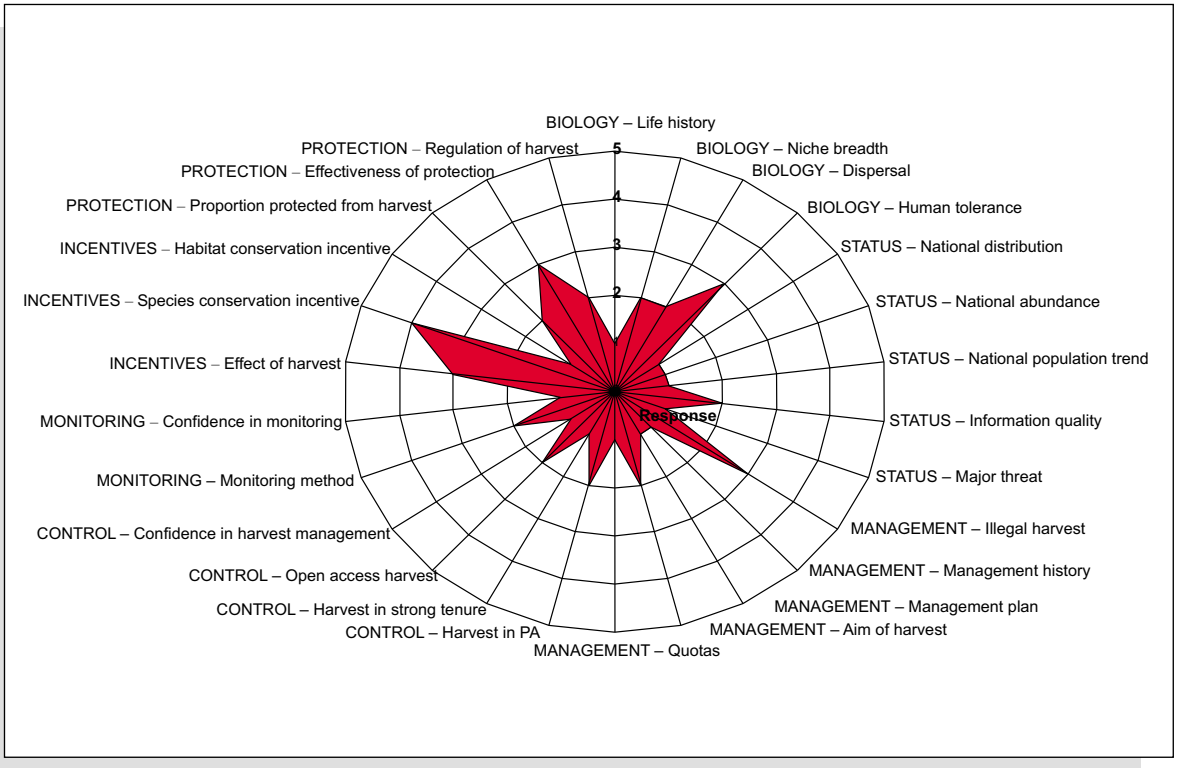
The IUCN Species Survival Commission

Guidance for CITES Scientific Authorities

Checklist to assist in making non-detriment findings for Appendix II exports

Compiled by
A. Rosser and M. Haywood



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The US Fish and Wildlife Service (USFWS) through its office of International Affairs was responsible for working with the Department of State to support, through the US voluntary contribution to IUCN, the workshops which led to development of the guidance for CITES Scientific Authorities in making non-detriment findings. The FWS is the lead U.S. federal agency in the conservation of the nation's migratory birds, threatened and endangered species, certain marine mammals and sport fishes. It also serves as the lead federal agency concerning international conventions on wildlife and operates a program of public affairs and education to enhance the public's understanding and appreciation of America's fish and wildlife resources.

The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has supported the development of this work on the non-detriment finding.

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With the support of the U.S. Department of State voluntary contribution to IUCN, as co-ordinated by the U.S. Fish and Wildlife service

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PART I
Introduction and rationale

Chapter 1
Introduction and rationale

1.1 IUCN assistance to develop guidance for CITES Scientific Authorities on the making of non-detriment findings, *Alison Rosser*

Introduction

Use of and trade in wildlife is a fact of life for human society around the globe. Despite concerns from the conservation community about the over-exploitation of wildlife, the reality is that in many cases use of wildlife will continue. Consequently, ways must be found to make that use sustainable and to make it work for conservation (see Hutton, this volume, Section 1.2). The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was established in 1975 to ensure that trade in wildlife species is managed for sustainability. CITES aims to regulate international trade in wildlife products through international co-operation, whilst recognizing national sovereignty over wildlife resources.

CITES is now a conservation tool of major importance. The number of Parties to the Convention has been increasing steadily (numbering, at the time of writing, some 158 countries) and levels of implementation of the provisions of CITES are improving. However, there is still room for considerable improvement in the implementation of Article IV of the Convention. This Article requires, amongst other things, that exporting countries restrict trade in Appendix II species to levels that are not detrimental either to species' survival, or to their role within the ecosystems in which they occur (known as the "non-detriment finding"). In short, CITES requires that trade in Appendix II species must be based on sustainable harvest and consequently, Article IV forms the backbone of the Convention.

Despite this formal requirement for a non-detriment finding, i.e. that the harvest should be sustainable, many species continue to be traded in the absence of information about the impact of such exploitation on the wild population. This is often due to the lack of programmes to monitor both the levels of harvest and the status of wild populations of species exploited for trade. If this inadequate implementation of Article IV for exports of Appendix II species continues to be the rule, rather than the exception, then there will be grave consequences for many species, and their listing on Appendix I may be the ultimate sign of failure. Much of the success or failure of the Convention lies with the implementation of Article IV.

Co-operation amongst Parties is key to the effective implementation of the Convention and the task of fulfilling CITES obligations should be shared between exporting and importing countries. Although CITES places much of the responsibility on exporting countries to ensure that trade in Appendix II species is non-detrimental, many countries lack the necessary financial and technical resources to fulfil these obligations adequately and in some cases even the political will to ensure that the obligations under the Convention are fully implemented. In these countries little progress will be made in improving CITES implementation unless more sustainable resources are made available to aid them in meeting their obligations. Importing countries should also be prepared to provide training, technical and financial inputs to develop the necessary monitoring programmes for species in trade in exporting countries. Strengthening CITES Scientific Authorities in this way, could assist greatly in reducing the risk of trading in wild species, and their products, at unsustainable levels.

Means to improve sustainability assessments under CITES

To develop some pragmatic assistance for Scientific Authorities, IUCN convened a workshop to address the basic question of "what is meant by a non-detriment finding?" and to explore information needs for making such findings. The workshop, held in Hong Kong, brought together biologists, managers, and national CITES staff to explore the issue and develop practical guidance. The focus of the initial workshop was global, to allow general agreement by representatives from the CITES regions on a principle that will affect all Scientific Authorities. A subsequent workshop was held in Cambridge to refine the guidance and to test the recommendations emanating from the first workshop. It was anticipated that a series of regional workshops would be necessary to explore specific regional needs in more depth and to lead to training and awareness raising where necessary. Fortunately, the CITES Secretariat has now developed a work plan which includes a number of regional training workshops, where the guidance on making non-detriment findings can be discussed and further tested.

The first IUCN workshop comprised a series of papers aimed at introducing the problem, and these papers form the basis of this publication, leading on to the checksheets for Scientific Authorities developed at the two workshops. This volume is split into four parts. The first introductory part presents the problem; the second presents insights from CITES staff in producer and consumer countries; the third presents biological factors to consider in managing species for sustainable harvests and the fourth part introduces the final checksheet approach that was developed, along with some worked examples.

In Part I (Chapter 1.2), Hutton, setting the scene, noted that like it or not, wildlife trade is a fact of life, people are using their natural resources and are unlikely to stop doing so. It was explained that wildlands may need to compete with alternative land uses and the overall aims of conservation may dictate that species are harvested in certain areas. Given this basic fact, Leader-Williams (Chapter 2) looked at the wording of the Convention and underlying harvest theory to produce some guidance on interpreting the term 'detrimental trade', and a discussion of points that should be considered in making non-detriment findings from a biological point of view. He considered harvesting theory and dealt with turning the theory into practice through adaptive management and the information needed to attain such management.

The requirements of the treaty and experiences of CITES Scientific Authority staff form the basis for the second part of the current volume (Part II). Van Vliet from the CITES Secretariat discussed the requirements of the treaty with respect to the non-detriment finding as encapsulated in Article IV of the Treaty and the relevant wording from the CITES listing criteria, etc. Then, Scientific Authority staff from a range of producer and consumer countries presented thoughts on how they interpret the requirement for a non-detriment finding, the methods that they use to make such findings and the problems that they encounter in making such findings, including some practical examples. The methods adopted in different countries vary considerably: from those where a lack of resources make it difficult to make non-detriment findings (NDFs) for a number of species, but the best information is relied upon (China, Cameroon and Togo); to those where resources are prioritized to the most needy species (Indonesia); to those where a system of national quotas based on population assessments is the aim (Namibia); to those where exports are generally prohibited because of the difficulty of making NDFs (Australia and Bolivia). Representatives from Australia and the US, both consumer and producer states, presented a detailed summary of points to consider in making non-detriment findings for imports and exports. As consumers of wildlife products, presentations from the European Commission and one of its member states, the Netherlands, introduced the stricter domestic measures that the EC may recommend after consultation with range states. From this array of papers, it is clear that whilst the interpretation of non-detrimental trade varies considerably amongst Parties, many Parties share a common lack of expertise, resources, and even communication difficulties when trying to make non-detriment findings.

The third part comprises a set of papers that dealt with technical aspects of determining whether harvests are likely to be sustainable. Bodmer considered the utility of models in assessing the sustainability of harvest of forest mammals and looked at practical methods of harvest monitoring in such conditions. Van Dijk focussed on the biological aspects to consider in assessing the suitability of a reptile and amphibian species for harvest. From these biological considerations, Mulliken moved on to discuss underlying harvest and trade management structures in relation to the bird trade, emphasising the importance of developing management plans, monitoring the harvest, and involving stakeholders in decision-making. Bodasingh discussed the utility of CITES annual report data, encouraging Parties to examine not only their own data, but those of other Parties too.

The practical results of the working group sessions at both workshops are presented in the fourth and final part of this volume. In considering what is meant by "a non-detriment finding", the Hong Kong working groups decide to narrow their focus. They agreed to concentrate on Appendix II species, leaving the requirements concerning imports of Appendix I species for non-detrimental purposes to some other occasion. By examining the Convention Text, participants highlighted the elements that should be included in an operational explanation of what is meant by, "non-detrimental to the survival of a species", but did not manage to produce an agreed definition. However, further consideration of these elements helped to focus participants on the information that should be considered in assessing the likely detriment or otherwise of the harvest. In addition to the biological characteristics of the species, socio-economic factors were also thought to provide important influences on the likely sustainability of harvests. It was recognized that in many cases neither detailed biological nor socio-economic information might be readily available, and so monitoring and adaptive management of the harvest must play a central role in ensuring non-detriment. Recognizing the constraints that many Parties are working under, participants determined that guidance must be pragmatic, starting from the lowest common denominator and then working to encourage better monitoring and data collection.

Taking these points further and incorporating items from some of the presentations, the rudiments of a qualitative checklist were established. After the workshop, the checklist was expanded, an explanatory guide was compiled and most usefully, a visual representation of the results was developed by a drafting group. In 1999, the checklist and guide were then expanded to incorporate further specific aspects relating to flora, and tested with a range of plant and animal examples from a variety of CITES regions and finalized during a second workshop. The final checksheet, explanatory material and some species examples are all included in Part IV of these proceedings.

In addition to the difficulty of dividing the requirement for a non-detriment finding into practical tasks, the Scientific Authority staff also noted a number of improvements that could be made in the process for making the non-detriment finding. These included: enhanced communication between national Scientific and Management Authority staff; better links with other institutions in country; better co-operation between importer and exporter nations; and a framework for co-operation between Parties to facilitate technology and capacity transfer.

This volume presents the background to the development of the non-detriment finding checklist and explains how the checklist itself is designed to work, in the hope that Scientific Authority staff will take and develop the parts of the approach that they find useful.

1.2 The contribution that well-managed international trade can make to species conservation, *Jon M. Hutton*

The issue

In considering the role that well-managed trade can make to species conservation, there are two major points to bear in mind. The first point is that wild species are being used and are bound to be used the world over. In many places they form a large part of, or even the entire, foundation for human survival. Only a tiny portion of this use is for international trade and prohibiting trade will reduce wild harvests only in very specific instances. In some cases, the removal of international trade, which returns a high value, can actually result in higher harvests as the harvesters seek to maintain their income from local, lower-value markets or because the species, in losing its value, becomes a pest. The restriction and prohibition of trade can be an important conservation tool, but it is far from a universal panacea. It must be used like a scalpel, not a mallet.

The second point is that the principal threat to wildlife as a whole is not international commercial trade, but habitat loss – closely followed by hunting for reasons other than international trade, and the introduction of invasive alien species. Experience from southern Africa and other areas suggests that one of the most effective tools to fight the pressures which lead to habitat loss (and in some cases to control domestic hunting activities) is to commercialize wild species through international trade. This is not a complex argument. In most, if not all countries of Africa the natural wild habitats which support wildlife are decreasing as they are converted to agriculture and other human uses. As population pressures rise, so even marginal lands are converted and protected areas come under direct pressure. The fundamental problem is that natural habitats cannot compete in economic terms with agricultural uses. If a farmer grows elephants he grows nothing more than a problem. If he grows cattle he can eat and sell them. The proven solution is to make wildlife as much a part of the economy as agricultural commodities, and in so doing to ensure that they are as valuable as possible. In other words, the solution is to give wildlife value, not to take it away – as is so often the case in CITES. Furthermore, where conservation systems are based on the economic incentives which flow from trade, and where well-managed systems of trade have been established it is in noone's interest to see illegal or unethical trade prosper. The conventional wisdom that legal trade inevitably leads to illegal trade is quite clearly wrong. Certainly, the southern African experience is not a universal truth but it is sufficiently important to make it imperative for CITES to evolve in a way that encourages the potential benefits of trade, wherever they might be found, whilst ensuring the sustainability of that harvest.

To ensure that CITES can contribute to conservation through international trade it is vital that the non-detriment requirement of Article IV is properly implemented by exporting nations to ensure sustainability. The failure to do so properly to date has resulted in:

a) a stream of species being transferred to Appendix I from Appendix II, and consequently removed from commercial trade; and

b) a range of stricter domestic measures being implemented by importing Parties which also commonly result in the restriction of trade.

In the first case it is clear that for some species, CITES has had little effect, except for that of monitoring the species as they decline until they reach such dire levels that they can be considered endangered and

included on Appendix I. Can this be considered an effective measure for conservation?

With respect to the second case, the unilateral imposition of stricter domestic measures is hardly a sound basis for a multilateral environmental agreement.

As the Convention stands, the implementation of non-detriment findings for Appendix II exports relies entirely on the capacity of the exporting country – the Articles exclude any role for the importing country or the international community – and herein lies the root of the problem. The extent to which the provisions of Article IV are implemented by Parties differs considerably and is highly dependent on several variables – the most significant of which appears to be inadequate legislative, administrative and technical capacity within the exporting country. In practice, what this has tended to mean is that CITES is constructed around one list of species (Appendix I) where authority lies with the international community and no commercial trade is possible, and another (Appendix II) where all trade is possible and its control is dependent entirely on the capacity and integrity of the exporting authorities.

Possible solutions

Possible solutions to deal with these problems include:

a) Improve the way that range states implement Article IV (the purpose of this workshop);

b) Devise a 'patch' or 'safety net' for the Convention (the Significant Trade Process fills this role);

c) Entrench the response which results in more species being removed from trade through an Appendix I listing or unilateral stricter domestic measures.

We suggest that the first two options are reasonable, the third is not. Furthermore, we urge caution in the way that a) and b) are implemented. There is an unfortunate tendency in some quarters to assume that international commercial trade is inherently incompatible with conservation, an attitude which leads to a 'hard line' approach to Article IV and Resolution Conf. 8.9.

In urging a more moderate, gradual and co-operative approach which recognises trade restriction and prohibition as the measures of last resort, the goal must be to ensure that trade is sustainable. Only through ensuring that non-detriment findings are properly implemented can we enjoy the benefits that well-managed trade can make to species conservation in the long term.

Chapter 2
When is international trade in wild animals detrimental to survival: principles, avoidance and monitoring?

Nigel Leader-Williams

Introduction

Determining when international trade is likely to prove detrimental to the survival of species is essential to achieving the aims of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). If species become threatened with extinction as a result of use incompatible with their survival, Parties to CITES face the prospect of including more species on restrictive appendices. Indeed, every transfer of a species from Appendix II to Appendix I could in this context be considered as an example of the failure of the Parties to fulfil their obligations under the Convention (Wijnstekers 1988–92). Therefore, it is very important that those responsible for implementing this key step in Scientific Authorities fully understand its implications. Accordingly, this paper has the overall goal of leading workshop participants towards appropriate working definition(s) of "detrimental to survival". In order to achieve its goal, the paper has the following specific objectives:

- to outline obligations with regard to making non-detriment findings under the Convention;
- to examine the theoretical differences behind approaches to harvesting that do, and do not, remove animals from the wild population;
- to briefly consider harvesting theory and the consequent definitions of over-utilization, that in turn both allows the non-detriment finding to be applied to well-studied species traded internationally, and sets a benchmark for little studied species;
- to recognise that many species and populations now being harvested are currently little-studied, such that ongoing harvests must be managed adaptively; and
- to outline the importance of establishing basic facts and an adequate monitoring system for a programme of adaptive management.

Convention and resolution text

The term "detrimental" appears in the articles of CITES, with reference to a Scientific Authority advising that international trade "will not be detrimental to the survival of the species involved" (Box 1). Despite these requirements, successive Conferences of the Parties (COP) have acknowledged that non-detriment findings were not always being made. Therefore, various resolutions have been adopted that have increasingly brought in others to provide advice on the non-detriment finding. Nevertheless, the most recent resolution still emphasises the role of Scientific Authorities and their ability to make appropriate non-detriment findings (Box 1). The language of the Convention and this resolution place emphasis on the Scientific Authority of the exporting state undertaking the necessary scientific review to determine whether harvests of species listed on Appendix I and II, and destined for international export, are appropriate in relation to factors affecting the status of populations under their care. In contrast, the Scientific Authority of the importing state only determines whether the purpose for which the import of a species listed on Appendix I is intended is appropriate. Hence, the goal of this paper has been formulated in the spirit of leading towards some clarification in the roles of different Scientific Authorities in making non-detriment findings.

The language of Articles III and IV and subsequent resolutions ties the term "detrimental" specifically to the survival of the particular species. When applied to single species, survival is the opposite of extinction. On this basis, biological principles would appear to provide the best hope of leading towards appropriate definition(s) of the term "detrimental" in relation to international trade in species included on Appendices I and II. On this basis, this paper does not discuss economic or social sustainability as they apply to our current understanding of sustainable use (e.g. Freese 1997), as the Convention does not appear to require a Scientific Authority to give advice on these two issues.

This paper also does not deal with the role of an Appendix II species in its ecosystem. This issue is avoided for three main reasons. First, because the word "detrimental" is not stated explicitly, even though it might well be implied. Second, because our knowledge of the role of species in ecosystems is rudimentary in relation to making decisions of this complexity. Third, because the workshop will have quite sufficient work to accomplish in working through explicit statements related to "detrimental to the survival of the species involved".

Box 1. Convention text and important resolutions referring to the role of a Scientific Authority in making a non-detriment finding.

The Convention makes some similar requirements for species listed on Appendices I and II. Articles III.2.(a) and 5.(a) require that the Scientific Authority of the State of export or of introduction, respectively, advise that the export or introduction from the sea of specimens of species included in Appendix I "will not be detrimental to the survival of the species involved". Articles IV.2.(a) and 6.(a) make the same requirement for the export or introduction from the sea of specimens from species included on Appendix II. However, the Convention also makes two differing requirements for species listed on Appendices I and II. Article III.3.(a) requires that the Scientific Authority of the State of import advises that the import of specimens of species included in Appendix I "will be for purposes which are not detrimental to the survival of the species involved". Article IV.3 also requires the Scientific Authority of the State of export to determine when to limit the granting of export permits for Appendix II species "in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs, and well above the level at which the species might become eligible for inclusion in Appendix I". Articles III and IV both stipulate that the issuance of a CITES permit by the Management Authority should be contingent upon a prior finding of non-detriment by the Scientific Authority. Article XIII vests authority with the CITES Secretariat to intervene with a Party when there are problems with implementation.

Various resolutions have been adopted (Resolution Conf. 2.6, 4.7, 6.1 and 8.9) that allow others to make decisions on the non-detriment finding, including other Parties (Resolution Conf. 2.6), the Animals Committee (Resolution Conf. 6.1), and the Standing Committee and Secretariat of CITES (Resolution Conf. 8.9). Nevertheless, Resolution Conf. 10.3 recommends, *inter alia*, that:

- the appropriate Scientific Authority advise on the issuance of export permits or of certificates for introduction from the sea for Appendix-I or -II species, stating whether or not the proposed trade would be detrimental to the survival of the species in question, and that every export permit or certificate of introduction from the sea be covered by Scientific Authority advice;
- the findings and advice of the Scientific Authority of the country of export be based on the scientific review of available information on the population status, distribution, population trend, harvest and other biological and ecological factors, as appropriate, and trade information relating to the species concerned;
- the appropriate Scientific Authority of the importing country advise on the issuance of permits for the import of specimens of Appendix-I species, stating whether the import will be for purposes detrimental to the survival of the species.

