in the environmental movement. I know there is a tendency to think that people are over-populated in the world, causing a lot of problems.

So, I would like to hear if you have some concrete examples where this sort of rural community development through wild life harvesting can have truly a positive environmental impact. I think that's an important thing that needs to be publicized, because a lot of people believe that development only has a negative impact on the environment.

EDWARDS: Well, let's put this; — to answer your question, I would like to put it into perspective. And when I talk about rural community development, we have to recognize that there is a spectrum of conditions out there. We tend to cluster developing countries into one kind of pool, and that's not really fair.

Indonesia, Argentina, Chile, are very sophisticated countries. They have a lot of capacity. There tends in these countries to be a high counterpart between the conditions and the capital in their most rural areas. But nonetheless, they have in place uneducated population that is far more sophisticated than we may want to admit.

The work that I described for the vicugna was taken, all of the research was undertaken by local biologists. And they are probably more sophisticated wild life modelers I have dealt with. So, we have this spectrum which we have to deal with.

Secondly, when you get out into the bush, people live on a day to day basis. They don't plan. It's one of the benefits, luxuries that we have in our world. People that live in a village live to survive tomorrow. If you have got six babies, you produce six, maybe you produce twelve and hope that you can get six to survive, because some day you are going to get old and you need somebody to take care of you.

You go hunting every day to fill the stew pot, so that your kids can be fed

and your babies can grow up, and your family can live another day. You have no refrigerators, so you do it every day.

To take time, as in these villages, probably most miraculous dimension of those projects is the fact that we have villagers that are taking time today out of that schedule and are planning, doing things that will not impact their lives maybe six months. Think about that. I mean that's a leap of faith that goes beyond what most of us would accept. They are setting aside a daily ritual in the belief that they will actually be able to achieve something that will affect them six months or a year from now.

Now, when you are working at that level, I don't know where that line lies, but there is — my own personal experience is that there are some line of what I, kind of, label "survival comfort", belief in the fact that somehow you will be there tomorrow. And when a village, a community reaches that level, they will take initiative on their own and make decisions about their own environment that affect them. Below that level, they depend upon that environment to survive, and they will take the last piece out of it, if that's what it takes to stay alive.

I have been in a village in Panama where a chap from Carib had been there several years ago. And he talked about community organization and management of natural resources. That community formed a committee, sort of a council, and they set up sectors: One sector worked with pigs; another sector worked with Caribbean pine and agro-forestry; another sector worked with therapia.

Now, each one of those, I have to tell you from a biologist standpoint, is terrible. None of them were native; they are all livestock and/or introduced species, and would be terrible on the environment. But because they worked with those three, that village was an oasis in the middle of a desert. I mean, I drove into it, and it was green; the children were healthy; they had clothes; no worms in their bellies; they were running around, and went to school; there was a developed system.

Fifty kilometers down the road, there were shacks, the kids were filthy, people were living in their own sewage.

In addition, in this village, several years ago, another lady came through to talk to them about the importance of raising iguana lizards. And they had another fourth sector that they formed to raise iguanas. And they raised the

iguanas and let them go, and they grew trees to keep the iguanas on them.

And I asked them which one of these four things that they liked the most, and they said, "Well, the pigs, because we can eat them and we can sell them." I said, "Well, that's very straightforward. What's No. 2?" And they said, "Well, we think the Caribbean pine is going to be No. 2, because they are getting big enough that we can build a hut, you know; — cut it for lumber, build houses, and we can sell it." I said, "What about those iguanas? Why are you doing that?" They said, "Well, now, we just want to. We thought it was important."

I was in a village in Mali two weeks ago, or a month ago, and we were discussing the consequence of pest species versus market species. One man is growing a cultural crop, and the birds are eating his crop. His view is "kill every bird". "It's eating my profit." Another man stands up and he says, "No, no, no, no. I make my money from those birds." "I catch them and I take them down to Senegal and I sell them." And then, the first guy says, "I don't care. You know, if you are going to take those birds, you know, they are eating my crop. And the whole village depends upon my crop." Another guy says, you know, "No, no, no. I make my money. My family depends upon me. I need the money. I raise my family." Then another one voice, a man raises his hand, and he says, "Well, first of all, it is not right under Gods' law for any species to be exterminated."