Effects of different harvesting regimes

Background to harvesting

Man has harvested wild species of animals and plants since time immemorial. Nevertheless, trade in wildlife and its products makes many conservationists nervous, because over-harvesting for monetary profit has so often over-ridden biological concerns (Caughley and Gunn 1996, Freese 1997, Milner-Gulland and Mace 1998). Hence, there are many examples of collapse in trade and/or stocks, particularly of large-bodied mammals whose relatively slow rate of reproduction is less than the rate at which interest can be earned on money placed in the bank through liquidating the stock (Clark 1990), and over-harvesting has been a prominent member of the evil quartet responsible for causing documented extinctions of mammals and birds since the 1600s (Diamond 1989). A few examples of stock declines are cited below:

- Monk seal *Monarchus* spp., sea lion *Zalophus* spp., and fur seal *Arctocephalus* spp. trade
- Southern Ocean whaling industry
- Tuna *Thunnus* spp. fishing industry
- illegal harvesting of Sumatran *Dicerorhinus sumatrensis* and black rhinos *Diceros bicornis*

At the same time, protection of wildlife from trade makes many other conservationists nervous. They argue that, with sustainable and well-regulated harvesting, profits can be generated that should strengthen the case for conservation. However, there are far fewer examples of actual positive success in improving the status of species but the best examples are:

- ranching of crocodilians Order Crocodylia
- hunting of leopards *Panthera pardus*
- live sale and hunting of white rhinos *Ceratotherium simum*

Even though there are relatively few examples of positive success, many would also argue that continued consumptive use has done less to impoverish biodiversity than converting land to other forms of use such as clear cutting of forests or cattle grazing of native grasslands. Hence, a comparison of rates of loss also needs to be considered in the "use it or lose it" debate, as well as positive successes (Freese 1997).

Theoretical requirements for different approaches to harvesting

There are two main approaches to harvesting, the first where the animal remains in the wild population, and the second where the animal is removed from the wild population. This distinction is important, because each approach is underlaid by different theoretical and practical implications.

The animal remains in the wild population:
Numerous examples exist of actual or possible harvesting strategies where the animal remains alive in the wild population, for example:

- down collected from nests of eider ducks *Somateria* spp.
- birds' nests collected from swiftlets *Collocalia* spp.
- wool sheared from vicuña *Vicugna vicugna*
- hair collected from muskox *Ovibos moschatus*
- horn taken from white rhinos *Ceratotherium simum*

A harvest of this kind may result in some impact to the population, for example, through capture or disturbance. The productivity of such harvests is generally highest when populations are **at their largest size or maximum carrying capacity**. However, there is little theoretical basis to deciding whether or not to harvest and upon appropriate quotas. The decision of whether to harvest, e.g. vicuña wool, or not to harvest, e.g. white rhino horn, and of appropriate quota levels, is largely based on the likely success of imposing trade controls and/or the effects of allowing a legal trade upon other related species and populations.

The animal does not remain in the wild population:
The other more widespread approach to harvesting is where the animal does not remain in the wild population, either because it is killed or is removed live. Examples of harvesting by this route abound, and include the following:

- hunting and cropping in their various forms, whether for sport, trophies, food, medicine or other animal products;
- fishing in its different forms, whether for sport or food, or other fish products;
- live capture in its various forms, whether for zoos, aquaria or the pet trade.

In contrast to the approach where an animal remains in the wild population, a strong theoretical basis underlies the approach to harvesting where the live animal does not remain in the wild population.

Harvesting theory for removal of animals

Harvesting models

Several different models, of varying degrees of complexity, are available to underpin the theory of harvesting as it applies to removal of animals from the wild population (for details see Clark 1976, 1990; Caughley 1977; and Milner-Gulland and Mace 1998). The simplest is the logistic model (Box 2). The theory underlying the logistic model was succinctly summarised for a previous IUCN workshop by Caughley (1992), and the points he made previously are largely re-iterated here:

- generally, the highest sustainable productivity comes when populations are **below their largest size or maximum carrying capacity**;
- if populations are reduced in numbers to below carrying capacity, they tend to increase;
- the biologically optimal strategy of harvesting is to lower the density to the point at which the population achieves maximum productivity, and then to harvest at the same rate as the population reproduces;
- harvesting always reduces density of a species, and numbers will decline during the first few years of a harvesting operation, and this initial decline does **not** mean that the species is being overutilized.

Regulating harvests

All harvesting theory refers to the idea of maximum sustained yield (MSY). Theoretically, MSY is the largest harvest that can be taken from a population indefinitely, without driving the population towards extinction (Box 2). The manager may calculate or arrive at estimates of MSY in two different ways:

- in theory, MSY may be calculated directly but the biological information necessary for such a calculation is rarely available;
- in reality, MSY is more often arrived at through the trial and error or adaptive management approach, and this has much to recommend it.

Box 2. Details of logistic model

Populations can grow in a logistic fashion, represented by an S-shaped (sigmoidal) curve, until the population reaches its maximum size *K*. The rate of growth is slow initially, increases to its maximum r_m and slows latterly as *K* is approached. If the population is now harvested at an instantaneous rate to hold the population size constant, the instantaneous harvest rate must equal the instantaneous growth increment. If the logistic equation is substituted, this produces an equation that has the algebraic form of an upwardly convex parabola passing through the origin. The sustained yield (*SY*) is the same as the harvesting increment, and this parabolic equation informs us that:

- *SY* is zero when *N* is zero (i.e. no population, and therefore no yield);
- *SY* is also zero when *N* is set at its maximum unharvested size of *K* (because the realised growth rate when $N = K$ is zero). Thus any harvest from a population of size *K* will decrease the size of the population;
- Between $N = 0$ and $N = K$, the *SY* first rises and then falls;
- The *MSY* (maximum sustained yield) is taken from a population size of $N = 0.5K$ at the instantaneous rate $H = 0.5r_m$.

Hence, the logistic model allows MSY to be defined as the harvest that keeps the population at half the carrying capacity. The manager may calculate or arrive at estimates of MSY in two different ways:

- In theory, MSY may be calculated directly from the **size of a population** before harvesting and its **maximum rate of increase**, combined with various other attributes of the species and its environment;
- In reality, population size is often not known prior to or during harvesting, so MSY can seldom be calculated directly. The approach used most often is to begin harvesting with an annual yield set well below the likely MSY. The population is monitored directly or through indices of abundance to confirm that it is behaving according to prediction, in other words it is not decreasing. After several years, the yield may be cautiously fine-tuned up towards the MSY. This is the trial and error or **adaptive management** approach to estimating MSY.

N.B. It is increasingly recognised that due to the unpredictability of environmental and other stochastic events, harvesters should not aim to achieve MSY, but rather aim for a more precautionary level of harvest.

Both these methods of calculating or arriving at MSY result in a relatively fixed yield or constant harvest. Administrators prefer the option of harvesting a constant number, because it allows the annual setting of a fixed quota that is easy to visualize, to justify to officials, to share between resource users or to report to national or international bodies. However, this approach has a number of biological disadvantages, including not taking account of year-to-year changes in population size and not limiting harvesting effort to reach allowed quotas (Box 3).

Alternative approaches to managing harvesting include either limiting harvesting effort or taking a constant proportion of the population (Box 3). Both these approaches to harvest regulation can be much safer biologically than setting a constant numerical harvest, because they are self-correcting as a population changes in size. Unfortunately, neither approach produces a fixed yield. The yield is likely to vary from year to year. Hence, the approach of regulating harvesting effort, which has the advantage of not requiring information on population size (Box 3), has the drawback that most administrators responsible for harvests will become nervous because they no longer have direct control over the size of the actual yield. Furthermore, regulating harvest effort is likely to prove difficult within the context of CITES, where relatively fixed quotas are easier for Parties to understand, approve, report and regulate. Equally, the approach of harvesting a constant proportion of the population requires accurate information on population size, which is often not available in the context of species traded under CITES.

Complications of harvesting

Despite all the underlying biological theory, most population harvesting is a highly practical affair. Either the resource users take:

- an arbitrary harvest each year, or
- as many as they can get with the time and equipment available.

This pragmatic approach sometimes results in a sustained yield, sometimes in over-utilization, for example:

- yields taken by recreational/sport/tourist hunters, the harvest being controlled by a government department, are usually inefficient SY, the yield being conservative.

Box 3. Methods of regulating a harvest

a) Harvesting a constant number

For the administrator, the harvest of a relatively fixed yield, or constant number, is the preferred option as it allows the annual setting of a fixed quota. However, setting a constant number for harvest can, and often does, push a population below the size yielding MSY because:

- environmental variation, such as bad winters or prolonged dry seasons, can cause considerable year to year variations in population size; and,
- it encourages greater harvesting effort or the introduction of improved technology, in other words working more and enjoying it less, as in the case of most fisheries heading for collapse.

Hence, the harvest of a constant number, and any subsequent quotas, should be set at considerably less than MSY.

b) Harvesting with a constant effort

Within limits, a given harvesting effort takes about the same percentage of a population whether it is at high or low density. Regulating by effort thus tracks population size by taking more animals when the population is larger and fewer when it is smaller. Such a safeguard is exactly what is needed when harvesting those species whose numbers fluctuate from year to year (for example, the irregular entry of a strong age class into the population, or irregular climatic changes that are a feature of the life history and ecology of the saiga antelope, *Saiga tartarica*) or whose size is not monitored regularly. The maximum sustainable harvesting effort represents that level of effort that takes a proportion of the population each year equal to the population's maximum rate of increase in that environment.

Regulating harvesting with a constant effort may take the form of:

- in the case of a fishery, a limit on the number of boats licensed to harvest a fish stock, a specified type of fishing equipment or a limit on boat-days, or,
- in the case of a hunting area, a limit on the number of recreational hunters licensed to hunt a particular area, a fixed hunting season, or a limit on numbers of hunter days, and so on.

The approach of regulating harvest through a constant effort is biologically more robust than regulating it through a constant number. Among its major advantages are:

- that it needs less fine tuning than constant yield harvesting, and can produce higher yields; and,
- it can be administered without monitoring population size or knowing the relationship between population size and population growth rate.

Among its disadvantages are:

- that it tempts harvesters to use more sophisticated technology to circumvent limits on hunting or fishing days;
- yields vary from year to year, depending on population size; and,
- the resource users may not see a clear relationship between policy and practice.

c) Harvesting a constant proportion of the population

Regulating harvesting by taking a constant proportion of the population has the same underlying theoretical basis of self-correction as harvesting with a constant effort. The optimum sustainable harvesting effort takes a percentage of the population each year approximately equal to half the intrinsic rate of increase. This is not half of the population size before harvesting starts, but half of the much reduced size to which the population is held down by harvesting. The approach of regulating harvesting by taking a constant proportion of the population offers a different mix of advantages and disadvantages to the approach of harvesting with a constant effort. Among the advantages of the former are:

- resource users can see a clear relationship between harvesting a constant proportion of the population and its biological characteristics; and,
- harvesters can use any technology they please, to ensure that harvesting is economically more efficient than constant effort harvesting.

Among its major disadvantages are:

- the population size must be known in order to set the harvest, which may prove a considerable expense for the regulator; and,
- yields will vary from year to year depending on population size.

- yields taken by professional fishermen or full-time hunters, even when harvest is being controlled by a government department or an international convention, are usually too high, the stock being forced down to a level that is uneconomic to harvest. The fishing fleet or hunting gang then moves to a new stock.

Even scientifically sanctioned calculations of sustained yield do not necessarily produce more success in conserving stocks than the pragmatic option, e.g.,

- year-to-year variations in the environment are often not included, and tend to lower the actual sustained yield that can be harvested; and,
- economic considerations are often omitted.

What is over-utilization?

The theory of harvesting outlined above suggests several ways that, under ideal and data-rich conditions, over-utilization detrimental to the survival of a species may be detected and defined (Caughley 1992).

What are the indications of over-utilization?

Over-utilization may be indicated in several ways:

- in a system where population data are available, and that population is below half its unharvested density and is continuing to decline under harvesting, there is a justifiable presumption of over-utilization;
- sometimes harvest can be estimated reasonably accurately, whereas population size is known only within very wide limits, if at all. Nonetheless, the sheer magnitude of the harvest may be such that it can confidently be declared above the MSY for any plausible population size. As an example, comparing very crude estimates of African elephant numbers with the volumes of ivory entering the trade in the 1980s suggested that elephants were being harvested above their MSY in many areas of Africa (Caughley *et al*. 1990);
- sometimes enough is known about the size and dynamics of the population to show that harvest is above the MSY. Many examples derive from the literature on whaling (Clark 1990).

How can over-utilization be defined?

On the basis of his considerations of underlying theory, Caughley (1992) formulated three possible definitions of over-utilization as follows:

- the number harvested each year exceeds the maximum sustained yield of the species; or
- the percentage harvested each year exceeds the intrinsic rate of increase of the species; or
- the harvesting reduces the species to a level at which it is vulnerable to other influences upon its survival.

This forms a very useful basis on which to move forward for relatively well known species groups such as elephants or whales. However, problems still remain for less well known groups if no estimates of population size or of life history variables are available to set against harvest rates. As examples, how does the harvest of several hundred thousand snakes per annum from a rattlesnake drive relate to the size or rate of increase of the snake population, or how does the export of several thousand finches per year for the live bird trade relate to the finch population?

Adaptive management

Adaptive management, a concept formalized from the process of trial and error, has proven a useful approach to the paucity of data that often surrounds issues of harvesting less well known species groups. Even for species where some basic facts of biology and ecology such as population size or maximum rate of increase are known, adaptive management is a crucial concept because:

- ecological systems are very complex and great uncertainties surround consequences of the use of those systems, and of the consequences of environmental, social and economic changes; and,
- management itself must be sustainable, and able to adapt to changing conditions.

A system of adaptive management reviews decisions and procedures and uses the lessons learned to adjust the management system. The central component of effective adaptive management is the monitoring system that is incorporated to evaluate management activities. Hence, an act of management, such as harvesting, is designed as a trial, the outcome of which can be assessed scientifically and improved upon where necessary. Hence, I now move to some practical considerations of both a biological and an anthropogenic nature, before describing a basic monitoring system that ensures the establishment of an effective system of adaptive management.

Practical needs for determining if harvests are detrimental

The following points should be considered when developing a framework for assessing the impacts of harvesting for international trade on the status of species:

- harvests for international trade may be only one of several biological or harvesting impacts acting upon a population;
- species have different biological characteristics depending on their body size and different positions in the food chain, which in turn affect their robustness to different levels of harvest; and,
- different harvesting operations target very different segments and volumes of the population, and will vary in their level of impact upon the population.

Once these basic points have been considered in a general approach for setting quotas for different kinds of species and for different kinds of harvesting operations, it then becomes important to establish a basic monitoring system.

International trade as one of multiple impacts upon a population

The harvesting of specimens for export is part of a range of impacts to, and threats that face species. Scientific Authorities need to be aware of, and take account of, these other impacts. Impacts range from those of a more biological nature, to those that are related to different forms of use.

Biological impacts:
Biological factors that may cause threats, particularly to small populations of a species, are divided into intrinsic and extrinsic factors (Mace and Lande 1991). Intrinsic factors include population dynamics, such as age structure and variation in rates of birth and death, population characteristics, such as genetic variability and dispersal patterns, and patterns of distribution, such as restricted ranges and numbers of sub-populations. Extrinsic factors include patterns and rates of environmental variability, habitat quality and availability, interactions with other species, catastrophes and contagious diseases. In an ideal world, knowledge of these impacts would allow harvests to be modified to improve the chances of species survival. However, it is often not economically or logistically possible to collect data on these impacts for species in international trade.

Harvesting impacts:
Species may be harvested for a range of uses other than for the international trade that comes under the purview of CITES. These uses may include local or domestic hunting or capture of species for sport, trophies, food, medicine or other animal products, carried out with or without legal sanction. In addition, consideration must be given to the scale of any international trade that is carried out illegally. Furthermore, there may be additional losses to the population that occur before export, for example due to unrecovered fatal wounding of hunted animals, or capture, post-capture or transport mortality of live-caught animals.

At its extreme, international trade that is non-detrimental to the survival of a particular species must avoid reducing, either directly or indirectly in association with a biological impact or another type of harvest, the total population of that species to a size, structure or number of sub-populations that is in any greater risk of extinction than it is already. However, there is an important practical implication of this definition. International trade in threatened species need not necessarily be precluded, providing it can be shown that it at least contributes to the lessening of threats such as habitat conversion or pest control that are occurring anyway. The classic example here are the crocodilians, where ranching has led to improved status of several species as opposed to continued and increasing threats causing further declines in status.

Species characteristics and type of harvesting

Species that are harvested display a range of life history patterns. Equally, different types of harvesting may target different segments and proportions of the population. These factors in turn can interact in determining whether international trade might be detrimental to the survival of the species.

Species characteristics:
Two important ecological characteristics of individual species need to be considered: the concept of *r* and *K* selection, and principles underlying the trophic structure within ecological communities (see for example Begon, Harper and Townsend 1996).

In very general terms, species of large body size within particular taxonomic groups tend to grow slowly and have a high age of sexual maturity, have a low reproductive rate, produce few young and invest in their survival, have a low rate of adult mortality and be selected to survive at carrying capacity, *K*, in relatively stable environments. Among mammals, the classic example is an elephant. In contrast, species of small body size tend to have a low age of sexual maturity and a high reproductive rate, produce more young and invest less in their survival, have a high rate of adult mortality and be selected to survive and reproduce rapidly, with a high *r*, in a more variable environment. This generalization of *r* and *K* selected species, like all dichotomies, is an

oversimplification. However, it provides a useful framework in which to consider the biologically optimal strategies by which to harvest particular species.

Energy is lost each time it is converted through different trophic layers of an ecological community. Hence, there is a lower biomass of carnivores than there is of herbivores, while in turn there is a lower biomass of herbivores than there is of primary productivity. This generalization also provides a useful framework in which to consider proposed quotas. There should be fewer lions than buffaloes on an African hunting quota, and fewer raptors than finches on a live bird quota, without raising suspicions of trade detrimental to the survival of those species.

Harvesting characteristics:
Different types of harvesting target different segments and quantities of the population, as the following examples highlight:

- legalized trophy hunting specifically targets small numbers of prime males, usually well below MSY, while unregulated meat hunters harvest age and sex classes more indiscriminately and in larger numbers, and often close to or above MSY;
- live capture of birds and reptiles for the commercial pet trade also targets sub-adult and adult age and sex classes relatively indiscriminately and in large numbers, while live capture of animals for zoos, terraria and aquaria is generally more selective and of lower volume;
- a crocodilian ranching operation specifically targets the harvest of eggs and juveniles, which otherwise experience very high levels of mortality of around 98% annually. In contrast, the harvest of adult crocodilians, which are generally long-lived, slow to reach sexual maturity and experience low mortality of some 5–6% annually, for skins and/or pest control is generally above MSY and can result in a population decline.

The crocodilian example shows a very clear recognition of the need to combine biological characteristics of the species and the approach taken to harvesting in a manner that is least detrimental to the survival of the species concerned. In contrast, any high volume and indiscriminate harvesting of a large-bodied predator would give grave cause for concern, as MSY could easily be exceeded, while a high volume trade in a small bodied and rapidly reproducing herbivore or granivore would give less cause for concern.

Establishing a monitoring programme in an exporting country

The theory of harvesting already outlined has been developed from well monitored fishing and whaling operations, and added to with examples from well known terrestrial mammals. At present, monitoring of both populations and of capture effort in many exporting countries is poor or non-existent for many species in international trade, particularly for those species that are hard to census directly. So, the basic requirements for ensuring that utilization is not detrimental to survival are not being met at present for many species. Thus, there is a yawning gap in both practice and understanding between the principles established through harvesting theory, and the practical management of many harvesting operations, including for international trade. Given that much harvesting will continue anyway, whether or not attempts are made to outlaw it through domestic or international measures, and given the concept of adaptive management, it is incumbent upon resource managers to review harvesting operations under their management. Thus, a recent resolution (Box 1) recommends that countries of export base their regimes of harvest management on the scientific review of available information on the population status, distribution, population trend, harvest and other biological and ecological factors, as appropriate, and trade information relating to the species concerned. There is no qualitative difference between the steps that a Scientific Authority of an exporting country need take for species on Appendix I or II, as recognised both by Convention text and recent resolutions (Box 1).

In order to set their international trade, and any subsequent monitoring programme in context, the first step for any exporting country is to establish an appropriate policy and legislative regime. The subsequent implementation and success of any harvesting programme is first determined by defining the objectives of such programmes. Management regimes and trade controls for particular species must be part of a larger overall government policy for wildlife conservation and utilization. Governments should determine their priorities, for example, habitat and/or species conservation, generation of foreign currency, development of employment opportunities, and so on. Once identified, these priorities can provide the foundation of government policy, and the general framework within which to develop management schemes for single species or species groups in international trade.

There are then two main components for a comprehensive monitoring programme, first biological monitoring and second, the monitoring of harvests and export controls (quota, permit and trade-monitoring system). In an ideal world, biological monitoring should

precede the monitoring of harvests and export controls. However, harvesting is often the way in to establishing MSY through adaptive management, and this more often precedes the gathering of detailed biological information. Nevertheless, this section will follow events in an idealized world and first discusses the requirements of biological monitoring.

Establishing a simple biological monitoring programme:
This first requires the collection of baseline population data, where none previously exists. A practical and sensible methodology would comprise the following:

Assessing suitability of species for harvest:

- ascertain the basic biology of the species, with large-bodied species or rare species or food specialists more at risk than small-bodied species or generalists;
- assess the geographic distribution and range of the species, with endemic and localized species more at risk than widespread, non-endemic species;
- determine the area of available habitat within the range and the proportion that is protected, with those species receiving no effective protection more at risk.

Assessing risks of harvest:

- assess extent of other forms of harvesting other than international trade;
- survey the population density in representative parts of the range, and compute the likely upper and lower population levels, coupled with an evaluation of reproductive and recruitment rates;
- based on the above, the calculation of conservative harvest quotas, using the lowest likely population level and taking note of the intended method of harvest, and apportionment of allowable harvests to international trade and other categories.

To make some of the initial assessments, Scientific Authorities can, at the very least, refer to field guides, international lists of protected areas (IUCN 1994), and Red Lists (IUCN 1996), if good local data are not available. Lists of protected areas show how much of that range is theoretically under protection. Red Lists provide an international assessment of threats to species, however coarse grained these may be for the situation in individual range states. Local data sources might comprise: biologists and anthropologists from local universities who have undertaken studies of distribution and status, or of use; national or regional biodiversity inventories (e.g. Stuart and Adams (1990) for sub-Saharan Africa); government departments of forestry, fisheries, agriculture and environment, who may have figures on rates of habitat conversion, livestock density, pesticide use and pollution; protected area managers, who can assess the proportion of the range or population under effective protection; and so on.

This initial assessment can be developed into a regular monitoring programme that undertakes annual censuses of density in the same areas of the range as above, using game scouts, local communities, university students, CITES Scientific Authority, and others. This should also be accompanied by the annual monitoring of capture effort, using an index relevant to the system of harvesting, for example hunter days, and regular reviews of distribution and habitat availability. Quotas can be revised as necessary based on information collected through regular monitoring.

Monitoring of harvest and quotas:
Governments of exporting countries should aim to establish an annual harvest for each species harvested for domestic use or export, and allocate that harvest between different resource users according to policy objectives. This will be relatively more easy for the larger mammals, but even for this group, assessing levels of illegal harvest remains difficult. It may be necessary to develop these levels of harvest with input from qualified scientific experts, depending on the levels of local capacity.

Harvest should be allocated and harvesting effort monitored in a manner that both recognises the importance of maintaining harvests within established limits and also recognises other possible losses from the population, such as illegal harvest, fatal wounding or capture and transport mortality. In many cases, quotas alone do not provide adequate control of harvests and exports. To be effective, they must be combined with an integrated capture and export permit system that is tracked and monitored. Permits must identify permissible harvests of each species for both domestic and international trade.

At the same time as the size of harvest is monitored, the harvest should also be sampled for its age and sex structure. This would entail the weighing, measuring, ageing and sexing of an appropriate proportion of the harvest. For example, every leopard hunted in an export quota in the low hundreds could be weighed and measured, and a tooth be taken for ageing. In contrast, the weight, length and carapace of every tenth tortoise in a quota of several thousand tortoises could provide an adequate sample on which to look for tell-tale signs of exceeding MSY, using the approaches successfully pioneered by fisheries biologists.

PART II
Presentations made by Scientific Authority staff from producer and consumer Parties

Chapter 3
Presentations made by CITES representatives

3.1 Introduction

To understand how the Scientific Authorities interpret and implement the Convention with regard to the making of non-detriment findings, a range of producer and consumer countries prepared information on making these findings. Contributors considered the following points: how they interpret the requirement for a non-detriment finding, the methods that they use to make such findings and the problems that they encounter in making such findings. This chapter presents an introduction to the CITES requirements for non-detriment findings by the CITES Secretariat followed by summaries prepared by CITES staff from producer and consumer countries.

3.2 CITES Secretariat – the requirements for non-detriment findings and tasks of Scientific Authorities, *Ger van Vliet*

Requirements of the Convention

The text of the Convention contains several specific references to the responsibilities of the Scientific Authority. The Convention does not specify, however, who should form the Scientific Authority; nor does it specify who should form the Management Authority. For the Management Authority however, it seems widely accepted by all Parties that this is a legally established authority, working within the legislation used to implement the Convention. This consideration will be discussed in relation to the information provided below in more detail in the presentation to the meeting.

The following summary refers to the text of the Convention and the Resolutions that relate to the tasks of the Scientific Authority.

According to the Convention text, the following tasks relating to non-detriment findings **must** be carried out by the Scientific Authority for trade in Appendix I and Appendix II species to be authorized:

Article III (trade in specimens of species included in Appendix I)

2. *The export of any specimen of a species included in Appendix I shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:*
   (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;
3. *The import of any specimen of a species included in Appendix I shall require the prior grant and presentation of an import permit and either an export permit or a re-export certificate. An import permit shall only be granted when the following conditions have been met:*
   (a) a Scientific Authority of the State of import has advised that the import will be for purposes which are not detrimental to the survival of the species involved;

Article IV (trade in specimens of species included in Appendix II)

2. *The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:*
   (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;
3. *A Scientific Authority in each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.*

The text of the Convention is clear with regard to exports. Exports may not be authorized unless the Scientific

Authority has been consulted and has determined that the proposed transaction will not be detrimental to the species. A survey that the Secretariat carried out some time ago revealed that many Scientific Authorities were never, or rarely, consulted by their Management Authorities. Apart from discussing how to make a non-detriment finding, it is also important to address the issue of mutual co-operation between Management and Scientific Authorities.

Article V (trade in specimens of species included in Appendix III)

Although Article V deals with trade in specimens of species included in Appendix III, the article contains no reference to the responsibility of the Scientific Authority to judge the sustainability of exports of specimens of Appendix-III species; not even for a country that has included the species concerned in Appendix III.

Tasks included in Resolutions

Although various Resolutions refer directly to responsibilities of the Scientific Authority, only one refers specifically to the task of the Scientific Authority with regard to the non-detriment findings – Resolution Conf. 10.3 on the Designation and Role of the Scientific Authority. A number of paragraphs of this Resolution repeat in more detail the requirements of the Convention referred to above. However, some paragraphs under RECOMMENDS are worth further thought:

d) Parties enlist the assistance of Scientific Authorities of other Parties, as appropriate;

e) neighbouring Parties consider sharing their resources by supporting common scientific institutions to provide the scientific findings required under the Convention;

From these paragraphs it is clear that the drafters of the Resolution expect the Parties to work together and assist each other in making non-detriment findings. It is also important to consider why the Parties use the phrase "appropriate Scientific Authority" in paragraphs g) and i) to o).

Precautionary principle

Annex 4 to Resolution Conf. 9.24 (Criteria for Amendment of Appendices I and II) contains a number of precautionary measures that do not directly relate to non-detriment findings. However, paragraph A) could easily be applied by Scientific Authorities that do not have adequate information when trying to make a non-detriment finding. That paragraph reads as follows:

A. When considering proposals to amend the Appendices, the Parties shall, in the case of uncertainty, either as regards the status of a species or as regards the impact of trade on the conservation of a species, act in the best interest of the conservation of the species.

Conclusion

These excerpts from the Convention text and appropriate Resolutions, underline the importance of the requirement for making a non-detriment finding before exports of Appendix I and II taxa are allowed to take place. It is also worth noting that the Parties have recognised the need to work together in collecting reliable information on which to make the necessary non-detriment findings.

3.3 China – process, problems and recommendations for making non-detriment findings, *Wang Sung and Guo Yin Feng*

The role of the Scientific Authority

The function of the Scientific Authority (SA) to CITES in China is performed by the Endangered Species Scientific Commission located in the Chinese Academy of Sciences. The SA in China is able to advise the Management Authority (MA) on the export of CITES Appendix I and II specimens and on the import of Appendix I specimens. This advice is binding to decisions of the MA. For other species including nationally protected species, the SA provides advice when consulted by the MA. For the export of Appendix I and II specimens and the import of Appendix I specimens, non-detriment findings are normally made by SA members nominated by the Chinese Academy of Sciences. There are currently 27 members with different backgrounds such as systematics, ecology, behaviour, etc., who have expertise on species of different taxonomic groups of interest to CITES. Other biologists and competent authorities are also consulted as the SA deems necessary. The National Forestry Bureau is responsible for conservation and management of most CITES listed species and some specialized issues such as trophy hunting. Their comments on the status of species in trade is very helpful to the SA in making non-detriment findings.

What is meant by the "non-detriment finding"?

The SA of China has no ready definition of the meaning of non-detriment findings. These findings are usually made by SA members whose understanding of what is meant by a non-detriment finding may differ from member to member. The SA in most cases acts as a conveyor of the findings, in the form of documents representing the advice of the SA. Generally speaking, a non-detriment finding is made based on the best knowledge of a species as a whole, taking into account the following factors:

- basic information on population, such as geographical distribution, available habitats, population status;
- information on threats and population trend if available;
- biological attributes, endemism and other information showing the uniqueness of the species;
- level of harvest, volumes of domestic and international trade, potential for illegal trade;
- availability and success of management programmes;
- breeding success, etc.

Sources of information used to make non-detriment findings

Most non-detriment findings are made by SA members based on their best knowledge of a particular species. The main types of information used as the basis to make such findings can be divided into the following categories:

- Results of research projects on various aspects of species ranging from distribution, threats, captive breeding and behaviour to age structure, sex composition, etc. Most of the projects are conducted by the Chinese Academy of Sciences and university and college students.
- Data accumulated from regular national monitoring programmes on species under national protection, organized by national wildlife authorities and conducted by wildlife research institutions, colleges and universities. Information acquired is less inclusive and comprehensive than the above mentioned projects.
- Information on levels of harvest of species under national and local protection and species of economic value, and statistics of international trade in these species.
- Results of projects organized by the SA on species in significant trade or conducted by the SA on species or issues of CITES significance.
- Information from the China Endangered Species Information System (CESIS). This system results from the 8th 5-year Biodiversity Plan Programme undertaken by the SA and contains information on 653 vertebrate species, including data on species distribution, population status, threats, protected measures taken, recommendations, rearing and breeding conditions, etc. Data is still being entered into the system.
- Other information, such as domestic trade statistics from companies trading in animal parts and from specialized associations related to wildlife use, etc.

Difficulties encountered and recommendations

There are many constraints affecting the making of non-detriment findings by the SA in China, including a shortage of funds to allow the SA to work more independently and a lack of personnel with a strong biological background. In addition, there is a lack of complete and centralized information on the levels of harvest and use of species, particularly for species with a wide distribution. Neither the SA nor its members are able to acquire and gain access to all these scattered data. The information used by the SA members only reflects members' own knowledge rather than the best information available on the species. Furthermore, whilst some species are well studied, for others there is a lack of even basic biological information.

To improve the process of making non-detriment findings and maximize the use of available information, the following recommendations should be considered:

1) Pragmatic, scientific and standardized guidelines for non-detrimental trade should be made, to enable the SA to give sound advice for different groups of species. The guidelines would take care of the general situations of Scientific Authorities of all CITES Parties.
2) A mechanism should be introduced (in the guidelines) to let the local wildlife authority responsible for developing management programmes for most Appendix II species demonstrate that the approved levels of harvest are not detrimental, while the SA members (or SA) make non-detriment findings on the basis of the information provided. This will also help to overcome the knowledge limitations of members themselves.
3) Quick and inexpensive communication tools such as e-mail should be used and the SA encouraged to strengthen its communications with domestic and international wildlife research institutions and field biologists with expertise on various taxonomic groups to ensure that wider input of information can be incorporated into the SA's advice.

3.4 Indonesia – making non-detriment findings in the Scientific Authority,

Siti Nuramaliati Prijono

Indonesia is thought to have the second highest level of biodiversity in the world. Overseas demand for Indonesian wildlife and wildlife products is very high so a balance between production and harvest of Indonesia's resources is needed to achieve sustainable use.

Indonesia ratified the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) in 1978. However, the threats to Indonesia's wildlife continue to increase and smuggling and illegal trade are rife, as the total prevention of poaching and smuggling is difficult. Therefore, producer countries require the assistance of consumer countries to complement their own efforts to enforce strict border controls.

The role of the Scientific Authority

One of the principal mechanisms of CITES for the regulation of international wildlife trade is that provided by Article IV of the Convention. Poor implementation of Article IV severely reduces the effectiveness of CITES trade controls, with possible disastrous consequences for excessively traded species. The Indonesian Institute of Sciences (LIPI) is the designated CITES Scientific Authority in Indonesia. LIPI is responsible for approving, co-ordinating, supervising and also conducting research on Indonesia's flora and fauna, and advising the Management Authority on the status of species that are, or may be, subject to trade. One of the major roles of LIPI as the Scientific Authority is to advise when exports of a species should be limited. Export limitation is usually achieved by setting an annual harvest quota. The procedure for the establishment of the annual quota is central to the implementation of Article IV of the Convention in Indonesia.

What is meant by the "non-detriment finding"?

The advice from the Scientific Authority that the export will not be detrimental to the survival of the species is obviously essential for achieving the aims of the Convention. Non-detrimental trade is defined as trade in a species of fauna or flora, which will not cause the species to decline in number in its natural habitats to a level where it is threatened with extinction. Different definitions of non-detrimental trade are used for Appendix I and Appendix II species in Indonesia.

Sources of information used to make non-detriment findings

For the Government of Indonesia to achieve sustainable use of wild species and implement its obligations under Article IV of CITES, effective assessment and monitoring programmes are essential. Ideally, an assessment should be performed before the harvest of a wild species begins, to acquire information on the status of the species in the wild. This assessment should aim to determine its: abundance, distribution, role in the habitat and ecosystem, reproductive capacity, reproductive behaviour, habitat quality, etc. Based on this information, harvest levels can be set with a reasonable assurance that they will not have a detrimental impact on the survival of the species in the wild. However, it is not realistic for LIPI to provide rigorous baseline surveys and follow-up monitoring for all populations being harvested. Nonetheless, LIPI endeavours to ensure that harvests are sustainable for the highest priority species. Furthermore, Indonesia's capacity to survey wild species can be enhanced by co-operating with non-Indonesian scientists who wish to undertake field research on wild animals or plants in Indonesia.

Indonesia has a national biodiversity monitoring programme which regularly collects status information at the species level, for priority species. The Indonesian Scientific Authority collaborates with non-governmental organizations and universities to develop this monitoring programme. In addition, information on the status of wild species in Indonesia is also collected by recording data from harvesting activities.

The national programme to monitor levels of species use at the domestic and international levels is undertaken by Management Authority personnel. The Scientific Authority does not undertake this type of monitoring as it does not receive export permits from the Management Authority. However, the Scientific Authority can give advice to the Management Authority to prevent exports, if it believes these exports to be detrimental to the survival of the species.

Difficulties encountered and recommendations

Efforts to control the trade in wildlife species, and to promote species conservation in Indonesia face many obstacles, because the desire of the general public to keep or to consume wildlife species is still high. As a result of these pressures on wildlife, Indonesia now has the unfortunate distinction of being the country with the greatest number of vertebrates threatened with

extinction. Conservation efforts are necessary to promote the sustainable utilization of living resources and their ecosystems to ensure that they are maintained in balance. The functions of the Scientific Authority are extremely important and should be considered as absolutely essential for the implementation of the Convention.

The following recommendations should help to improve the process by which non-detriment findings are made, and to increase confidence in the findings:

1) Field surveys should be initiated for selected priority species.
2) LIPI should develop methods for wildlife population monitoring for distribution to the regional Directorate for Forest Protection and Nature Conservation (PHPA) offices and local universities so that information gathering can be performed on the basis of defined methods.
3) Existing relevant data on priority species should be collected from all sources, including non-governmental organizations and other agencies to facilitate pilot surveys and monitoring activities.

3.5 Namibia – quotas, monitoring and management plans in relation to non-detriment findings, *Malan Lindeque*

The role of the Scientific Authority

Namibia's Scientific Authority functions are performed by an informal group of dispersed scientists who have information relevant to the implementation of CITES. As such it is impractical to consult with a given authority on a case-by-case basis. Namibia has accordingly attempted to streamline the non-detriment process as well as integrating CITES implementation with domestic conservation management in general. Consequently, Namibia intends to expand the use and scope of annual quotas and management plans to ensure sustainable use of wildlife resources. This approach will in effect obviate the need to make individual non-detriment findings for exports of Appendix I and Appendix II species. Accordingly, Namibia sponsored Resolution Conf. 9.21 which provides that export quotas set by the Conference of Parties to CITES for Appendix I species satisfy the requirements of Article III regarding the making of a non-detriment findings. The same approach is followed as far as possible within Namibia regarding Appendix II species, i.e. managing exports on the basis of a predetermined annual quota.

Quotas and management plans have been established by the relevant management agency (or the Namibian CITES Management Authority) in collaboration with local and international scientific authorities for most of the major species exported, i.e. the African elephant *Loxodonta africana*, cheetah *Acinonyx jubatus*, leopard *Panthera pardus* and Cape fur seal *Arctocephalus pusillus*. Management plans are also available for some other CITES listed species, and the drafting of a plan for the Hartmann's Mountain zebra *Equus zebra hartmannae* has been initiated. The management planning process is not yet complete and existing plans will need frequent revision. However, the Namibian CITES Management Authority supports the adaptive management paradigm and hopes eventually to make all harvests from wild populations subject to management plans.

CITES quotas

All Namibia's CITES quotas are fixed annual quotas, as in most other countries. However, several aspects of the quota setting process within the Conference of Parties to CITES merit further consideration:

- no common standard for quota setting has emerged, i.e. some quotas appear to be arbitrary and apparently not based on representative information or scientific criteria;
- quotas are seldom sufficiently specific, they only indicate the number and type of specimens, but do not include information on other restrictions such as locality of harvest, harvesting method, monitoring of harvest and time period;
- the CITES quota setting process is difficult, cumbersome and inequitable, deterring Parties from seeking frequent amendments to quotas that may more accurately reflect conservation and management needs;
- increasingly, CITES decisions are apparently made on political rather than scientific grounds; and
- Appendix I (sometimes viewed as the zero quota system) is particularly inflexible and divorced from actual conservation concerns and needs.

Appendix I, or zero quotas are regarded by some as the pinnacle of conservation success and by others as the worst conservation failure. This dichotomy distorts CITES, and this situation of inequity and insecurity will continue to undermine the scientific integrity of CITES decisions.

Namibia's proposed quota and licence system

Namibia has recently updated and revised its conservation policies and legislation to consolidate achievements such as the long-term recovery of wildlife populations, the establishment of a large and growing wildlife-based industry and the community-based natural resource management approach. All commercial use of wildlife will in future become subject to a quota control system which aims to:

- shift the level of management from individual farming units to the level of a distinct wildlife population, so as to establish management at the appropriate ecological level and eliminate multiple uncoordinated harvests from the same population;
- regionalize the system to reduce the need for farm inspections and for issuing permits on a case-by-case basis;
- encourage the formation of conservancies, through management at the population level;
- maximize the benefits from economy of scale for the Ministry of Environment and Tourism's (MET) monitoring, regulatory and administrative roles in the quota and licence system;
- determine the level of harvest through adaptive management by using initial resource inventories, monitoring the impact of previous harvests and responding to environmental variance; and
- ensure that total annual harvest from all forms of use falls within sustainable limits, by proactive government regulation and monitoring of total harvest rather than managing on a case-by-case basis.

Sustainable harvest quotas for all species will be established on the basis of population estimates and the demographic characteristics of populations. Initial quotas will be determined from potential rates of increase typical for each species in arid and semi-arid areas. These quotas can be subsequently adjusted on the basis of monitoring of population trends. In some areas it might be appropriate to manage populations at a level that will allow for population recovery and increase. In such cases harvests should be well below the maximum sustainable level. A licence system will be used in conjunction with the quota system to:

- distribute the quota on a competitive or representative basis amongst the landholders; and
- certify harvest as part of a quota, and thus facilitate law enforcement.

Namibia's approach to resource monitoring

A fundamental principle of adaptive management is that wild populations should only be used if the impact of such use is monitored. An effective survey and monitoring system is necessary for the initial determination of the size of the resource and for subsequent monitoring of the impact of use. Current aerial survey technology and capacity in Namibia are sufficient to obtain independent scientific estimates of population densities for at least the economically important species throughout the country. While such monitoring is a considerable undertaking, and requires significant resources, the information returns justify the input. In 1998, *c*.350,000km^2 or nearly 40% of the land was surveyed. In addition to regular population monitoring, quota uptake should also be monitored, particularly where population monitoring is not undertaken annually. It is essential to monitor the effort and efficiency of harvesting, i.e. the proportion of the quota used, and harvest/person or per time period. It is particularly important to know how much of the quota was not used (in a given area or time period), and incentives are needed to ensure that this information is provided (e.g. a discount on future licences or a lottery for the return of unused licences).

Management plans

The proposed quota system for Namibia provides strong incentives to encourage communal management of migratory, nomadic or communal wildlife populations. The strongest incentive is to exempt certain categories of land or certain wildlife producers from the standard quota system on the basis of approved management plans. Such plans should have an integrated quota setting and resource monitoring procedure (in addition to the more practical elements of wildlife management). This system will apply to land units which can be managed in isolation as well as to contiguous groups of farms or land holdings ('conservancies') preferably in excess of 200,000ha. To qualify, wildlife resources on such units have to be managed cooperatively to ensure that harvests are sustainable and biodiversity is maintained or restored.

To facilitate implementation, management plans must be simple. As a minimum requirement such plans should include the setting of management objectives (including quotas) and a protocol for monitoring population status, introductions, and removals. Removal should be recorded in such a way as to allow the monitoring of harvest effort.

3.6 Togo – making non-detriment findings: current practice, problems and future recommendations, *Joseph Esso Bowessidjao*

The role of the Scientific Authority

Other than the documents received periodically from the CITES Secretariat, there are few references available in Togo to assist the Scientific Authority in carrying out its work. There is a sad lack of the basic facts needed to establish the different quotas. The definition of non-detrimental international trade in a wild species refers to an international trade that does not threaten the survival of the wild species. This definition only concerns the species included in Appendix II.

In Togolese legislation, species listed in Annex I are said to be protected. However, according to the legislation of Togo, this Annex includes two distinct classes:

- **Class A** includes wild animals that are protected in full, for which hunting and capture, including that of young or eggs, are forbidden except to those carrying scientific permits and within the limits and means detailed in those permits; and
- **Class B** includes the taxa of wild animals protected in part and is divided into Group I and Group II:
  - **Group I** includes the list of all fully protected wild animals, of which hunting and capture, including that of young or eggs, is only authorized to those carrying capture permits (within the limits and means detailed in those permits) and to those carrying special sport hunting permits (for trophies or collection pieces).
  - **Group II** includes the list of partially protected wild animals of which the hunting of individual adults, with the exception of females accompanied by young, is permitted to holders of special sport hunting licences, within the limits of the quantities fixed for each grade, and by means authorized by law. Capture, including that of young, is permitted to those carrying capture permits within the limits and means detailed in the permit.

What sources of information are used to make non-detriment findings?

For species listed in Annex I of the Togolese legislation, the animal population needs to be examined in each case. It is possible to find local or regional populations where the population concentration, or density, actually threatens the survival of the species and in these cases it would be better to instigate scientifically-based population control. The CITES management groups would then need to find the necessary means to provide for local or regional management of the species concerned.

To form the basis for decisions on export that does not affect the survival of a species, a better knowledge of biology, ecology and exact distribution of the species is needed and information on productivity, birth, and death rates should be well known. However, there is no national programme for monitoring biological diversity in Togo. The establishment of such a programmeshould be considered. The Science Faculty of the Université du Bénin in Togo has initiated a small programme to establish a monitoring framework for waterbirds, but this suffers from a lack of materials and finance.