This is a very primitive village, and he is saying it very straight. It is against God's law, in my terms, — he is a biologist. "It is inappropriate to exterminate any species." And he says, "Maybe the solution rests in the man that sells the birds, sharing some of his income with the man that loses some of the crop due to the birds." And everybody would say, "Oh, okay. It's a great idea."

What I am trying to communicate here is that people that live in rural conditions are not stupid. They survive under conditions that none of us could survive under. And they do that because they are intelligent people. If they are not intelligent, they are not in the survival queue. And we tend to overlook that.

Secondly, they have solutions to problems that we haven't even thought of. And if given an opportunity, it's my personal belief that they will apply that. The concept of conservation is not just a Western ethic. I think it's an ethic that we all share as the human on this planet. The question is: Can you afford it?

If you are in a village and your day-to-day survivorship depends upon what

you can eat, the answer is no. But if somehow we can bring people in a development context, to that threshold, they will tend to invest in it.

Now, I am avoiding one kind of nasty element of this, and that's called the "exploiter". Because it's also a human nature to say that one man can get rich and to that with everybody else. But I feel that, you know, that's an unfair complaint to levy on a rural community, I mean: Is my culture any better? My city of Washington D.C.? We have our good and we have our bad, you know. Should we build our argument about whether or not communities are able to manage resources on the basis of one person that may take advantage of other people in one village over thousands? I just don't think so. I think we have to look at the broader picture.

So, there are lots of examples. The honey one is another one. I mean, the guy depends on honey. They did it. Nobody told them. It was their decision. And they enforced it. And I have since learned that there were several other villages that have done similar things.

In one dialogue, I was talking to a hunter; I was trying to make the argument that, "Well, if we can save the species now, his son would have the opportunity to hunt." So, I started by asking the question, you know, "Wouldn't you; — do you want to see this resource so that your son can be a hunter?" And he looked at me as if I were straight out of the funny farm, and he says, "Why should I want my son to hunt?" He said, "It's dangerous." "I want my son to go to school." You know, and this was in a fairly primitive spot in Pakistan.

MODERATOR: Any other questions?

QUESTIONER: My name is Sakai. I am from JICA Headquarters, Finance Department.

Before I was assigned to the present post, I worked in JICA Kenya Office in charge of the Wild Life Conservation Project there. And when I was in Kenya, I wondered very much what we, JICA or Japan, can do in the field of wild life conservation. And because we don't have enough experience, enough human resources; — enough human resources even in Environmental Agency. You can see the Japanese National Parks, that is, only national parks but the regulation is not so strict comparing to the other countries. And they don't have enough know-how to keep wild life animals or to utilize these animals.

Now, so, my question is: What do you think we can do, we, JICA or Japan,

can do in the field of wild life conservation?

In conclusion, in the case of Kenya, we donated some road machineries — road construction machineries to Kenya Wild Life Conservation Services, to maintain or rehabilitate or construct new roads in the national parks in Kenya. But that is one part of the World Bank Conservation Project. But for me it looks, how to say, the old-fashioned Japanese way. And so, we would like to find out a new way or project in the field of wild life conservation, but there is some constraint in Japan side.

So, what do you think what we can do, or what do you expect what Japan can do? That's my question.

EDWARDS: Well, let's start by saying that I expect that Japan in the next decade will be the global leader in this field. That's what I expect.

Now, the question is how; — if Japan is not in that position today, how can it achieve that position?

And I make that statement because Japan has a strong tradition of becoming the keenest the best, and whatever it takes on as a challenge, and it's clear that the environment is becoming a challenge in Japan. It's not a true or real statement, because I believe that Japan has work relationships with many countries, particularly in their relationships with the Asian states — developing states. This is going to be extremely important, too.