The motivation and technical knowledge exist at the Université du Bénin to develop a monitoring framework to manage reptile exports. However, open collaboration between ranch breeders, traders and management groups will be needed. To facilitate successful monitoring and management, the farms breeding wild animals will each need to keep the following information: exact stock records; statistics on reproduction and fecundity; records of death rates; records of stock released into the wild and their identification marks; and a record of the place of capture of wild animals. Capture records will help to establish the current distribution of the species and to avoid the export of species that do not occur in Togo.

Togo's wildlife management system requires that releases of surplus animals must be carried out in the presence of the CITES Scientific Authority. In addition, a scientific system must be developed to determine export quotas, at the very least for species such as the pythons, *Python regius* and *Python sebae*.

Recommendations

- CITES management bodies in Togo should enforce control measures on the general export of wild animals;
- CITES management bodies in Togo should, in future, use scientific management programmes to ensure long-term availability of specimens;
- CITES management bodies in Togo should also, in future, ensure that breeding farms strictly observe the above mentioned points before delivering an export permit;
- CITES management bodies should base the allocation of export quotas on credible scientific formulae and criteria;
- A biological and ecological study of animals destined for export should be made to ensure long-term sustainability of the resources.

3.7 Cameroon – interpretation of the non-detriment finding, *Jean Ngog Nje*

The role of the Scientific Authority

The responsibilities of the CITES Scientific Authority are described in Article III paragraphs 2a, 3a, b and 5a, and Article IV paragraphs 2a, 3 and 6a of the Convention and in Resolutions Conf. 2.11 (Rev.) and 10.3. The importance of Scientific Authorities was recognised in 1992 with the adoption of Resolution Conf. 8.6 (Rev.) which stressed the importance of Scientific Authorities and asked the CITES Secretariat, with the help of appropriate experts, to prepare guidelines for Scientific Authorities. To assist this process, a questionnaire on the role of the Scientific Authority, to be answered by both the Management and Scientific Authorities, was circulated to the Parties. Questionnaire responses highlighted several problems regarding the functioning of the Scientific Authorities: lack of independence; lack of communication between Management and Scientific Authority; and lack of resources (manpower, funding, time, etc.). These responses were used to inform the development of Resolution Conf. 10.3 which repeals Resolution Conf. 8.6 (Rev.).

The making of non-detriment findings by the Cameroon Scientific Authority

The Scientific Authority of Cameroon makes non-detriment findings using the text of the Convention and resolutions as references. The Scientific Authority does not have a working definition of the term 'non-detrimental', but uses the text of the Convention as a basis. Where possible, information on the distribution and approximate population size of the species in question are used in the making of non-detriment findings. Such information is available from two sources:

- since 1996, the GEF has supported a project to monitor Cameroon's biodiversity; and
- some monitoring is carried out by non-governmental organizations, the University, and individual researchers.

However there is no national programme known to Scientific Authority staff, to monitor levels of species use at the domestic and international levels. Due to lack of resources the Scientific Authority is not able to monitor regularly export levels and to advise the Management Authority of any concerns. If funds were available, the Scientific Authority would make arrangements to monitor exports at the main ports of exit and to train staff in species identification, national regulations, CITES regulations and in strategies used by customs to detect smuggled wildlife goods.

Recommendations to improve the making of non-detriment findings

To improve the making of non-detriment findings in Cameroon the following requirements are necessary:

- training seminars should be run on a regional and sub-regional basis for both the Scientific Authority and the Management Authority;
- guidelines must be available for Scientific Authorities;
- funds must be available for SA staff to undertake field investigations when necessary;
- funds must be available to improve communication with Management Authorities and the CITES Secretariat; and
- the Management Authority should have the necessary resources to function effectively.

Conclusion

The role of the Scientific Authority is complex but essential for the implementation of the Convention. The advice it is required to give necessitates knowledge of the conservation status of the species and good collaboration with other partners, especially the Management Authority.

3.8 Australia – Wildlife Protection (Regulation of exports and imports) Act 1982, *Tony Bigwood*

The role of the Scientific Authority

The export of wild harvested native plants and animals (including products) from Australia, and the import of specimens of CITES listed species is regulated by the Wildlife Protection (Regulation of Exports and Imports) Act 1982 (the Act), particularly Sections 10 and 10A of the Act. The Act bans the export for commercial purposes of live native vertebrate animals, except fish, and regulates exports of most native plants and animals, although there are a number of exceptions including some marine fin fish, some marine invertebrates and wood.

The Act also regulates the import of most live animals, and has the capacity to regulate the import of live plants. Where CITES Appendix II specimens are being

considered for commercial import into Australia, the management arrangements for those species must be approved by the Australian government.

Specimens may be harvested under a designated Management Programme or as a Controlled Specimen. In management programmes the Minister must be 'satisfied' about a number of moderately strict criteria in making a decision. In contrast, as a Controlled Specimen somewhat less stringent criteria must be 'taken into account' when making a decision. Management programmes are generally required for larger, more established harvesting proposals, while Controlled Specimen declarations are used for smaller start-up operations where there is often less information on the biology and ecology of the species in question. The Controlled Specimen provisions are also generally used when considering the commercial import of CITES Appendix II specimens.

The sort of information that is required to determine non-detriment for a species in trade is outlined under the Act. These criteria only apply to Appendix II specimens (the import and export of CITES Appendix I specimens is only permitted under the Act for inter-zoological gardens transfers, scientific purposes or where the specimen is captive-bred). Management programmes can be declared when there is sufficient information available on the biology of the species to ensure that the proposed harvest will not be to the irreversible detriment of the species, or its habitat. Such programmes are usually administered by State or Territory government agencies and reflect State/Territory-wide management for the particular species concerned. The criteria for a management programme are:

a) that there is sufficient information concerning the biology and ecology of each species intended to be subject to the management programme to enable the designated Authority to evaluate a management programme for that species;

b) in the case of a management programme that is proposed to be carried out, is being carried out, or has been carried out in another country – that the Designated Authority has received and considered information relating to the management programme; and

c) in the case of a management programme that is proposed to be carried out, is being carried out, or has been carried out in Australia or in an external Territory – that the Designated Authority has held discussions with all relevant bodies; and

d) after receiving and considering advice from the Designated Authority – that the management programme contains measures to ensure that the taking in the wild, under the management programme, of an affected specimen will be carried out so as to maintain the species or sub-species in a manner that is not likely to cause irreversible changes to, or long-term deleterious effects on, the species or sub-species, or its habitat; and

e) after receiving and considering advice from the Designated Authority – that the management programme provides for adequate periodic monitoring and assessment of the effects of taking specimens, under the management programme, on the species or sub-species to which the specimens belong, the habitat and any other species or sub-species specified in writing by that taking; and

f) after receiving and considering advice from the Designated Authority – that the management programme provides for a response to changes in:

   i) the populations and habitats of the species subject to the programme; and

   ii) knowledge and understanding of the biology and ecology of that or those species; and

g) after receiving and considering advice from the Designated Authority – that the management programme is consistent with the object of the Act.

Current management programmes include:

- A Management programme for the Saltwater crocodile *Crocodylus porosus* and the Freshwater crocodile *C. johnsoni* in the Northern Territory of Australia.
- Management programme for the Saltwater crocodile *C. porosus* and the Freshwater crocodile *C. johnsoni* in Western Australia.
- The Short-tailed shearwater *Puffinus tenuirostris* Management programme in Tasmania 1998–2000.
- Management programme for the Brush possum *Trichosurus vulpecula* (Kerr) in Tasmania 1997–1999.
- The New South Wales Kangaroo Management Programme 1998–2002.

The Controlled Specimens provision allows for commercial harvesting and trade, under strict conditions, where it would be inappropriate to insist on a management programme, and where it is consistent with the object of the Act not to declare an approved management programme. Such circumstances might include short-term salvage harvesting, small-scale harvesting of

common species, the developmental stages of management programmes and the import of CITES-listed species from overseas. All harvesting proposals are currently assessed in accordance with the principles of ecological sustainability and conservation of biological diversity. The criteria for a Controlled Specimen are:

a) the distribution of the species from which the specimens would be taken would be derived, and its national and regional status and abundance; and

b) the likely effect of the taking of the specimens on the population from which the specimens would be derived; and

c) any existing management provisions under laws relating to the species, or the population, from which the specimens would be derived; and

d) in the case of a specimen which is to be imported, advice from the Designated Authority following his or her consideration of information relating to the management of the animals or plants from which the specimen would be derived; and

e) in the case of a native Australian specimen, advice from the Designated Authority following his or her discussions with any relevant body; and

f) advice from the Designated Authority as to:

   i) the nature and extent of controls over the taking, possession and disposal of the specimens; and

   ii) the nature and extent of any proposed or potential trade in the specimens for commercial purposes; and

   iii) any management and monitoring procedures necessary to ensure that the population from which the specimens would be derived will not be adversely affected by the proposed level of exploitation.

Current controlled specimen declarations include:

- Management programme for Protected Plants in Trade in Queensland 1995–1998.
- Management of Native Freshwater Fish in the Northern Territory.
- Management arrangements for Specimen Shell Collection in Western Australia.
- Management Plan for the Commercial Exploitation of Jellyfish *Catostylus mosaicus* from New South Wales Ocean and Estuary Waters.
- Beche-de-mer Fishery Management Arrangements – Queensland.
- Interim plan for beche-de-mer fishing in Western Australia.
- Small scale harvesting operations for *Dicksonia antarctica* in Victoria.

Current Controlled Specimen declarations for overseas countries include:

- "Rain Sticks" where each consignment must be covered by a Chilean CITES export certificate or re-export certificate indicating Chile as the country of origin.
- Birdwing Butterflies: Applies only to butterflies derived from the operation conducted by the Insect Farming and Trading Agency Papua New Guinea. Relevant permit or certificate must be issued in compliance with CITES by the appropriate authority of the country of export or re-export.

When considering a proposal to export specimens of a species the level of monitoring is part of the consideration. The Declaration required to approve a commercial export proposal often reinforces the reporting requirements of the proponent. There is no co-ordinated national level biodiversity monitoring programme. Where an individual species is subject to a significant level of use, for example; kangaroo, crocodiles, mutton birds, and some species of flora, specific monitoring programmes are established to determine the population and the sustainability of harvesting operations.

The Scientific Authority has access to the trade database and regularly interrogates the database about the level of trade in particular species, as well as the origin of the export and other relevant information. There is however a requirement to upgrade the capabilities of the database to enable more rigorous assessment of trade. There is generally a preference to regulate harvesting at the point at which it is occurring or at the wholesale or processing points rather than through regulation at the point of export.

3.9 Bolivia – non-detriment findings and monitoring/quota setting policy,
Lillian Villalba

The role of the Scientific Authority

Bolivia's major wildlife and environmental laws were established in 1975 and 1992. Since 1986 three successive Supreme Decrees have established a total ban on all wildlife hunting, trade and export. However, the first two Supreme Decrees from 1986 and 1987 had some exceptions that permitted the export of skins of Yacare caiman *Caiman crocodilus yacare* and wild pecaries *Tayassu* spp. The third Decree dating from 1990 had no exceptions and established that species may be removed from this prohibition only by a specific Supreme Decree. However the export of wildlife products confiscated and sold by public bid, was authorized, if they were not included in CITES Appendix I.

From 1994, when the National Museum of Natural History (MNHN) was designated as the Scientific Authority, to the time of writing, the Bolivian government had not approved the export of wildlife for commercial purposes. However, products of Yacare caiman and wild peccaries, stock-piled during 1986–1989, and products confiscated and sold by public bid since November 1990 are exempt from this export ban.

The procedures for issuing CITES permits are rigorous. The evaluation and verification of the legality of acquisition of wildlife products by the exporting companies is particularly important. This evaluation includes examination by the Wildlife Consultative Council, composed of scientific institutions with relevant experience and knowledge, who *recommend* to the Management Authority whether the CITES permit should be issued. Until May 1998, issuance of CITES permits by the Management Authority, was supported only by the Wildlife Consultative Council recommendations. Later the General Biodiversity Direction established a permanent CITES co-ordination office and the mechanism for issuing permits was improved and became more efficient. The Scientific Authority is now the first point of contact for issuance of CITES permits.

Sources of information used to make non-detriment findings

The Scientific Authority non-detriment findings are based on:

- the knowledge of specialists;
- the Vertebrate Red Data Book of Bolivia (published in 1996);
- the IUCN Red List categories; and
- recommendations of the Wildlife Consultative Council, of which MNHN is one of the three non-governmental members.

However the lack of basic knowledge about local geographical distribution, numbers and conservation status of several species, makes it difficult or impossible to decide if the export is detrimental or not for a specific species.

Currently, only two species, vicuña *Vicugna vicugna* and Yacare caiman *Caiman crocodilus yacare*, are under specific regulations that allow their use in an experimental way. A national census for the vicuña and a survey to establish the relative abundance of Yacare caiman were required before the specific regulations allowing experimental use could be issued. Therefore at the time of writing, these were the only two species for which reliable population status information was available. However, a regular monitoring programme has not yet been initiated.

The lack of human resources (the absence of dedicated core staff) and operating funds, have restricted the ability of MNHN to fulfil its functions as a Scientific Authority. Activities have been limited to an evaluation of the issuance of CITES permits.

Recommendations to improve the making of non-detriment findings

A number of factors should be considered to improve the work of the Scientific Authority in Bolivia:

- Funding and institutional support is essential to encourage and improve the work of the Scientific Authority and to ensure that the following can occur:
  - long term studies on biology, ecology, population dynamics, surveys and a monitoring programme for native, economically important species;
  - an assessment and monitoring of wildlife trade;
  - the establishment of a data bank and information network about CITES;
  - training of additional field staff for MNHN and other scientific institutions of other Bolivian departments to carry out surveys and monitoring; and
  - joint work, through collaborative agreements, between MNHN and other local institutions for the implementation of monitoring programmes.

- The functions of the Management Authority should be clearly defined and separated from those of the Scientific Authority.
- Communications should be improved between Scientific Authorities in the region, in order to exchange information and experience.
- The Management Authority will require funds for operations, equipment, improving local infrastructure and training official staff, to allow effective control of hunting, trade, export and inspection of wildlife use or management programmes.

3.10 Procedures used by the United States of America in making CITES non-detriment findings, *Susan Lieberman*

The role of the Scientific Authority

The United States has the unique advantage of a large and robust scientific community to draw upon, as no matter how many staff there are in the Scientific Authority, we can never have all the expertise necessary to make non-detriment decisions alone. We must work closely with the scientific community, experts, and others around the world. I believe that the same is true in all countries of the world. Decisions on particular exports, either for individual shipments or annual quotas, should be made based on the best available information, and based on consultations with experts on particular taxa. If we reach a global scientific consensus on what is not detrimental for particular species then we will reduce much of the controversy about whether or not particular uses are sustainable or not.

The United States is both an exporting and major importing country. We have a federal system in the United States, and the office of the Scientific Authority works very closely with our States and Indian Tribes in the export of our native species. In some cases, such as for the American alligator and American ginseng, those exports are extensive. We also support large numbers of captive-bred wildlife, often of species wherein the founder stock was imported from other countries. This paper will focus on fauna, but many of the same points could be made for flora.

All non-detriment findings are made in the United States by the Division of Scientific Authority (as required by the CITES treaty). There has been some discussion in CITES fora as to what is meant by the independence of the Scientific Authority, as required by CITES and Resolution Conf. 10.3. The explanation is quite simple. When we in the Scientific Authority make a finding that a particular export (or import for Appendix I species) would either be detrimental or that we have insufficient information on which to make a non-detriment finding, the Division of Management Authority cannot issue the CITES permit. It is as simple as that. Of course, in some cases further dialogue with the Management Authority, or the provision of new information, may modify our finding, and in all cases applicants that have been denied a permit have an appeal process available to them. But the important point is the independence; the Management Authority cannot issue a permit if the Scientific Authority does not make the non-detriment finding. I am acutely aware that in many countries that is not the case, and the Management Authority either does not consult the Scientific Authority, or ignores their biological opinion in many cases; in some countries they are even the same individuals. That lack of scientific independence poses a serious problem for the implementation of CITES, and more critically, a serious problem for the conservation of species subject to international trade. In other words, the independence of the Scientific Authority is not a function of where it sits in a country's bureaucracy, but rather the independence of the decision-making process.

Sources of information used to make non-detriment findings

In all cases, the status of the species in the wild is the primary factor that we take into consideration in making a non-detriment finding. Our non-detriment findings, whether for Appendix I or Appendix II species, are based on the best available biological information, are scientifically grounded and consider whether the species in the wild is common, abundant, managed, stable, declining, threatened, or endangered. We may pay greater attention to some proposed shipments than others, based on the status of the species. In all cases, the degree of risk to the species (risk of detriment, illegal trade involvement etc.) determines the degree of scrutiny. Therefore, if a species being bred in the United States is a highly valuable species subject to illegal trade, or a rare endemic in its country of origin, we might pay closer scrutiny than to a species bred here that is extremely common and less valuable economically (and thus less at risk of illegal trade, laundering etc.). I believe that Scientific Authorities must pay particular attention to illegal trade risks to species, as illegal trade poses significant risks to the conservation of species in the wild. This is true for both Appendix I and II species.

It is useful to highlight some of the information sources that we use. When our Scientific Authority receives permit applications from the Management Authority, any of the following information sources may be consulted in making non-detriment findings:

- Published literature – scientific journals, the Internet, databases, publications of TRAFFIC and other NGOs and other publications;
- Species experts – individual scientists, field biologists, members of IUCN specialist groups, Species Survival Plan coordinators, studbook keepers, and other experts;
- U.S. government officials in other countries – when applicable we consult U.S. government officials in other countries that may have useful information on conservation and management in that country where they are located (such as the U.S. Agency for International Development and the U.S. Department of State);
- Other CITES Management and Scientific Authorities;
- CITES Secretariat (when applicable);
- CITES documents – documents from previous meetings of the Conference of the Parties (including proposals submitted to amend the Appendices), and documents from the Animals, Plants and Standing Committees, when applicable.

Many of the sources of information that we use are now available on the Internet, and I welcome efforts to produce a directory of these information sources for CITES Scientific Authorities.

For every CITES permit request we receive from our Management Authority, a non-detriment finding is "on file". However, the United States issues more than 5,000 CITES permits every year, and therefore we must prioritize applications. We therefore do not request to actually see every application (although which applications or types of application we see is at the discretion of the Scientific Authority). We have set up a system whereby certain "lower priority" or otherwise simpler applications can use so-called "general advices" that we issue to the Management Authority.

Every permit file has a U.S. Scientific Authority non-detriment finding in it, and every permit issued by the Management Authority is copied to the Scientific Authority. We track the permits that are issued as required by the CITES treaty, and the exports from the United States, in particular, for Appendix II species to implement effectively Article IV. Such monitoring is vital to the implementation of the requirement of Article IV paragraph 3. Unfortunately, all too often, Scientific Authorities in some countries may implement Article IV paragraph 2 (the non-detriment finding), but they have ignored the requirement of paragraph 3 to ensure that the species are maintained throughout their range at levels consistent with their role in their ecosystems, and well above levels at which they might become eligible for inclusion in Appendix I.

General advices

To expedite permit issuance for lower risk activities the Scientific Authority has devised a system whereby "general advices" have been issued for certain species and activities. Exceptions to these general advices often exist, and in those cases the Scientific Authority requests that the Management Authority provide it with a copy of the permit application. Both offices are in constant, close coordination, but the decision-making processes are independent. The Management Authority provides the Scientific Authority with copies of all permits issued, to assist it in its monitoring functions and to allow the Scientific Authority to confirm that permits have been issued appropriately and the correct advices have been used.

General export findings (general advices) can be facility-based or species-based. Facility-based non-detriment findings are issued for facilities with which we are very familiar, and whose work usually either benefits species conservation or recovery, or the facility is breeding in captivity or artificially propagating species that we are familiar with. In many cases, we have physically inspected the facility (or it has been inspected by another Fish and Wildife Service representative, usually from our Division of Law Enforcement). Facility-based non-detriment advices can either be annual or multi-year. For example, we issue general multi-year findings for certain scientific research institutions with which we are very familiar. We have recently issued such multi-year findings for Appendix I and II specimens involving major conservation research institutions in the United States, for the import and export of tissue samples for scientific research. This does not exempt them from needing a CITES permit, of course, but it allows our Management Authority to issue a permit more expeditiously.

Species-based non-detriment advices include more open-ended general advices for export of certain (low risk) non-native captive-bred animal species or artificially propagated plant species. We evaluate whether or not certain species meet the criteria in Resolution Conf. 10.16, as bred in captivity, and in particular whether all specimens in the United States meet those criteria. Such determinations take into consideration the establishment of the original founder stock, and whether or not additional animals are imported into the United States for commercial breeding purposes, among other

factors. There are also native species for which we have issued species-based advices, including the paddlefish (*Polyodon spathula*) and white sturgeon (*Acipenser transmontanus*), with the stipulation to our Management Authority that these are for aquaculture-produced fish only. The Management Authority then has the obligation to ensure that the specimens are indeed captive-bred.

In addition, we approve several native Appendix II species on an annual or multi-year basis for export, based on State programmes. For species such as American ginseng and American alligator, we approve the programmes of the various States and Indian Tribes in the United States on an annual basis, based on the information provided to us by our States. We make our non-detriment finding based on that information. We do not issue quotas to our States, or national quotas, but rather approve the export programmes of individual States and Tribes, based on our satisfaction that the State's or Tribe's harvest or export programme is not detrimental to the species. A list of approved programmes is available on request. There are also several furbearer species in the United States (such as the bobcat *Lynx rufus* and river otter *Lutra canadensis*) that are listed under Article II.2.b of CITES, in that they are similar to other furbearer species, and their pelts may be confused with either Appendix I species or similar Appendix II species. Under Article II.2.b., their listing is in order to ensure that trade in the other species to which they are similar is brought under control and our non-detriment finding for these species is made on this basis. Of course, it is the obligation of each Scientific Authority, in the case of II.2.b species, to ensure that the species does not decline to the point that it qualifies for Appendix II in its own right. We receive information from our States every year that allows us to monitor exports and satisfy us that exports are not detrimental.

Samples of any of our general advices (facility-based, species-based, or State programmes) are available on request from the Scientific Authority. The important point is that we have devised a flexible system that allows us to strategically focus our resources and attention.

Types of non-detriment advices

So how do we make non-detriment findings? Population monitoring and censusing may be appropriate for certain exports, while adaptive management and similar strategies may be appropriate in other cases. In the case of imports of Appendix I specimens, censusing and population monitoring or other management is the responsibility of the range country and so the US Scientific Authority adopts a different approach. We make individual non-detriment findings for three categories of trade: live animals, sport-hunted trophies and scientific specimens. Some of the more contentious findings that we make often involve those for the import of Appendix I species. Our general operating principle is that for Appendix I species, import or export is likely to be considered detrimental if the proposed activity stimulated removal from the wild, or may stimulate the removal of additional specimens from the wild, without any off-setting benefit for the conservation of the species in the wild. The degree of off-setting benefit necessary is related to the extinction risk to the species. For imports, we take into consideration the management programme in the country of export in evaluating the conservation benefits of the proposed activity. As stated previously, the status of the species in the wild is the primary factor that we take into consideration in making all non-detriment findings.

Live animals: We look at captive animals a bit differently from wild-caught animals, as the risk to the conservation of the species in the wild is by definition greater for wild-caught animals. For captive animals, we look at the origin of the animals. If the animals are captive-bred, in general, neither import nor export is considered detrimental, unless the proposed activity would disrupt conservation efforts for rare or endangered species. If the animal is wild caught, but is a long-term captive, we usually treat it the same as a captive-bred animal, as long as the proposed activity is unrelated to the circumstances of the original removal of the animal from the wild. Therefore, we take into consideration the length of time that has elapsed since the animal was removed from the wild. This is particularly germane for personally owned animals or animals for zoological exhibition or display. In the case of recently wild-caught animals, if the removal from the wild appears to be unrelated to the proposed activity, we may treat them the same as captive-bred specimens. An example of such an occurrence is the case where an animal is removed from the wild for the treatment of injuries.

In looking at live captive animals, we pay particular attention to the origin of the animal [and founder stock in the case of captive-born individuals]. This is vital to ensure that wild-caught animals are not being traded as captive-bred specimens. There are also all-too-many cases where animals may themselves be bred in captivity, but the founder stock was not obtained legally, and therefore export of even the progeny would be detrimental to the survival of the species (in that it increases demand and facilitates detrimental trade). Information that we use to verify the origin of the animals can include: a) affidavits from the applicant, the breeder, and previous owners; b) ISIS (International Species Inventory System) documents and studbooks; or c) published sources, such as the

International Zoo Yearbook, IUCN Red Data Books, or other similar publications.

In the case of wild-caught animals, we look at the impact on the species in the wild and we verify the origin of the animals. In considering the impact on the species, each case is looked at individually, based on the best available biological information. This is particularly relevant for imports of either Appendix I species or species subject to stricter domestic measures here in the United States (such as the Endangered Species Act or the Wild Bird Conservation Act). We consider various factors, including: a) the current status of the species (including population size, trend and distribution); b) the impact on the population or species of removal of specimens from the wild; c) for Appendix I specimens, whether or not there is any off-setting benefit to wild populations from the proposed activity; d) range country management of the species; e) impacts on future recruitment; and f) the amount of incidental take.

In verifying the origin of wild-caught animals, the information that we consider can include: a) affidavits from the applicant; b) copies of collecting permits and other permits required by the range country; c) verification by other Management or Scientific Authorities; d) a copy of the CITES export permit (if applicable); and e) information from the current literature or species experts with knowledge about the species or country in question.

Sport-hunted trophies: One of the more frequent types of non-detriment advices that we provide pertains to sport-hunted trophies. In the case of Appendix II species (where our finding is on exports from the United States), we: 1) consult with the relevant State agency or Indian Tribe within the United States; 2) consider the current status of the population, including population size, trends and distribution; and 3) consider the management programme for the species, including permits or licences, quotas or bag limits, restrictions on seasons or hunting areas, age or sex limitations, and the marking of specimens.

For Appendix I species for which we are requested to make import findings, we consider a number of factors. For species that are imported in large numbers, we may issue a programmatic finding for one or more range countries, on an annual basis. Such is the case, for example, for the leopard, for which there is a CITES-approved quota, and for certain countries' populations of African elephants. We consider the following information in making import findings for sport-hunted trophies:

1. relevant Resolutions of the CITES Conference of Parties;
2. relevant Decisions of the CITES Conference of Parties;
3. relevant decisions or recommendations of the CITES Animals and Plants Committees;
4. the status of the species in the wild (population size, trends and distribution, including the IUCN classification);
5. the management of the species, including: permits or licences, quotas or bag limits, restrictions on seasons or hunting areas, age or sex limitations, and the marking of specimens;
6. whether the hunting programme in the range country provides benefits for the conservation of the species, including improved enforcement, habitat protection, or research on the species; and
7. the effectiveness of the implementation of CITES by the range country, including its implementing legislation, enforcement and overall CITES management.

Scientific specimens: We issue a relatively large number of findings for scientific specimens. In many cases, we try to issue these programmatically, usually on a facility basis, for a number of species or specimen types. This is analogous to the CITES exception in Article IV paragraph 6 for scientific institutions exchanging accessioned museum specimens. In this case we look at scientific institutions (such as universities or research institutions) that are working to benefit species conservation; it is our goal to expedite their import and export of scientific specimens. A certain amount of scrutiny is required to ensure that the research is legitimate. We have also issued general advices for tissue culture specimens, and for other specimens involving negligible risk to species in the wild. For scientific specimens, we differentiate between specimens from salvage materials or those taken from live animals. For salvaged material, we consider an activity to be non-detrimental if the material is derived from animals that have died of natural causes or opportunistically from legal subsistence or other take. We also take into consideration whether the import would stimulate additional take from the wild, such as by offering rewards or monetary compensation for specimens. We often condition our findings (and the Management Authority thus conditions its permits) to preclude the payment of rewards for specimens, which we believe could be detrimental to the survival of some species. For scientific specimens taken from live animals, we take into consideration the record of the importing facility, including its history of compliance with wildlife laws and regulations. We also consider the methods of capture, restraint, sample, collection, and other manipulations of the animals involved. Finally, we take into consideration whether the research is designed to result in

benefits for the conservation status of the species. We require each facility (particularly those with programmatic findings) to be responsible for ensuring the qualifications of the persons involved in the collection of samples.

Conclusion

In conclusion, I have tried to give an overview of the types of information we use in making our non-detriment findings, and therefore in fulfilling our obligations under the CITES Convention. The space available does not allow for examples of individual permit decisions and how we reach our conclusions. Our primary goal is the conservation of species in the wild, as stated best in the CITES preamble: "Recognizing that wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come". We are cautious and precautionary, and always focus on what is in the best interest of the conservation of the species in the wild.

3.11 European Union – stricter domestic measures and non-detriment findings for imports of Appendix II species, *David Morgan*

CITES Implementation in the EU

The implementation of CITES in the European Union (EU) countries needs to be considered in the light of a number of fundamental points:

- There is only one basic law for the whole of the EU. Its provisions are binding on each Member State.
- There are no customs barriers within the EU so CITES specimens are free to circulate without controls between Member States.
- Permits and certificates are issued by each member State and harmonized implementation is ensured by a Scientific Review Group (SRG) comprised of representatives from the Scientific Authorities of the Member States and a Committee comprised of representatives from each Management Authority.
- The EU trade regulations are designed to support CITES, not to replace it.

The legislation implementing CITES in the EU is based very closely on the requirements of CITES. The legislation incorporates directly into EU law virtually all the provisions of the many CITES resolutions. In this respect, it is arguably the most comprehensive legislation for implementing CITES anywhere in the world. All this contrasts with the position of the EU under CITES. The "Gaborone Amendment" agreed in 1983 and permitting accession to the Convention by regional economic integration organizations has still not been ratified by sufficient Parties to enter into effect. The mismatch between the day-to-day realities of implementation at EU level and the Union's position under CITES results in a lack of accountability and hinders the EU's attempt to play its full part in the work of the Convention. Parties who have still to ratify this amendment should do so without delay.

The significance of the application of non-detriment requirements in the EU is heightened by the fact that we have adopted a stricter domestic measure requiring import permits for CITES Appendix II species. These permits can only be issued after a non-detriment finding has been made. The conditions required to be fulfilled for import and export of CITES specimens in the EU are summarized in Table 1.

Derogations from the conditions specified in the above table are available for captive-bred animals/ artificially propagated plants, non-commercial exchange between registered scientific institutions and so forth in a similar way as applies under CITES.

As shown in Table 1, the non-detriment finding can be determined at three levels. Firstly, the importing Member State's Scientific Authority must determine that "after examining available data, the introduction into the EU would not have a harmful effect on the conservation status of the species or on the extent of the territory occupied by the relevant population of the species, taking account of current or anticipated trade". If the finding is negative, the European Commission is informed and coordinates such that the SRG either upholds or rejects this conclusion.

Secondly, the SRG also systematically reviews the conservation status of Annex B species and forms positive or negative non-detriment findings. As these are collective decisions of the Scientific Authorities, they are followed by them in their everyday work. It is important to note that EU Management Authorities cannot issue import and export permits unless a non-detriment finding has been made.

Thirdly, if the SRG has made a negative non-detriment finding, the European Commission can then formalize this decision though the publication of an import restriction in the Official Journal of the European Communities. Before doing so, the Commission is

Table 1. Checklist of prerequisites for the delivery of EU CITES import and export permits

	ANNEX A (= ±CITES App. I)		ANNEX B (= ± CITES App. II)	
	Import	**Export**	**Import**	**Export**
Not for primarily commercial purposes	√	√	**X**	**X**
Valid import/(re-)export document from other Party	√	√	√	**X**
Non-detriment finding (NDF) by importing SA	√	√	√	√
No Negative NDF by the SRG	√	**X**	√	**X**
No EU level import restriction	√	**X**	√	**X**
Non-detrimental purpose*	√	**X**	**X**	**X**
Live specimens to be properly housed	√	**X**	√	**X**
No other negative conservation factors	√	√	√	√
Documentary evidence of legal acquisition	**X**	√	**X**	√
Live specimens to be properly shipped	**X (√)**	√	**X (√)**	√

*Non-detrimental purpose under the Regulations defined as:
- advancement of science
- essential biomedical purposes
- breeding/propagation with conservation benefits
- research or education aimed at conservation of the species
- other non-detrimental purposes

(√) Transport of all live animals is subject to general EU standards

required to consult with the affected range States. Information presented by the range States during this process is reconsidered by the SRG to see if a change of view is required. This consultation exercise is seen as a vital element of the process. In passing, it can be noted that the European Commission can also establish restrictions on the import of Annex B species subject to high mortality during transport or unlikely to survive in captivity for a considerable proportion of their potential lifespan and of live specimens of any species presenting an ecological threat to indigenous EU species.

Negative opinions of the SRG and EU-level import restrictions are published on the Internet (unep-wcmc.org/species/trade/eu) to aid transparency. Further general information and a detailed guidebook about EU CITES implementation can be found at europa.eu.int/int/en/comm/dg11/cites/citeshome.htm.

3.12 The Netherlands – making a non-detriment finding and issuing an import permit under the EU stricter domestic measures, *Marinus Hoogmoed*

Introduction

The Netherlands is mainly an importing and transit country for wildlife managed by CITES, not an exporting country. Nonetheless, non-detriment findings are regularly made when import permits are applied for. Under the present European Union (EU) regulation, all member States of the EU are bound to work along the same lines when considering non-detriment findings etc. When one country denies an import permit, all other countries are required to do the same. These decisions are regularly coordinated in meetings of the Scientific Review Group (SRG), in Brussels. The advice of the SRG to the European Commission is final. The Commission regularly asks consultants to study certain species in order to facilitate decisions of the SRG. In the Netherlands data are regularly reviewed for species that cause concern. This is done by experts of the Dutch Scientific Authority (SA) in cooperation with other experts, based on their own experience, on literature, on data available through the internet, and in cooperation with IUCN Specialist Groups. Some examples will be provided.

The role of the Scientific Authority

The Netherlands is a country that deals mainly with imports and re-exports of CITES-listed wildlife, and is not an exporter of such products. Any CITES specimens that are exported are always specimens that have been bred or propagated in captivity and so there is no direct influence on the wild population. So, it might be considered strange that such a country contributes to a workshop on making non-detriment findings for CITES species. However, non-detriment findings are regularly made in the Netherlands when import permits are requested. The European Union requires import permits not only for Appendix I species (as required under the CITES Convention) but also for imports of all Appendix II species and even for some non-CITES species.

The Dutch Scientific Authority for CITES consists of a committee of several scientists with different backgrounds, currently comprising four zoologists and three botanists. They are assisted by a full-time professional secretary, also a zoologist with a long experience of CITES matters from the Management Authority side. The Committee's expertise covers mammals, birds, reptiles, amphibians, fish, invertebrates, bulbs, plants in general and tree species and also zoological gardens and captive breeding. The Committee scientists are backed by their institutions, including the National Museum of Natural History and the National Herbarium and are assisted by other experts within these institutions. Two expert members of the Committee can devote 20% of their working hours to CITES tasks, but the remaining members have no designated time and must often work on CITES matters outside their normal duties. As a result, efficiency may be less than desirable.

Sources of information for making non-detriment findings

The Management Authority contacts the Scientific Authority Committee about import requests either when it perceives there may be a problem, or when it is a species that the Scientific Authority has asked for notification about. In addition, copies of all import permits issued are regularly sent to the Scientific Authority experts to check for possible irregularities, mistakes etc. When a particular import request requires action, the relevant Scientific Authority specialist supplements his own knowledge by gathering information from: colleagues, pertinent IUCN Specialist Groups, studbook keepers, other Party Scientific Authorities, published literature and reports, reviews from the SRG, CITES Significant Trade Reviews, the original CITES listing proposals, internet databases of IUCN/TRAFFIC/ UNEP-World Conservation Monitoring Centre (UNEP-WCMC), and other information from the internet (although the latter is treated with some caution). The types of information sought include: species distribution and habitat preference and availability, population data (including age class of individuals involved in the import), trends in population development, trade data from UNEP-WCMC reports and other sources, Red Data book status, mortality rates between harvest and export, and threats to the population. In the case of Appendix I species, close scrutiny is given to the destination of the specimens, although most import requests come from *bona fide* zoological gardens and so there are few problems.

Based on the information gathered in this way by the Scientific Authority expert, either a positive or negative finding will be made. These findings are either reported directly to the Management Authority or first discussed within the full Scientific Authority, which then presents advice. If the finding is negative it will be reported to the European Commission in order to alert other EU countries to the problem. At the next meeting of the SRG the finding will be discussed and the data on which it is based will be presented to the group, which will then attempt to reach consensus for a SRG advice to the European Commission. If the SRG agrees with a negative finding the import of the species from a certain country (or in some cases all countries of origin) will be stopped. If the group is not convinced, the negative decision will be revoked and imports will be allowed again. If a negative finding is made the country or countries concerned will be consulted and informed about the basis on which the decision was made and invited to supply comments and additional information. In the case of negative findings it is the intended policy of the EU that follow-up will be taken, if necessary in the form of a proposal to transfer the species to a more protective Appendix.

The advice will hold as long as there are no new data that could lead to reconsideration. All advices are publicly available on the internet site of the EU database.

If no consensus is reached a vote has to be taken in line with normal EU procedure. For a scientist, this latter process is illogical, as larger countries have more votes than smaller countries, so the final decision may not be made on the basis of science, but of politics.

There has been concern that such findings made by importing countries can be viewed as unilateral trade restriction measures. However in the EU context, such measures are taken in consultation with exporting countries and aim to assist exporting countries in managing their own natural resources in a sustainable way. Often Scientific Authorities in Europe have better access to recent publications, libraries and specialists than do the Authorities of exporting countries. Thus the

SRG is trying to gather all available data and make it available to other Parties.

Examples of practical action taken by the EU to ensure the sustainable use of wildlife

To facilitate data exchange and decision-making, the EU has contracted UNEP-WCMC to produce desk-based reviews of over 300 species for which there is concern that harvest for international trade may not be sustainable. The reviews are conducted on the same basis as the CITES Significant Trade Reviews and include information on biological data (distribution, abundance, detailed population data, natural history notes) and trade data over the past five years. Generally, population data are sadly lacking and mainly consist of anecdotal information. So any decisions made by the SRG are based on the combined expertise of scientists and their knowledge of the literature and the field situation. Clearly, these decisions are open to criticism. However, the countries involved are consulted and when they provide better data to the SRG, a change in the position of the EU may be considered.

In cases of special interest to the EU, (e.g. when most of the exports of certain countries, areas or species seem to be directed to the EU), the Commission of the EU might decide that further studies are necessary and may allot funds for these studies. Generally these studies are commissioned through the CITES Secretariat and aim to lead to the provision of more detailed information. For example a number of studies have been commissioned on various aspects of the reptile trade in West Africa. These studies led to a number of recommendations both to the EU and the countries concerned, which were accepted by the EU as the basis for opening up the EU market again to products coming from these operations, provided the exporting countries accept the recommendations directed to them.

Due to concerns about the large volume of trade in millions of bulbs of *Galanthus* spp. and *Cyclamen* spp. from Turkey and Georgia to the Netherlands, the EU has sent several fact-finding missions to these two countries. These missions have been appreciated by all involved. Information from these missions has allowed the SRG and the botanists to determine whether the current levels of trade are deemed to be non-detrimental.

As a final example, recently there has been concern that species of reptiles claimed to have been bred in captivity do not in fact comply with the CITES definition of this term. Consequently, the EU has financed missions organized by the CITES Secretariat to look into this matter. Members of the SRG have been examining data on breeding effort, clutch size and on the size of specimens exported. In some cases maximum size of specimens have been imposed to ensure that only juveniles are exported and no wild-caught adults are entering the trade. With more communication between the Parties involved a solution will be reached.

PART III
Technical considerations in making non-detriment findings

Chapter 4
Technical considerations in making non-detriment findings

4.1 Methods for evaluating the sustainability of harvests for tropical mammals, *Richard Bodmer and John Robinson*

Introduction

Where there is management of wildlife in tropical forests it has generally depended on the use of simple models of sustainability, and an adaptive process in which the effects of management are monitored. Furthermore, the use of these simple models in adaptive management in tropical forests has been based on the following understandings:

a) The use of a number of different models (which use independent variables) to evaluate the sustainability of hunting allows greater confidence in the results. If different models similarly indicate that hunting is sustainable (or not), then confidence is higher.

b) Specific numerical values generated by models are "ball park estimates", and do not specify actual harvest numbers. In other words, values from a specific model can generally indicate the sustainability of a particular harvest, but are not accurate enough to set specific quotas or harvest rates.

c) Each model makes certain assumptions, which need to be understood if the results and values are to be evaluated. In the following discussion, different models are compared and contrasted.

Comparisons of abundance, density or standing biomass

Comparisons of abundance, density or standing biomass in unhunted versus hunted areas have been used to evaluate whether species appear to be overhunted. One of the greatest drawbacks with density comparisons is that it is difficult to estimate wildlife densities where the vegetation is dense and visibility is limited. Nevertheless, in recent years, species densities in tropical forests have been estimated at hundreds of sites. Most estimates have used the line transect method coupled with DISTANCE analysis (Buckland *et al*. 1993, Laake *et al*. 1994). The almost universal adoption of this method, and the extensive statistical analysis of sources of variation gives validity to comparisons between hunted and unhunted areas.

Estimating demographic structures of wildlife populations

A number of studies in tropical forests have described differences in age structures of populations between hunted and unhunted sites. Hunting tends to shift the age structure of the population so that:

a) the proportion of juveniles in the population increases, and

b) among adult animals, the distribution of animals in a hunted population are more skewed towards younger age categories.

Our understanding of the effect of hunting on the demography of tropical forest species remains in its infancy. However, using demography to manage wildlife populations in the tropics has enormous potential, because it concurs so well with the activities of local hunters. Rural people can easily collect skulls from animals they hunt with only a minimum of extra labour, thus creating large skull collections. These collections can be used to calculate hunting pressure, to evaluate demographic patterns and to initiate participation of hunters in management programmes.

Effort models

Effort models examine the relationship between yield and effort, and commonly use harvest per unit effort, measured by the distance, frequency, duration of hunts, or number of hunters. These models usually require extensive information about the daily activities of hunters to measure effort. Continuous declines in the harvest per unit effort is assumed to indicate that wildlife population densities are declining.

Production models

In the absence of detailed information about the demographic structure of hunted populations and the impact of hunting on that structure, one approach to managing populations has depended on estimates of population production (defined as the addition to the population through births and immigrations during a specified time period, whether the animals survive, emigrate or die during the period, Banse and Mosher 1980). This

production can then be compared to actual harvests to obtain a measure of sustainability.

Production estimates have to date been largely indirect. The approach adopted by Robinson and Redford (1991b) was to calculate the maximum possible production of a population, and then compare these to actual harvests. This model allows managers to evaluate whether an actual harvest *is not* sustainable but not whether an actual harvest *is* sustainable.

Harvest percentages

In the absence of detailed demographic information on tropical forest wildlife species, models have not been used to directly predict sustainable harvest rates. Actual, observed harvest rates have been calculated in a number of areas, and authors have addressed the sustainability of these rates only by comparing them to rates derived from the better-known temperate populations. Sustainable harvest rates for primates are generally low. For ungulates, they fall within the range of many temperate species. For species with very short life-spans, predicted maximum sustainable harvests are a high percentage of the standing population.

Harvest models

Where rates of births are known, and they are known for only a few tropical forest species, harvest models can be used to evaluate the sustainability of hunting. The impact of hunting can then be determined by comparing harvest with production, by calculating the proportion of production that was harvested. The harvest model is a useful way to evaluate the sustainability of hunting in a specific area, because it uses information on local production and harvests.

Stock recruitment models

Stock recruitment models assume that production varies predictably with population size. If recruitment is density-dependent, as has been generally found with large-bodied wildlife species (Caughley 1977), then production is maximized at some population density below K (where K = carrying capacity). This density, termed the density of maximum sustainable yield (MSY), is specified by the shape of the curve of recruitment against population density (McCullough 1987). Managing populations to achieve MSY is risky. Any overharvesting would result in a decreased base population the following year, and if continued, could quickly lead to extirpation of the population (McCullough 1987). For the same reason, harvesting species at population levels lower than the MSY point is problematic.