Now, how do we get from here to there? First of all, I think we have to recognize that it's a global issue that we are dealing with. It's not just Kenya; it's not just Africa. It's not just Asia. And I am putting all of my comment in the context of sustainable development — sustainable use of wild resources.

I have chosen countries carefully. I have chosen countries where there is the greatest probability of success. I have chosen organisms with the greatest probability of success to avoid high profile species in controversy. Because I am very keen to ensure that this programme and the concept succeeds.

I am also sympathetic to the fact that not all countries will, in fact, pursue this concept. Not all philosophies or cultures are going to endorse this. India, for example, where you have a very strong negative cultural or religious belief regarding the use of wild species, and it's just not going to work. As a Hindu, they do not eat meat. And harvesting wild animals is, and/or plants in some cases, begins to have very negative connotation in that culture.

Kenya is also a culture that has a very strong protectionist philosophy as part of their Government's structure. And I am obliged as an IUCN staff person to respect that. I know that they are trying in Kenya to look at sustainable use. They have a large World Bank grant and some U.S. A.I.D. funding. If I were to be critical of that process from what I have heard of it, it's simply that a lot of decisions are being taken in Nairobi without a lot of consultation with the people in the field.

So, if Japan wished to take positive steps, I note that you have JICA offices located around the world; — in the developing world. Within those offices, I would start getting out and listening to what is happening at the grassroots level, within the communities.

If you take on a per capita base or on a GNP base, countries like Sweden, Norway, Denmark, the Netherlands, Switzerland, those that cluster probably is putting the largest percentage of their money, the highest percentage of their GNP, into development-related activities. It's a huge amount of their budget. And in so doing, Finland, — I would include in that group, also — and that group as a pattern works very closely with certain NGO's, domestically and internationally. Because they've found it's to their advantage.

The next here probably involves and fits like France, in terms of working with the NGO community, if you will; — France, Germany, to sort of in between the two, America. The U.S. doesn't do as much as I think that they should.

If you would ask me which is the most effective development assistance agency in the world, I would say Switzerland; those characters are really on top of it. And, I mean, I know in dealing with the field or desk officers in development assistance agencies that the Swiss; I have to run to keep up with. They know the issues; they know the problems; they know the constraints; they know the conservation objectives; they know the development objectives; and they know how to bring them together. And if I walk in without being prepared, I guarantee I am going to be shown to door. And not many; — in other words, they have a very high standard. One of their standard routines is everyone of their staff officers is obliged to spend three — four years in the region; they rotate back to Bern; they then go back out to a different region. They are constantly in a flux. And so, their staff is very intimate with the problems in the field. And

they keep the staff small.

And when IUCN goes to them where a project, I can guarantee you that we know exactly what we are going to do. We are not even going to get a word.

Norway is on the same league. Sweden not so much, but Finland is gaining, but they don't have a lot of education experience internationally. And they are trying to gain it. That's another thing. You have a volunteer, a volunteer processor, certainly like our Peace Corp or the British equivalent. Or young people can go out and get field experience. Excellent programme. I mean, that's your future. Those are people that are going to understand the problems.

And we are sort of in the middle. We are all kind of just trying to retool ourselves to deal with the changing age. But it's going to be the youngsters that are going to understand this, far more than we do.

So, I hope I have given you some guidance. I mean I would appreciate working with JICA.

MODERATOR: Since we have almost run out of our time, but the last question may be the last one. But do you have any questions? Or otherwise, I would like to say we will conclude now.

Thank you very much, Dr. Edwards.

EDWARDS: Well, I should thank you in my conclusion.

It has been an honour and a privilege to be able to speak to you. And I hope that JICA and you as individuals have gained some greater understanding of the issues and the problems that we are trying to deal with.

Thank you, again.

CONCLUDED

JICA