Source-Sink considerations

The models described generally assume closed populations, and while they are useful indicators of the sustainable use of populations, they do not consider the possibility of immigration from adjacent areas. These areas could act as sources that replenish hunted (or sink) areas. Because a number of recent studies of tropical forest wildlife have suggested that such immigration is important, management models for tropical forest wildlife must incorporate consideration of the spatial geometry of sources and sinks.

To demonstrate how these approaches can be used to evaluate the impact of hunting, they were applied to data derived from persistently hunted and non-hunted populations of lowland tapir *Tapirus terrestris*, Collared peccary *Pecari tajacu* and White-lipped peccary *Tayassu pecari* in the Reserva Comunal Tamishiyacu-Tahuayo in northeastern Peru (see Bodmer *et al.* 1997). Considering the results of these disparate analyses increases the level of confidence when evaluating the impact of hunting Collared peccary, White-lipped peccary and Lowland Tapir in the region. Taken in aggregate, the analyses are remarkably consistent with one another. Results suggest that Collared and White-lipped peccaries are not overhunted in the persistently hunted site. However, the harvests should probably not be increased since confidence in the numeric values is low – there are untested assumptions and large potential errors. The results for the Lowland tapir are more interesting. Models that assume closed populations suggest extensive overhunting of the Lowland tapir, while the observation that tapirs are still reliably harvested might indicate significant immigration from adjacent source areas.

Further work on hunting in tropical forests can be found in the volume edited by Robinson and Bennett (2000).

4.2 Managing the harvest of reptiles and amphibians for international trade, *Peter Paul van Dijk*

Introduction

Determining the levels at which animal species can be traded without short- and long-term effects on natural populations is a complex subject. However, determining such levels for reptile and amphibian species is particularly difficult because there is so little information about their natural history and levels of exploitation. Ideally, one would wish to have complete and reliable data on the intensity of exploitation of each species, and on the speed with which populations of each species can replace captured individuals. In reality, such data are rarely available for reptiles or amphibians. Nevertheless, some guidelines are needed now; if we wait for detailed studies of each species, the results will come too late to prevent the extinction of many populations and species. The following considerations may be helpful when considering non-detrimental exploitation levels.

Export for trade is part of the overall exploitation of, and potential threat to, species populations and should be seen in this perspective. For example, the annual export of a couple of thousand Tockay geckos (*Gekko gecko*) for the terrarium trade is insignificant compared to the bulk usage of tockays for Chinese folk medicine, the number killed as pests, and the unknown numbers affected by environmental pollution (pesticides, etc.).

Assessment of sensitivity to exploitation

A reasonable knowledge of the biology of a species can permit one to predict fairly accurately whether a species is sensitive to exploitation. Based on this, one could lay down guidelines or quotas for exploitation of each species, taking account of domestic as well as international trade.

Habitat adaptability

For convenience, one can assign reptile and amphibian species to three broad categories with regard to their distribution and habitat use:

- **Commensal species:** those species living in towns, village outskirts, cultivated lands, etc. These are generally adaptable species tolerating or thriving in disturbed habitats, usually locally common and widespread geographically. Such species are rarely of conservation concern and trade would represent an insignificant impact on populations.
- **Widespread and abundant non-commensal species:** these include a variety of species inhabiting forest, wetlands and other 'non man-made' habitats. By virtue of their wide geographical distribution and broad ecological tolerances, such species usually occur in substantial populations inside protected areas as well as elsewhere. Again, few of these species would be of conservation concern.
- **Rare and restricted species:** reptile species may be rare for a variety of reasons, such as very localized geographical distribution, habitat or food specialization, or failure to recover from previous widespread exploitation or habitat destruction pressures. Whether such species are of conservation concern needs to be assessed on a species-by-species basis, but as long as the data for such assessments are not available, a conservative approach would be to consider them all endangered and unsuitable for exploitation. However, it may be possible to raise significant funds for conservation by allowing a strictly regulated small harvest once status data becomes available.

Ecological biomass considerations

Herbivores and insect-eating small species can maintain much higher numbers and biomass per hectare of suitable habitat than carnivores. Thus, a shipment of a hundred frogs or geckos can be collected from a few hectares and is biologically insignificant, while the collection of a hundred monitor lizards *Varanus* spp. or rat snakes *Ptyas* spp. will represent a significant reduction in the population over many dozen km^2.

Reproductive characteristics

Populations of a species which produces numerous eggs or young per female, and whose young mature in a short time, will generally recover faster and better from the effects of exploitation than species that produce only a few offspring that in turn, take a decade or longer before they themselves can reproduce. This long period until sexual maturity is reached is the main reason why exploitation of adult turtles is so disastrous to a population. In most if not all species of reptiles and amphibians, juvenile mortality is quite high in nature, and exporting a dozen hatchling reptiles or a hundred tadpoles has less impact on a population than removing a single mature adult animal. Consequently, the life stage at which human exploitation takes place is important for the population and needs to be monitored.

Monitoring exploitation levels

There are several approaches to monitoring exploitation levels that can be applied to reptile and amphibian populations. They vary in their practical value.

Monitor levels of export

In principle, monitoring levels of exports is the most convenient indirect method for assessing trends of harvest and indirectly possibly, population abundance, but it is very dependent on supply-and-demand forces. For example, the increased freshwater turtle exports from Vietnam in recent years are unlikely to represent increased turtle populations, but probably result from increased market demand.

A refinement of monitoring export levels would be to apply fisheries-type monitoring, i.e. measuring sizes of a random sample of exported animals. Over several years, a declining population would show smaller average size, with large animals no longer occurring in shipments. Although this requires some statistical manipulation, it is probably much more reliable than using gross export numbers. Size or age class is particularly significant for slow-maturing animals like freshwater turtles. However, the size of animals in trade is often determined by market demand, for example the meat trade targets large animals, whilst the hobbyist pet trade is usually more interested in juvenile animals. Total trade volume and price per animal may also give some broad indication of abundance, but there are some strange exceptions. For example, one of the cheapest, most numerous South East Asian lizards in the terrarium trade is *Takydromus sexlineatus*, yet this appears to be a very uncommon species in the wild. Raising the question of where the animals in trade come from.

Monitor capture effort

Another indicator of population trend can be gained by monitoring the searching or trapping effort required to catch an animal. As animals become more scarce, they take more effort to collect, but measuring this capture effort can be very difficult. Teams of small boys are organised to catch animals for a few cents for middlemen who sell to exporters. Nobody will disclose their hunting grounds or their supply sources. Traders' statements that a particular species is common or rare are often influenced by price considerations, while they also know full well that the authorities are likely to restrict trade in rare/endangered species but would not do so if a species is thought to be common.

Exploitation of safe populations

One may take the view that local exploitation (and subsequent export) may go unchecked *provided* that safe populations are known to exist elsewhere. As long as populations persist, unmolested, inside several National Parks and Wildlife Sanctuaries, one may take an extreme view and consider it irrelevant whether populations surrounding the protected areas are collected and traded to local extinction. It may be that the species will be eliminated locally anyway, by habitat alteration and increased predation by domestic species, or pesticide use, if not by direct exploitation.

Whilst the validity of this view is debatable, it does provide a practical way to maintain species in a category where they can be traded because they are of least concern. The problem with this thinking is that it is of course imperative that the protected areas remain properly protected and this may be compromised if trade in small animals is lucrative and is allowed in areas surrounding protected areas. It would be easy to imagine collection spreading inside protected areas, so that presumed safe populations are not safe at all. Furthermore, intensive and unregulated exploitation outside protected areas may have significant long-term effects. Such effects may include the isolation of protected populations from each other, compromised ecosystem functioning in the surrounding areas because of the loss of species beneficial for pollination, pest control and other activities, and loss of future income from sustained wildlife exploitation.

Obstacles to determining sustainable exploitation levels

- Local exploitation and levels of trade at which reptiles and amphibians are extirpated are usually insufficiently known and barely monitored; their importance relative to trade is usually guesswork.
- Identification of species is problematic for most tropical species.
- Monitoring of trade shipments is complicated by smuggling, under-declaration of contents, mixing rare species in among common look-alike species, etc.
- Assignment of species to any of the ecological categories outlined above is problematic with our present state of knowledge of natural history and distribution. One solution, would be to argue that any species whose biology is poorly known, is unknown because it is rare. This is a somewhat circular and imprecise argument, but can be used until better data becomes available.
- The occurrence/appearance of species is often extremely seasonal and localized. This presents problems for assessment of conservation status and also can make such species particularly vulnerable to exploitation.

Clearly, monitoring trade levels is only part of monitoring exploitation, and exploitation may or may not

contribute to declines of amphibian and reptile species and populations. Species really should be assessed for trade on a case-by-case basis founded on proper knowledge of distribution, abundance, ecological requirements and population dynamics. This is currently impossible, and provisional exploitation guidelines may well take a cautious approach until better information becomes available.

4.3 A management framework for the bird trade, *Teresa Mulliken*

Introduction

Wild birds have been traded internationally in large numbers since at least the mid-nineteenth century. The trade apparently reached a peak of approximately 7.5 million birds per year in the mid-1970s, falling to an estimated 2–5 million birds per year during the late 1980s, and was still believed to exceed 2 million birds per year during the mid-1990s. This paper draws attention to a management framework developed in 1992 (as a result of discussions with producer countries), in the hope that it will be a useful tool for CITES Authorities in the process of modifying management plans for birds and other CITES-listed species, and specifically, the way that non-detriment findings are made.

CITES and the wild bird trade

Concern regarding the scale of wild bird trade and the potential impacts on the status of some species prompted the inclusion of numerous bird species in the CITES Appendices. Most notable was the inclusion in Appendix II of all those raptors not already included in the Appendices by the second meeting of the Conference of the Parties (1979), followed by the similar inclusion in Appendix II of all but three parrot species by the third meeting of the Conference of the Parties (1981). These and other CITES listings for wild birds had the dual effects of instituting trade controls and allowing for more effective trade monitoring. Data compiled from CITES annual reports showed a significant increase in the trade in Appendix II species during the mid-1980s. This trade peaked in 1988, when the gross trade of over 740,000 live birds, mainly parrots, was recorded. During that same year, the results of the first 'significant trade review' for Appendix II bird species was published, which concluded 46 bird species were 'possible problems', i.e., possibly traded in excess of sustainable levels, and several others were 'problems', i.e., likely to be traded at detrimental levels. Subsequent significant trade reviews similarly indicated that trade in some species was not being conducted in accordance with CITES Article IV.

Development of a management framework

The bird trade was also receiving scrutiny from other sectors during the late 1980s, especially from NGOs within Europe and North America, some of which were campaigning for an end to the trade. In 1990, TRAFFIC developed a project to examine the perceptions of the international bird trade and trade controls within five of the main producer countries (Argentina, Guyana, Indonesia, Senegal and Tanzania), and to identify methods for developing and implementing sustainable use programmes in areas where trade did not appear to be adequately controlled. The results of the country studies and a preliminary concept for a management framework for the trade were presented and discussed at a workshop in 1991. The results, including a revised management framework, were published in the 1992 TRAFFIC report *Perceptions, Conservation and Management of Wild Birds in Trade*. The findings of this report were presented and discussed in workshops on the bird trade in Senegal and Tanzania, and on the larger wildlife trade in Indonesia, all of which resulted in recommendations for more effective management of the trade.

The 1990s have seen a substantial decline in the international trade in CITES-listed bird species. This is a result of several factors including: the imposition of stricter export controls by range States; CITES Standing Committee recommendations for specific import bans in response to concern that non-detriment findings are not being made adequately in some cases; the imposition of unilateral (USA) or regional (EU) import restrictions; and NGO campaigns resulting in restrictions on air transport for live birds and changes in consumer preference. Nevertheless, significant trade reviews are continuing to document cases where non-detriment findings are not being made sufficient to assess whether export volumes are within sustainable levels.

The management framework developed in 1992 is a useful tool for CITES Authorities in the process of modifying management plans for birds and other CITES-listed species, and specifically, the way that non-detriment findings are made.

4.4 CITES annual report requirements and assistance to Parties in developing database and trade monitoring systems, *Ashish Bodasing*

Introduction

One of the primary tenets of implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is the issuance of permits and certificates by the Parties in order to ensure regulation of trade in species listed in the Appendices of the Convention. The documentation resulting from this system serves as a mechanism for monitoring trade at both national and global levels. However, for such monitoring to take place, CITES Management Authorities (MAs) are required to compile trade statistics on an annual basis in the form of a CITES Annual Report (AR). This report is then submitted to the CITES Secretariat for incorporation into the CITES Database housed at the UNEP-World Conservation Monitoring Centre in Cambridge, UK.

Although the production of such a report may appear to be merely a reproduction of the information contained on permits and certificates, the compilation of such a report is considered a daunting task by many CITES Management Authorities. As of February 1998, only 39% of CITES Management Authorities (MAs) submitted the 1996 CITES Annual Report within the specified deadline of 31st October 1997, 14% submitted late and 26% percent had not yet submitted even the 1995 CITES Annual Report. Such statistics indicate that there may be factors common to CITES MAs which are inhibiting timely AR production.

Collaboration for CITES implementation

TRAFFIC East/Southern Africa (TESA) has gained wide experience in working with MAs in the East/Southern Africa region including Malawi, South Africa, Tanzania, Zambia and Zimbabwe. These collaborations have provided a deeper insight into the very real and practical problems experienced by countries in producing ARs and in conducting the monitoring work that should precede and follow the production of ARs.

The Management Authorities and CITES Scientific Authorities (SAs) form the core components of CITES implementation, but in many countries they are one and the same, and rely on other often separate departments, such as customs, law enforcement, research and hunting to assist them in their function. In conjunction with other entities including the CITES Secretariat, the IUCN Species Survival Commission, the World Customs Organization and other MAs, the national implementation of CITES creates a complex myriad of relationships to fulfil a variety of tasks, of which the compilation of ARs forms a central part.

The effectiveness of such collaborations are, however, dependent on the efficiency of communications, the level of inter-departmental co-operation, the availability of technical knowledge bases and the presence of technical skills and resources. In developing countries, these factors vary in scale. It is therefore imperative, when addressing problems, to develop solutions that fit within the context of the variability of these factors.

Following requests from MAs for assistance in enhancing CITES implementation, TESA has developed a number of solutions. These solutions, while not all-encompassing, can nevertheless be effective within working environments that are poorly funded, understaffed and under-skilled. One such example is TESA's Wildlife Information Database System (WIDS) which was developed in 1992. WIDS seeks to provide a solid base from which MAs can collate and assimilate reliable and accurate CITES trade data to produce ARs, quota reports, and other datasets required to monitor levels of trade in wildlife specimens and products. WIDS is currently being implemented in Malawi, Tanzania, Zambia and Zimbabwe and the South Africa TESA office. WIDS has also been translated into French for implementation in Gabon and discussions are currently being held for its implementation in Senegal. Solutions such as WIDS are intended to enhance the capacity of Management Authorities to implement CITES, in advance of more global technically complex solutions being made available to Parties.

The implementation of WIDS forms part of the IUCN Regional Office of Southern Africa's Networking and Capacity Building Programme funded by USAID. The implementation of WIDS takes into consideration that the provision of a database tool is not sufficient to ensure success. The TESA WIDS programme incorporates training in computer skills, raising the level of CITES technical knowledge and enhancing the CITES implementation process. Critical resources such as computers and reference materials are also provided.

The implementation of information systems such as WIDS, has brought to light a number of valuable lessons and experiences which may be useful to other CITES Parties. This paper was produced in consultation with various management authorities in the East/Southern African region.

4.5 The Significant Trade Process for animals: can this process help to guide the making of non-detriment findings? *Robert W.G. Jenkins*

Introduction

During the early years of CITES (1975–1988) large numbers of species of wild animals were transferred from Appendix II to Appendix I. The reasons for including such species in Appendix I have been numerous and diverse, spanning ethical considerations and an ideological opposition to commercial use of certain species, to the reality, or perception, that a species has become threatened with extinction as a result of excessive international trade. In some cases these decisions have been based on the often-erroneous belief that inclusion of a particular taxon in Appendix I alone would "solve the problem". Some of these inclusions in Appendix I, often prompted by a non-range State, have had the negative effect of polarizing the developed and developing world Parties.

However, when considering proposals to transfer species from Appendix I to Appendix II the Conference of the Parties has traditionally exercised caution and it can be extremely difficult and costly to remove a species, or a national population from Appendix I. In the case of the Australian saltwater crocodile *Crocodylus porosus* effective management of the species required that it be removed from Appendix I. However, obtaining sufficient scientific data to support the down-listing proposal to the satisfaction of the Conference of the Parties took over five years and cost in excess of AUD 1 million.

Towards the end of the 1980s, an increasing number of Parties were starting to question whether inclusion of a species in Appendix I was beneficial to *in-situ* conservation of the wild resource. The transfer of the African elephant *Loxodonta africana* in 1989, although undoubtedly warranted for some populations, was seen by some Southern African countries, where numbers of elephants were being well-managed and were either stable or increasing, as an example of an unwarranted intervention by the international community. Many exporting countries believe that some Appendix I listings have had profoundly negative conservation impacts by removing much of the economic value, and hence political incentive, to manage wild populations of the species for conservation. For some species, an Appendix I listing has removed the flexibility to respond appropriately to management crises such as overgrazing during drought periods and conflicts between animals and human land use systems. These situations changed the perception of some species in the minds of many land-holders from that of being an asset to something which held no value. For example, the leopard *Panthera pardus* was included in Appendix I when the Convention was first crafted in 1973. As an Appendix I-listed species, the leopard although relatively common throughout many parts of sub-Saharan Africa, quickly became perceived as a pest and was actively persecuted by poisoning and shooting because of its ability to prey on agricultural livestock. In some areas, populations of the species declined even though it was subject to the most stringent international trade controls. These trade controls had very little effect on the ground where land-holders (and governments) were faced with very different management problems. Following concerted efforts by many range State governments to reverse the decline and acquire the flexibility to confer an economic value on the species, CITES instigated a system of national export quotas for the sub-Saharan population of leopards. This approach has proved very successful and has since been extended and applied to national populations of the cheetah *Acinonyx jubatus*, in 1994, and to markhor *Capra falconeri* populations in Pakistan in 1997.

The CITES significant trade process

Against the background of this growing divergence in conservation philosophy, the CITES Animals Committee, in its preparations for the eighth meeting of the Conference of the Parties (Kyoto, 1992), made the first serious attempt to address Article IV implementation constructively to stem the rate at which many animal species, often without the support of the range States, were being transferred from Appendix II to Appendix I of the Convention. Article IV (2)(a) requires that before authorizing export of a CITES Appendix II-listed species, the Scientific Authority makes a determination on the extent to which a population is able to "sustain" being used for the export trade, with no detriment to the long-term conservation of the population(s) in the wild. Some guidance on achieving this requirement is provided to Parties by Article IV(3) that specifies the types of actions that must be undertaken by the Scientific Authority of an exporting country.

Resolution Conf. 8.9 on *Trade in Wild Caught Animals Specimens* was adopted in 1992 at Kyoto as a means to facilitate improved implementation of Article IV (2)(a) and (3) by exporting Parties. From a conservation standpoint, when a species becomes eligible for inclusion in Appendix I of the Convention, it represents a failure by an exporting country (or countries) to implement effectively the requirements of Article IV and

ensure that harvest of a species for export is sustainable. Management that provides for use of a wild species incorporating the elements of Article IV achieves a marriage between two seemingly disparate conditions, viz. conservation and use.

The Significant Trade Process established by Resolution Conf. 8.9 seeks to identify, and rectify, in cooperation with the Management Authorities of exporting countries, Article IV implementation problems. The Process entails an initial assessment of available trade data for Appendix II-listed species in order to determine those taxa that may be being traded in excessive quantities. Following agreement by the Animals Committee on the candidate taxa, the Secretariat commissions more detailed reviews, incorporating greater consideration of the biological characteristics of the species. In the past these reviews have been undertaken by the UNEP-World Conservation Monitoring Centre, IUCN – The World Conservation Union and TRAFFIC International. The draft reviews are circulated to the Management Authorities of range States for comment and correction or updating of information before being considered by the Animals Committee.

The Animals Committee must assess all available information and determine whether or not the provisions of Article IV(2)(a) and (3) have been satisfied. In cases where a particular problem has been identified, the Committee formulates primary and/or secondary recommendations designed to correct the problem. The Animals Committee recommendations are communicated by the Secretariat to the Management Authority of the relevant exporting country. Problems of a serious nature become the focus of primary recommendations and the recipient has 90 days in which to respond to the satisfaction of the Secretariat. Less serious problems or problems requiring field studies become the subject of secondary recommendations for which the recipient country has twelve months to submit a satisfactory response to the Secretariat. Where the exporting country has been the recipient of a primary or secondary recommendation and either fails to respond to the Secretariat, or provides an unsatisfactory response, then the Secretariat is authorized under Resolution Conf. 8.9 to recommend appropriate action to be taken by the CITES Standing Committee. In extreme cases the Standing Committee has recommended that Parties not accept imports of a particular species from a country until such time as the country in question has addressed, to the satisfaction of the Secretariat, the problem originally identified by the Animals Committee. In many cases the Management Authority consults the Secretariat to define a more conservative annual export quota that fulfils the requirements of Article IV (3).

Resolution Conf. 8.9, if applied correctly, has the ability to contribute significantly to achieving the objectives of the Convention. However some organizations perceive the Resolution Conf. 8.9 process as a means of prohibiting international trade in wild animals. Indeed, some Parties that have been the recipients of recommendations have expressed concern that the process represents a “backdoor” mechanism to achieve the same effect as an Appendix I listing. This perception is reinforced further if importing countries use the process to justify the application of unilateral import bans on species that have been subject to Resolution Conf. 8.9 recommendations. In light of this concern, it is essential that Parties understand the process and hence appreciate the potential benefits. It is critically important that Parties participate fully in the process and provide the most current information available on a species subject to the review process. This will ensure that the Committee bases its recommendations on the most up-to-date information available. As an entity representing the interests of the Parties, it is equally important that the CITES Animals Committee counters the views of extreme non-government organizations by maintaining an objective and cooperative approach to implementing Resolution Conf. 8.9.

While it is true that the significant trade process of Resolution Conf. 8.9 has the potential to result in punitive measures, such as specific trade sanctions, being applied to a Party for failure to implement the provisions of Article IV, it is also true that without such a mechanism to address the implementation of Article IV provisions, the only alternative process available within the framework of the Convention lies in the Conference of the Parties transferring from Appendix II to Appendix I those species that are or are perceived to be subject to unsustainable export trade.

In addition, heavy trade of Appendix II-listed animals has led to the Scientific Authorities of an increasing number of importing countries making Article IV non-detriment findings before recommending import approval be granted for consignments of these Appendix II species. These determinations by the importing countries are often made without consulting the exporting country, and often with incomplete or dated information. Thus although the Resolution Conf. 8.9 process may seem to some Parties to counter the spirit of cooperation, implicit to this process is the principle that the species remains on Appendix II and the exporting country retains unilateral control over management of species which are subject to recommendations. Hence, Resolution Conf. 8.9, if implemented properly with the cooperation of exporting countries, provides a mechanism that allows individual exporting countries to develop the necessary technical and administrative capacity to implement Article IV requirements. It also

removes the need for importing countries to apply stricter domestic measures such as import bans or independently derived import quotas that are more conservative than the national export quotas established by the exporting countries.

Theoretically, effective implementation of Article IV of the Convention should result in a reduction of the number of animal taxa being transferred from Appendix II to Appendix I. Thus if Resolution Conf. 8.9 is implemented in the correct manner the process should effectively avoid the need to transfer species from Appendix II to Appendix I. Consequently, when considering proposals to transfer taxa from Appendix II to Appendix I, the Parties should also consider whether or not the taxon has been subject to the Significant Trade Review Process (Resolution Conf. 8.9).

The real power of the Resolution Conf. 8.9 significant trade process undoubtedly lies in its ability to enable the Management Authority of an exporting State to address Article IV implementation problems whilst retaining the species in Appendix II. A large number of Appendix II-listed species, if managed correctly and harvested in quantities that can be sustained by the wild population, represent an important economic resource for many rural communities in developing countries. The inclusion of such species in Appendix I and the attendant prohibition on commercial exports effectively removes any requirement to implement Article IV provisions of the Convention. The systematic inclusion of "commercially" important Appendix II species in Appendix I has the potential to transfer the focus of management from field studies, necessary in order to provide a scientific basis for making non-detriment findings to enforcement activities.

Clearly, the Resolution Conf. 8.9 process can contribute positively to implementing the Convention and achieving an effective link between the use of a species for export and conservation of the wild population by ensuring a greater likelihood that such use will be sustainable. However, without a source of adequate funding to support the necessary field studies to create the scientific basis of management and thus the linkage between use and conservation, the process will remain largely academic. As the Resolution Conf. 8.9 process becomes more institutionalized, it will be important to also institutionalize a reliable on-going source of adequate funds to undertake field studies. Past contributions by various donor agencies and governments have enabled specific studies to be undertaken, however, the availability of funds from these sources is not guaranteed, and when made available are often "tied" to a particular country or species.

PART IV
Guidelines to assist the Parties in making non-detriment findings

Chapter 5

5.1 CITES Scientific Authorities: Checklist to assist in making non-detriment findings for Appendix II exports

Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a conservation tool of major importance, numbering some 158 signatories. It aims to protect species from the detrimental effects of over-exploitation for international trade, to ensure sustainable utilization of others, and to encourage international cooperation between signatory Parties in achieving this aim. The Convention has three appendices that provide different levels of regulation for the species listed in each. The Convention is administered at the national level by Management and Scientific Authorities.

Determining when international trade (of an individual shipment or on an annual basis) is likely to prove non-detrimental to the survival of species is essential to achieving the aims of CITES. If species become threatened with extinction as a result of use that is incompatible with their survival, Parties to CITES face the prospect of including more species in Appendix I. Indeed, every transfer of a species from Appendix II to Appendix I as a result of a lack of appropriate regulation of trade, particularly from a scientific perspective, can be considered as a failure of the Parties to fulfil their obligations under the Convention. Clearly, action is needed to improve the situation and to assist Scientific Authorities in making non-detriment findings.

An operational definition of non-detriment

Recognising the difficulties that some Scientific Authorities have in making non-detriment findings, the elements of an operational definition can be identified by examining the relevant paragraphs of Article IV of the Convention.

These paragraphs of Article IV require the Scientific Authority to determine that proposed exports will not be detrimental to the survival of species. Furthermore, once exports are underway, the Scientific Authority must monitor the actual levels of export to ensure that the species is maintained throughout its range at a level consistent with its role in the ecosystem and well above the level at which the species might become eligible for inclusion in Appendix I. In practice, the Scientific Authority must consider total national harvest levels for both new and on-going exports to make a non-detriment finding. Hence, export for international trade is not detrimental when it is part of a harvest, the sum of which is sustainable, in that it does not result in unplanned range reduction, or long-term population decline, or otherwise change the population in a way that might be expected to lead to the species being eligible for inclusion in Appendix I.

CITES Article IV, paragraph 2
The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:

Article IV, paragraph 2.a)
A Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species.

Article IV, paragraph 3
A Scientific Authority in each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.

Adaptive management based on adequate monitoring and appropriate feedback is vital to ensure the sustainability of wildlife harvest. Current problems with making non-detriment findings result mainly from lack of capacity and of resources to implement monitoring schemes across the wide range of species in international commercial trade. More attention should be given to developing and promoting cost-effective and pragmatic methods of resource monitoring, and in providing Scientific Authorities with the skills and means to make these determinations. In many cases such monitoring schemes need not be complex nor too resource intensive. For example, monitoring can be carried out by wildlife personnel or community scouts while undertaking anti-poaching patrols. Information that should be considered for monitoring purposes includes: population size; distribution/range; population trends; management plans and protection of the populations from over-harvest. Monitoring of the harvest levels and trade patterns, as well as of population data, will allow establishment of the feedback loop necessary for adaptive management.

Assisting Scientific Authorities in making non-detriment findings – development of a checklist

A checklist of information to be monitored has been designed to help build the capacity of Scientific Authorities in advising whether exports of Appendix II-listed taxa are not detrimental to the species' survival. This checklist also allows Scientific Authorities to compare their findings with those of other countries for similar species or similar commodities in trade. Qualitative data categories have been used purposefully at this initial stage for two reasons. Firstly, because great difficulties have been met in developing hard criteria for sustainable use across large numbers of taxa and in diverse ecosystems (Allen and Edwards 1995). Secondly, with the wide range of species in international trade, it is very difficult to extrapolate quantitative data from those few species where harvesting has been studied. Unanswered questions in the checklist will serve to highlight areas where management schemes or information collection might be improved.

Furthermore, the checklist does not aim to be long or intimidating, although it may appear so at first reading. Initial testing of the checklist using species for which sufficient information was available shows that it can be completed quite quickly. However, a more concise format may be developed once the checklist has been fully tested through wide use. The relevance of some of the management questions will vary from region to region and from country to country. Furthermore, the checklist should be viewed as an early stage in an evolving process that will witness the increasing adoption of management schemes and of improvements in information collection. As the process for making non-detriment findings becomes more established, there should be merit in developing more quantitative categories tailored to particular species groups and derived from case studies in range States.

The Checklist

Introduction

The checklist comprises two tables that should be followed for each species in Appendix II that is the subject of export as a result of removal of specimens from the wild. The tables and text for plants and animals have been developed together to ensure that the format and contents are as standardized as possible for both major kingdoms. However, for some parts it was necessary to develop different text parts, but the tables have a similar underlying logic, so the similarity should reduce possible confusion for those Parties where a single individual may have to deal with both plant and animal issues.

Explanation of the tables on harvest characteristics

Tables 1. Animals (1A) and 1. Plants (1P) encourage Scientific Authority staff to make an initial review, at the national level, of the likely effects of harvesting the target species. Information is sought on the types of harvest, the degree of control over the harvest, the segment of the population harvested, the level of total harvest (for domestic and international use), the reason for the harvest, and the end users of the harvest. Scientific Authorities need to distinguish between regulated and illegal or unmanaged harvesting. Consideration of these data will begin or further assist the process of consultation between Scientific and Management Authorities. In the case of some types of harvest, it will also allow the Scientific Authority to advise quickly that harvest is not detrimental to survival.

Table 2 encourages Scientific Authorities to review in more depth more general biological and management information for those species where Table 1 has raised concerns. Information is also sought on management history and planning, harvest management, status of land on which harvesting takes place, capacity for monitoring the harvest, benefits and risks of harvest, levels of strict protection, and the relationship between ranched and captive-bred specimens to those that are wild caught.

The tables have been designed to allow use of easy qualitative checks that permit a basic assessment of the

confidence with which a non-detriment finding may be made by Scientific Authorities. Those regulated harvesting regimes where products are removed without killing the species, or where ranching occurs, are removed from further consideration, once Tables 1A and 1P have been completed. For all other harvesting regimes, Table 2 should also be completed. In the completion of Table 2, it should be noted that a high degree of uncertainty should lead a Scientific Authority to conclude that insufficient information exists on which to base a finding of non-detriment. In such a case most Parties should choose not to allow commercial trade until information quality is improved.

Table 1. Animals

The explanation for this table is arranged according to the respective columns. For each species under consideration, each type of harvesting (1.1 to 1.6) to which the national population of that species is subject should be checked, and there may be several options available. For example, wool may be shorn from live vicuñas in a well-regulated harvest, while poachers may kill vicuña for their wool and meat in an unmanaged harvest. Shading indicates where a box cannot be checked. For example, ranching does not allow for collection of adults or non-selective harvest.

Type of harvest
The types of harvest when regulated, are arranged according to their levels of impact on the wild population.

1.1 Captive breeding: this row should be used to record the numbers of specimens that are derived from captive breeding operations for export. Animals removed from the wild population for establishment or augmentation of captive breeding operations are effectively lost from the wild population, and so their numbers should be recorded under 1.5, for live capture.

1.2 Non-lethal harvesting for parts/products: this row refers to the collection of parts and derivatives that does not require the death of the individual animal. For example, this might include the live shearing of vicuña wool or the collection of down from eider ducks (this species is not included in the appendices). The main type of product derived from the harvest should be identified. Collection of eggs does NOT fall in this category; see 1.3.

1.3 Ranching: this row refers to the removal of eggs or live young for rearing in captivity, based on the premise that survival will be enhanced compared with the wild when this stage of the life history is being collected. Consequently, this surplus production can be harvested without detriment to the long-term survival of the population. This includes both ranching of Appendix II species where any export quotas are set by the range State, as well as Appendix I species that are transferred to Appendix II pursuant to a quota approved by the Conference of the Parties. This does *not* include the rearing in captivity of adult or sub-adult individuals for later export, without any habitat benefit, or the holding in captivity of captured adult individuals pending eventual export. Such cases should be considered under 1.5, live capture.

1.4 Pest or problem animal control: this row refers to specimens removed under a government-based policy of pest control. These specimens are included in trade because they would in any case be destroyed to protect human life or crops, and any potential products can be used to provide incentives to promote conservation purposes.

1.5 Live capture and **1.6 Killing of the individual:** these rows refer to removal of the live specimen from the wild population, through collection, hunting, trapping, or fishing, and may include lethally wounded, disregarded, by-catch, or incidental deaths as a result of land clearance, that do not ultimately reach international trade. Different types of collection, hunting, trapping, or fishing target different segments of the population. The main type of product derived from killing should be identified under row 1.6.

Table 1. Animals. Summary of harvest regime for animal species (or population of an animal species)

Species: . . . . . Country (if applicable State or Province): . . . . . .

Date (of making non-detriment finding):. . . . . Period to be covered by finding: . . . . . .

Name:. . . . . Position in Scientific Authority: . . . . . .

Is the species endemic, found in a few countries only, or widespread? . . . . . .

Conservation status of the species (if known): IUCN Global status: . . . . . National status: . . . . . .

Other: . . . . . .

Type of harvest	Main product	Degree of control	Demographic segment removed from wild population					Relative level of harvest (include actual number or quantity if known)				Reason for harvest			Commercial destination(s) (numbers and percentages if known)		
			Eggs	Juvs.	Adult males	Adult females	Non-selective	Low	Medium	High	Unknown	Sub-sistence	Com-mercial	Others	Local	National	International
1.1 Captive breeding		a) Regulated															
		b) Illegal or unmanaged															
1.2 Non-lethal harvesting for parts/ products		a) Regulated															
		b) Illegal or unmanaged															
1.3 Removal for ranch-ing		a) Regulated															
		b) Illegal or unmanaged															
1.4 Pest or problem animal control		a) Regulated															
		b) Illegal or unmanaged															
1.5 Live capture		a) Regulated															
		b) Illegal or unmanaged															
1.6 Killing of individual		a) Regulated															
		b) Illegal or unmanaged															

Table 1. Plants

The explanation for this table is arranged according to the respective columns. For each species under consideration, each type of harvesting (1.1 to 1.6) to which the national population of that species is subject should be checked, and there may be several options available. In the case of bulbous plants, for example, *Galanthus* spp. may be harvested under a regulated and well managed programme, while illegal collection may be conducted by specialist collectors. Shading indicates where a box cannot be checked.

N.B. Relocated wild stocks: wild plants are collected and are replanted prior to export. For example in the case of bulbs, large quantities of wild collected bulbs are frequently "stored" on agricultural fields. At time of export the bulbs are harvested from these storage fields. The assessment by the Scientific Authority should be based on the primary removal from the wild.

Type of harvest
The types of harvest when regulated, are arranged according to their levels of impact on the wild population.

1.1 Artificial propagation: Before filling in Table 1. Plants, the Scientific Authority should assess whether the plants are artificially propagated or wild collected. In the case of artificial propagation the plants must fulfil the criteria laid out in Resolution Conf. 9.18 (Rev.), which includes the definition of artificial propagation.

1.2 Non-lethal harvesting of fruits/flowers/seeds/leaves: this row should be used to record the collection of parts and derivatives that does not require the death of the individual plant.

1.3 Non-lethal harvesting of bark/roots/wood: this row should be used to record the collection of bark/roots/wood without killing the individual plant. For example, selective removal of the bark of *Prunus africana* as part of a planned management programme will ensure survival of the tree in the wild.

1.4 Removal of whole plant: this row should be used to record instances where the whole plant is collected, and is thus removed from the wild population, or killed.

1.5 Removal of whole bulb: in the case of the collection of bulbs from the wild, e.g. *Sternbergia* spp., bulbs should be treated as whole plants; however, the removal of full grown specimens only may have a different impact than when all bulbs are removed.

1.6 Killing of individual by removal of seeds, leaves, bark, roots, wood:

Wood: this row should be used to record the harvest of wood as timber, charcoal, woodchips etc., where the plant does not survive this type of harvest.

Bark: destructive removal of the complete bark or cutting down of the tree will result in the death of the tree (e.g. *Prunus africana*).

Roots: collection of the whole root systems or significant parts of the root for medicinal use etc. almost always results in death of the plant (e.g. *Panax quinquefolius*).

Seeds: collection of seeds from, for example, certain cacti where the top of the plant is chopped off is likely to result in the death of the plant.

Table 1. Plants. Summary of harvest regime for plant species

Species: . . . . . Country (if applicable state or province): . . . . .

Date (of making non-detriment finding): . . . . . Period to be covered by finding: . . . . .

Name: . . . . . Position in Scientific Authority: . . . . .

Is the species endemic, found in a few countries only, or widespread? . . . . .

Conservation status of the species (if known): IUCN Global status: . . . . . National status: . . . . .

Other: . . . . .

Type of harvest	Main product	Degree of control	Demographic segment of population harvested			Relative level of harvest (include number or quantity if known)				Reason for harvest and percentage (if known)			Commercial destination and percentage (if known)		
			Immature	Mature	Sex	Low	Medium	High	Unknown	Subsistence	Commercial	Others	Local	National	International
1.1 Artificial propagation		a) Regulated													
		b) Illegal or unmanaged													
1.2 Non-lethal harvesting of fruits/ flowers/seeds/leaves		a) Regulated													
		b) Illegal or unmanaged													
1.3 Non-lethal harvesting of bark/roots/wood		a) Regulated													
		b) Illegal or unmanaged													
1.4 Removal of whole plant		a) Regulated													
		b) Illegal or unmanaged													
1.5 Removal of whole bulb		a) Regulated													
		b) Illegal or unmanaged													
1.6 Killing of individual by removal of seeds, leaves, bark, roots, wood		a) Regulated													
		b) Illegal or unmanaged													

Table 1 – Animals and plants

Degree of control: This column has two options:

a) Regulated: refers to a sanctioned (government-approved or otherwise official) harvest that is under the full control of the manager, set against scientifically-based quotas, with appropriate apportionment of the harvest to different end users.

b) Illegal or unmanaged: refers to a harvest that the manager does not have full control over, and where the harvest is apportioned to different end users by the harvester. Although illegal and unmanaged harvests differ in terms of their legal sanction, they can have the same effect on the wild population, and share the common property of not being supported by a formal system of data collection. Hence, a harvest may be legally sanctioned, but unmanaged. There are also cases where a harvest takes place without any framework of local or national legislation or regulations, and such harvests should also be considered as unmanaged.

Regulated and illegal harvests of the same or different types often occur at the same time within one population. Hence for many species, information on type(s) of harvest may include checks in two or more rows and sub-rows (e.g. *Prunus africana*, where there may be both a regulated bark harvest from live trees (1.1.4) and an illegal harvest for bark or wood that results in death of the tree (1.1.6).

Demographic segment removed from population: This column refers to the segment of the population that is harvested. The impact of the harvest on the overall population structure will depend on the life history stage that is targeted.

Animals. Natural mortality tends to be highest for eggs and/or for neonates and juveniles. Hence, a harvest of eggs, neonates or juveniles managed for ranching will have less impact on the population than the removal of reproductively-active animals. In general, a harvest based on adult males will have less impact on the population than a harvest of females for polygynous species where a small proportion of the adult males is responsible for the majority of matings. However, where a larger volume and non-selective meat harvest are the ultimate aim, there will be greater impact on the population. An appropriate combination of columns within this column heading may be checked for each type of harvest. However, if the harvest is non-selective, i.e. any of the types of harvest from 1.4–1.6, then only the column for "non-selective" should be checked. Examples of columns that could be used include: males or females; age classes; and combinations thereof.

Plants. It is important to include the range of the plants that are subject to harvest i.e. are mature and immature plants harvested? If the plants are Cycads, are just females being targeted? For these tables, mature plants are considered to be capable of reproduction while immature plants are not considered capable of reproduction. In the case of dioecious species, indicate if male or female plants or parts are targeted, if known.

Level of harvest: Where quantitative information on **numbers** or **quantity** is available for regulated harvests, this should be included to increase confidence in the assessment. Otherwise, and including for illegal and unregulated harvests, a qualitative assessment can provide some indication of the levels of harvest. The columns Low, Medium and High must be interpreted in the context of the species being harvested. For example, an annual harvest of ten giant pandas would count as high, because the wild population only numbers in the hundreds, while the panda's reproductive rate is low. In contrast, a harvest of 100 Cyclamen would be considered low, in relation to a world population numbering in the millions. Only one column should be checked for each type of harvest under this column heading.

Reason for harvest: This column heading gives an indication of forces driving the harvest. The indication of a percentage, if known, may help. Where a harvest is for subsistence purposes only, there is greater likelihood of a sustainable harvest under the management of local people. Where commercial interests prevail, there may be less incentive to harvest sustainably due to economic pressures. One or more columns should be checked, as appropriate, under this overall heading for each type of harvest.

Commercial destinations: This column heading adds to information on reasons for harvest. If the harvest is for subsistence purposes only, the end users of that harvest will be local people. If local people are using some of the harvest and selling the remainder, then both boxes should be checked. If the harvest is for commercial trade, the end users may range from local to international. Historically, the impact of trade was thought to increase from local to international uses, but this perception very much depends on the commodity. For high value items on international markets, such as some parrot species or rare orchids, international trade has certainly been the stimulus for an unsustainable harvest. Similarly, for products with local or national value, such as medicines, trade within national borders may be the driving force in stimulating an unsustainable harvest, although such national trade does not come under the purview of CITES. One or more columns should be marked, as appropriate, for each type of harvest under this column heading.

Making a non-detriment finding using Table 1A

The information collected in Table 1A can be used to advise of a high probability that exports will not be detrimental to the survival of species in three very specific situations, as follows:

- Row 1.1a, where a species is subject only to well regulated captive breeding;
- Row 1.2a, where a species is subject only to well regulated removal of products, without killing the animal and where the scale and impact of the harvest can be quantified; and,
- Row 1.3a, where a species is subject only to a well regulated ranching operation, where the scale and impact of the harvest can be quantified.

If there are checks for regulated harvests for pest control, or live capture, or killing (Rows 1.4a, 1.5a, and 1.6a), or for any type of illegal or unmanaged harvest (any of Rows 1.1b to 1.6b), or if there are checks for several types of harvest, Scientific Authorities should also complete Table 2A before proceeding with advice on whether exports are not detrimental to the survival of the species.

Making a non-detriment finding using Table 1P

The information collected in Table 1P, can be used to advise of a high probability that exports will not be detrimental to the survival of species, in three very specific situations as follows:

- Row 1.1, where a population is subject only to well regulated artificial propagation;
- Row 1.2, where a population is subject only to a well regulated removal of fruits/flowers/seeds which does not kill the plants and where the scale and impact of the harvest can be quantified; and
- Row 1.3, where a population is subject only to a well regulated harvest of leaves which does not kill the plant and where the scale and impact of the harvest can be quantified.

If there are checks in any type of pest control, collecting of live specimens, killing of specimens, illegal or unmanaged harvest, or if there are checks in more than two rows, Scientific Authorities should also complete Table 2 before proceeding with advice on whether exports could be detrimental to the survival of species.

Explanations of Table 2 on "factors affecting management of the harvesting regime"

Table 2 leads the assessor through questions arranged so as to indicate the sensitivity of the species to the impacts of harvesting and commercial use:

- the first section considers general biological characteristics of the species (these are different for animals and plants);
- the second section considers information on the status of the species at the national level;
- the third section focuses on considerations of harvest management;
- the fourth section on control of the harvest regime;
- the fifth section deals with monitoring of the harvest;
- the sixth section examines incentives and conservation benefits from harvesting; and
- the final section deals with the extent to which the species is protected from harvest.

This table is arranged such that the left hand column for each row poses a question, for which there is one of four definite answers, or a fifth answer for "uncertain" in the right hand column. Definite answers that indicate greatest confidence in sustainability of the harvest appear at the top of each numbered question. Generally, only one answer should be checked, although in some cases several answers may be relevant (e.g., see below in 2.19). However, only the most precautionary answer (i.e. worst scenario) will count when scoring information. A simple scoring system based on where ticks are placed for answers to each question will help Scientific Authorities advise whether or not that component of international trade carried out for commercial purposes is detrimental to the survival of the species (see Figure 1b for a visual representation of the scoring system).

It should be stressed that the compilation (and subsequent graphical representation) of the checklist does not necessarily in and of itself constitute a finding of non-detriment. Rather, the use of the checklist should inform the non-detriment finding, and can guide the Scientific Authority in obtaining the necessary information. When a preponderance of factors point to potential detriment, the Scientific Authority should inform the Management Authority that the proposed export should not proceed.

Biological characteristics: Animals only

2.1 Life history: Basic life history characteristics indicate the likely sensitivity of a species to harvest. For

example, r-selected species ("r-strategists") with a high intrinsic rate of increase are likely to be at less risk from harvest than K-selected species ("K-strategists"), which mature slowly and have low reproductive rates (e.g., mice versus elephants, starlings versus raptors).

2.2 Ecological adaptability: Ecological adaptability indicates the likely sensitivity to harvest and encompasses factors such as the species' breadth of habitat use, dietary breadth, and environmental tolerance (in other words, niche breadth). These factors are divided into the broad categories of generalist or specialist. Generalists can switch prey or habitat types relatively easily and are likely to be less affected by disturbances in their range than specialists that occupy a narrow ecological niche. A specialist with a low level of ecological adaptability is somewhat more likely to be negatively impacted by harvest for trade than a generalist (though not in all cases). For example, a given predator population at the top of a food chain, is likely to be more sensitive to harvest than a given herbivore population, lower in the food chain.

2.3 Dispersal efficiency: Species which have mechanisms that ensure a wide dispersal of individuals during some part of their life history may be less susceptible to the effects of harvest than similar species (depending on the life history of the species). Such species can more easily recolonize areas from which they have been locally extirpated. For example, a number of marine organisms depend on the dispersal of large numbers of widely distributed planktonic larvae, and so may be able to recolonize habitats from which the more sedentary adults have been overfished e.g. giant clams.

2.4 Interaction with humans: The tolerance of a species to human activity may indicate its likely sensitivity to the effects of harvest. Species mostly tolerant of human intervention are also likely to be the least affected by harvest. Pests, which people have difficulty in eradicating, and commensal species that benefit from the spread of human-induced environments such as agricultural land, are likely to be least sensitive to harvest. For example modified habitats in oil palm plantations in Indonesia support much higher populations of rodent prey and consequently of blood pythons than an equivalent area of natural habitat (although other species found in undisturbed habitats are absent from the oil palm plantations).

Biological characteristics: Plants only

2.1 Life form: The life form of a plant species gives some indication as to its likely sensitivity to harvest. The more long-lived a perennial plant is, the greater impact harvesting that plant may have on the overall population. Basic life form types are included.

2.2 Regeneration potential: The regeneration potential of a plant defines the capacity of the species to reproduce. Four simple basic types of regeneration potential are included. In completing this section, more than one type can be ticked. For example, *Fast vegetatively* and *Slow or irregular from seeds* would be ticked in the case of *Galanthus elwesii*, a snowdrop species subject to controlled collection in Turkey.

2.3 Dispersal efficiency: The dispersal efficiency of a species may allow it to overcome the effects of overharvest. Consequently, species which have mechanisms that ensure a wide dispersal of individuals during some part of their life history may be less susceptible to the effects of harvest as they may be able to recolonize areas from which they have been locally extirpated. For example, a number of plants depend on the dispersal of large numbers of widely distributed seeds or spores, and so may be able to re-colonize habitats from which the adults have been over-collected.

2.4 Habitat: Plants occur over a very wide range of habitats which cannot all be included in this table. However, five basic types have been included. The examples range from habitats which require a short time to reestablish to potential climax forest or other climax types (e.g. savannah) where recovery is long term or often impossible (e.g. Madagascan "Spiny bush"). This particular subject will need more extensive evaluation.

Animals and plants

National status

2.5 National distribution: The pattern of distribution of a species provides some indication of a species' sensitivity to harvest. Widespread species with a continuous distribution at the national or regional level are likely to be less sensitive to harvest or other threatening factors than species with a widespread but fragmented distribution. Population fragmentation may produce sub-populations, adapted to a specialized or restricted habitat, that are too small to be viable. Localized endemic species adapted to specific habitats that are naturally fragmented, such as mountain chains, are more likely to be at risk from habitat change and the effects of harvest. Species that are localized nationally, i.e. only occur in a few locations at the national level, could be particularly at risk from unmanaged harvest.

2.6 National abundance: Intuitively, species that are generally very abundant and occur at high densities are likely to be less sensitive to harvest than less common species occurring at naturally low densities. However, some species that occur at high densities are prone to major fluctuations in population size, either on a regular basis or due to stochastic events, and the impact of harvest in a climatically bad year (for the species) may

result in a large population reduction from which the species cannot recover rapidly, (e.g. Saiga antelope). For species that are already uncommon or rare, the margin of error associated with the harvest is likely to be low. For example, predators are generally less numerous than prey species, or mahogany trees are generally less numerous than daisies.

2.7 National population trends: Trends in national population status provide some indication about a species' likely susceptibility to harvest: species with an increasing population are likely to be less sensitive to harvest than species whose population is decreasing. Ideally, trends in the national population status should be measured over a time period independent of the harvest regime, and should recognise the "shifting baseline" phenomenon, in which each manager takes the population level first encountered as the baseline level. This phenomenon is very important for a species or population that has experienced a history of harvest and commercial use. Mathematical modelling suggests an independent time period of three generations is necessary as a minimum. However, generation time is not known accurately for a number of species in trade and, in these cases generation time should be predicted, based on known biological information from closely related species. In any event, the time period over which the population trend is assessed should be indicated in the right hand-box of 2.7. If data from actual population surveys are available, ideally results from a minimum of three censuses should be used to evaluate trends. As population monitoring improves, the age and sex structure of the population should also be assessed. Failing this, trends in measures or indices of relative abundance can also be used. In the absence of such data from the field, indices of habitat loss can be used to infer whether populations are likely to be declining.

2.8 Quality of information: The quality of data used to describe population trends is an important consideration in determining the robustness of the advice on non-detriment findings. For example, if all the data presented are recent and quantitative, then the confidence in the results of the assessment will be high. In contrast, if the majority of data are anecdotal, the chance of making a robust non-detriment finding will be lower. Consequently, more emphasis is placed on good local qualitative knowledge than on out-of-date quantitative data.

2.9 Major threats: Assessing the severity of the impact of the major threat provides a basis to weigh up the relative impact of the harvest. The major threat to the species at the national level should be indicated in the left-hand box and the severity of the threat recorded in the relevant right-hand box. For example, if habitat loss is the major threat and its impact on the species is severe and irreversible, then it may be difficult to justify a harvest at all from an area not affected by the habitat destruction. In contrast, if the effects of habitat loss are reversible, a well regulated harvest could possibly provide incentives to reverse the habitat loss (see also 2.13). It is vital to any evaluation of non-detriment that the Scientific Authority assesses the impact of trade in relation to other threats to the species.

Harvest management

2.10 Illegal harvest or trade: The total harvest to which a population is subject at the national level must be considered in assessing the impacts of a harvest. Consequently, it is necessary to try to assess the levels of both unmanaged and illegal harvest, even though reliable information is particularly difficult to collect (see also Tables 1A and 1P). Nonetheless, managers can often make an intuitive assessment of the significance of such harvest, in relation to the level of regulated legal harvest. Good local information and information from rangers and other enforcement personnel in the field is often exceedingly useful in evaluating the level of illegal harvest.

2.11 Management history: The management history of a harvest provides a good starting point to assess the likely sustainability of the harvest. A harvest with a long history of effective management, particularly well-regulated adaptive management, is more likely to be sustainable than an unmanaged harvest. A managed harvest, with adaptive management based on reliable monitoring of how harvest affects the population is the optimum situation. A managed harvest is one in which there is some degree of oversight and feedback, whether it be under a formal or an informal process. Any harvest regime necessarily contains an element of experiment, and requires feedback and monitoring for absolute safety. An ongoing but informally managed harvest may not have a nationally approved structure, but may nonetheless have a good chance of sustainability, particularly if associated with strong local resource ownership. In contrast, the necessary feedback will not have taken place in a newly established programme of harvest, so the probability of sustainability may still be open to question. An unmanaged harvest is one in which there is no oversight and the harvest is taken in a purely opportunistic manner, giving least confidence in its sustainability.

2.12 Management plan or equivalent: The development and adoption of a national management plan or equivalent is necessary to build the political will to establish the process of sustainable use. Furthermore, a harvest managed according to a nationally approved management plan is likely to have undergone a process of review and scrutiny before official adoption, and should thus have a higher chance of reliability. Ideally national management plans should be developed in

conjunction with local inputs, because the majority of harvested species are likely to be patchily rather than uniformly distributed throughout a range State, and so any harvest should be managed at the local level to avoid local extirpations. In range States with a strong federal/state or provincial system, strong management plans at the state or provincial level would be the equivalent of strong national management plans. Consequently, the optimum harvest management situation will include approved and co-ordinated local and national management plans. In cases where there is no approved plan and informal or unplanned management takes place, there will be little confidence in the probability that the harvest is sustainable or that the export is non-detrimental.

2.13 Aim of harvest regime in management planning: The aim of the harvest regime for a species has a considerable bearing on the probability that a harvest will be sustainable. Where the main aim is to generate conservation benefits, particularly on a habitat or ecosystem level, the likelihood that the harvest will not be detrimental to the wild population should be higher. For example, the encouragement of butterfly farming in Irian Jaya, Indonesia, was promoted to provide an economic incentive to maintain the natural vegetation that supports the butterfly populations. Where control of the target population is the aim, the rationale is that a managed situation is better in conservation terms than an unmanaged situation. For example, people may be more likely to tolerate crocodilians, and their habitats, if there is some visible form of management and protection of human life and economic returns. Where the aim is to maximize economic yield, the sustainability of the programme will have a lower probability, depending on the long-term strategy. Whilst maximum short-term economic yield derives from mining the resource completely, a strategy to maximize economic yield in the long-term should result in a more sustainable programme. Although this may only be true in theory, and in many cases harvesting is opportunistic and unselective, giving the low confidence in the sustainability of the harvest. Mining of the resource to commercial near-extinction is often the result, followed by exploitation of other species.

2.14 Quotas: Quotas have been used as a means of regulating and managing harvests for some time, and export quotas have become increasingly common in CITES as questions have been raised about particular harvest regimes. As in the adoption of management plans (2.12), the optimum situation is one in which: a) a national quota is based on local quotas that guard against local overexploitation, and b) the quota is based on knowledge of species' biology, life history, demographics, and reproductive capacity. Quotas can be based on the numbers of individuals removed from the wild, or on specific age or size classes within the population. A well managed, biologically-based harvest programme may involve harvest only of immature animals or plants, depending on the life history of the species concerned. For many species in trade detailed biological information is not readily available, so a system of "cautious", co-ordinated local and national quotas may be adopted. "Cautious" national quotas are those which are very small relative to the likely national population size. Finally, untried local quotas based on a biological understanding of the species would be expected to give a higher chance of sustainability than a situation in which market driven, arbitrary or no quotas are set. "Market driven" describes the situation in some countries where the traders are able to demand a given quota, or quotas are assigned based on expected commercial demand. An arbitrary quota is one based on no apparent knowledge of the species.

Control of harvest

2.15 Harvesting in Protected Areas (PA): Resource ownership and tenure can play an important role in determining the sustainability of harvests. If tenure and ownership are strong, the incentive for good management and regulation is likely to be greater. Protected areas have a variety of designations and purposes, depending on the national legal and political systems in place. The term, State Protected Area is here used to encompasses a variety of PAs and multiple use zone types, where sustainable use and harvest are allowed, including forest, game and marine reserves, and so-called "National Parks" in China and UK. Range States may have several types of such PAs which offer different degrees of protection from harvest. In general, greater confidence can be placed in the likely sustainability of the harvest if most of it occurs either in such State PAs or in other areas with strong tenure (see also 2.16).

2.16 Harvesting in areas with strong resource tenure or ownership: Strong local control over resource use may range from the local community management or private land management systems in place in southern Africa to the strong local control practised by communities surrounding oil palm plantations in Indonesia, where blood pythons are harvested. In all these cases either a local community or a private landowner is responsible for managing and regulating the harvest. In such systems, it is generally thought to be in the long-term best interests of those who own the resource to ensure that it is used in a sustainable manner. Consequently, greater confidence will be placed in the likely sustainability of the harvest if most harvest occurs in areas with strong resource ownership (see also 2.15).

2.17 Harvesting in areas with open access: When there is neither strong state, nor community, nor private

tenure, a system of open access prevails. In such cases there is no local control over the resource and a danger that there will be no incentive to regulate the harvest, resulting in a "free for all". Little confidence can be placed in the sustainability of harvest if most occurs in areas with actual or *de facto* open access.

2.18 Confidence in harvest management: This question requires a judgement on the effectiveness of harvest controls. A variety of factors such as low budgets, lack of trained staff, other capacity deficiencies, or a lack of political will, may prevent harvest controls from being implemented adequately. A response that indicates a lack of confidence in harvest management should not be seen by the respondent as an indictment of his/her government, but rather a recognition of existing deficiencies.

Monitoring of harvest

2.19 Methods used to monitor harvest: Monitoring of the harvest is vital and essential to ensuring the sustainability of any harvest. Direct population estimates of the harvested population or other measures of absolute density or abundance are generally considered the best methods, but may be very expensive and time consuming to implement, or may be impossible for the species concerned for biological reasons. In the absence of direct population measures, quantitative indices of population abundance and trend (measures of relative density or abundance) of the harvested population can be used. Alternatively qualitative indices may be used, which, if based on good local knowledge, can provide good indications of the effects of harvest. Under CITES, all Scientific Authorities are required to monitor exports, so that these can be halted or reduced if levels are thought to be detrimental to the survival of species, or the species is being used at a level inconsistent with its role in its ecosystem. CITES Annual Report data can play a very important role in monitoring, and better use of these data, along with better communication between Scientific Authorities of different countries, would allow Scientific Authorities to build up increasingly accurate pictures of the effects of international trade on population trends. This question could receive multiple ticks in answer, but only the most effective/principal monitoring system should be scored.

2.20 Confidence in harvesting monitoring: This question requires a judgement on the effectiveness of the monitoring system in use. For example a Scientific Authority may know that direct population estimates are conducted, but that budgetary, staffing and other resource constraints result in such population counts only being conducted at long intervals, insufficient to monitor the effects of an annual harvest programme. A response that indicates a lack of confidence in harvest monitoring should not be seen by the respondent as an indictment of his/her government, but rather a recognition of existing deficiencies.

Incentives and benefits from harvesting

2.21 Use compared with other threats: The major threat to the species was identified in 2.9, and this question aims to determine how use affects the species in relation to the major threat affecting the species. In some cases, use of the species may convey conservation benefits that mitigate the effects of some other major threat such as habitat destruction. In other cases, use does not affect the species detrimentally and does not have any mitigating effects on other major threats, so any use has a neutral effect. Thereafter, the harvest may become increasingly harmful in conjunction with the major threats. In yet other cases, the use may exacerbate other threats (such as disease, invasive species, or habitat deterioration), thereby necessitating a more cautious or precautionary non-detriment finding. The non-detriment finding should never be taken out of context from other impacts and conservation benefits impinging on the species.

2.22 Incentives for species conservation: In some rare cases the species derives a direct benefit from the harvesting programme. In many cases, the benefit may not be financial, but in such cases, the harvest programme may significantly reduce illegal collection.

2.23 Incentives for habitat conservation: This question looks at the broader implications of harvest to support habitat conservation. Any potential benefit to habitat conservation should be known and demonstrated. If a benefit is intended but it cannot be shown, this question should be answered as "low". If no conservation benefit is intended, this question should be answered "none".

Protection from harvest

2.24 Proportion strictly protected from harvest: Strict protection, both legally and in practice, of representative parts of a species' range, or of a portion of the population sufficient to ensure its survival, should prevent harvest threatening the whole national population of a species. This question aims to assess the percentage that is strictly protected (where strict protection is defined as a prohibition on removal from the wild). For many species, the existence of strict protected areas where harvest is not allowed, with adequate enforcement controls, is an important assurance that core areas can provide recruitment to a population subject to harvest.

2.25 Effectiveness of strict protection measures: This question requires an assessment of the effectiveness of protection measures. A number of factors including budgets and the resource ownership of such protected areas may have a bearing on how effective they are. A response that indicates a lack of effectiveness of strict protection measures should not be seen by the respondent as an indictment of his/her government, but rather a recognition of existing problems and challenges.

2.26 Regulation of harvest effort: This question requires an assessment of the effectiveness of harvest restrictions. These restrictions generally comprise closed seasons, or portions of the population which cannot be targeted (based on size, for example). Much of the success of these measures will depend on the political will for enforcement and on the degree to which harvesters are law-abiding.

Table 2. Factors affecting management of the harvesting regime

Biological characteristics: Animals only		
2.1 Life history: What is the species' life history?	High reproductive rate, long-lived	
	High reproductive rate, short-lived	
	Low reproductive rate, long-lived	
	Low reproductive rate, short-lived	
	Uncertain	
2.2 Ecological adaptability: To what extent is the species adaptable (habitat, diet, environmental tolerance etc.)?	Extreme generalist	
	Generalist	
	Specialist	
	Extreme specialist	
	Uncertain	
2.3 Dispersal efficiency: How efficient is the species' dispersal mechanism at key life stages?	Very good	
	Good	
	Medium	
	Poor	
	Uncertain	
2.4 Interaction with humans: Is the species tolerant to human activity other than harvest?	No interaction	
	Pest/Commensal	
	Tolerant	
	Sensitive	
	Uncertain	
Biological characteristics: Plants only		
2.1 Life form: What is the life form of the species?	Annual	
	Biennial	
	Perennials (herbs)	
	Shrub and small trees (max. 12m)	
	Trees	
2.2 Regeneration potential: What is the regenerative potential of the species concerned?	Fast vegetatively	
	Slow vegetatively	
	Fast from seeds	
	Slow or irregular from seeds or spores	
	Uncertain	

Table 2. Factors affecting management of the harvesting regime (cont.)

2.3 Dispersal efficiency: How efficient is the species' dispersal mechanism?	Very good	
	Good	
	Medium	
	Poor	
	Uncertain	
2.4 Habitat: What is the habitat preference of the species?	Disturbed open	
	Undisturbed open	
	Pioneer	
	Disturbed forest	
	Climax	
National status: Animals and plants		
2.5 National distribution: How is the species distributed nationally?	Widespread, contiguous in country	
	Widespread, fragmented in country	
	Restricted and fragmented	
	Localized	
	Uncertain	
2.6 National abundance: What is the abundance nationally?	Very abundant	
	Common	
	Uncommon	
	Rare	
	Uncertain	
2.7 National population trend: What is the recent national population trend?	Increasing	
	Stable	
	Reduced, but stable	
	Reduced and still decreasing	
	Uncertain	
2.8 Quality of information: What type of information is available to describe abundance and trend in the national population?	Quantitative data, recent	
	Good local knowledge	
	Quantitative data, outdated	
	Anecdotal information	
	None	
2.9 Major threats: What major threat is the species facing (underline following: overuse/habitat loss and alteration/invasive species/other: and how severe is it?	None	
	Limited/Reversible	
	Substantial	
	Severe/Irreversible	
	Uncertain	
Harvest management: Animals and plants		
2.10 Illegal harvest or trade: How significant is the national problem of illegal or unmanaged harvest or trade?	None	
	Small	
	Medium	
	Large	
	Uncertain	

Table 2. Factors affecting management of the harvesting regime (cont.)

2.11 Management history: What is the history of harvest?	Managed harvest: ongoing with adaptive framework	
	Managed harvest: ongoing but informal	
	Managed harvest: new	
	Unmanaged harvest: ongoing or new	
	Uncertain	
2.12 Management plan or equivalent: Is there a management plan related to the harvest of the species?	Approved and co-ordinated local and national management plans	
	Approved national/state/provincial management plan(s)	
	Approved local management plan	
	No approved plan: informal unplanned management	
	Uncertain	
2.13 Aim of harvest regime in management planning: What is harvest aiming to achieve?	Generate conservation benefit	
	Population management/control	
	Maximize economic yield	
	Opportunistic, unselective harvest, or none	
	Uncertain	
2.14 Quotas: Is the harvest based on a system of quotas?	Ongoing national quota: based on biologically derived local quotas	
	Ongoing quotas: "cautious" national or local	
	Untried quota: recent and based on biologically derived local quotas	
	Market-driven quota(s), arbitrary quota(s), or no quotas	
	Uncertain	
Control of harvest: Animals and plants		
2.15 Harvesting in Protected Areas: What percentage of the legal national harvest occurs in State-controlled Protected Areas?	High	
	Medium	
	Low	
	None	
	Uncertain	
2.16 Harvesting in areas with strong resource tenure or ownership: What percentage of the legal national harvest occurs outside Protected Areas, in areas with strong local control over resource use?	High	
	Medium	
	Low	
	None	
	Uncertain	
2.17 Harvesting in areas with open access: What percentage of the legal national harvest occurs in areas where there is no strong local control, giving *de facto* or actual open access?	None	
	Low	
	Medium	
	High	
	Uncertain	
2.18 Confidence in harvest management: Do budgetary and other factors allow effective implementation of management plan(s) and harvest controls?	High confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	

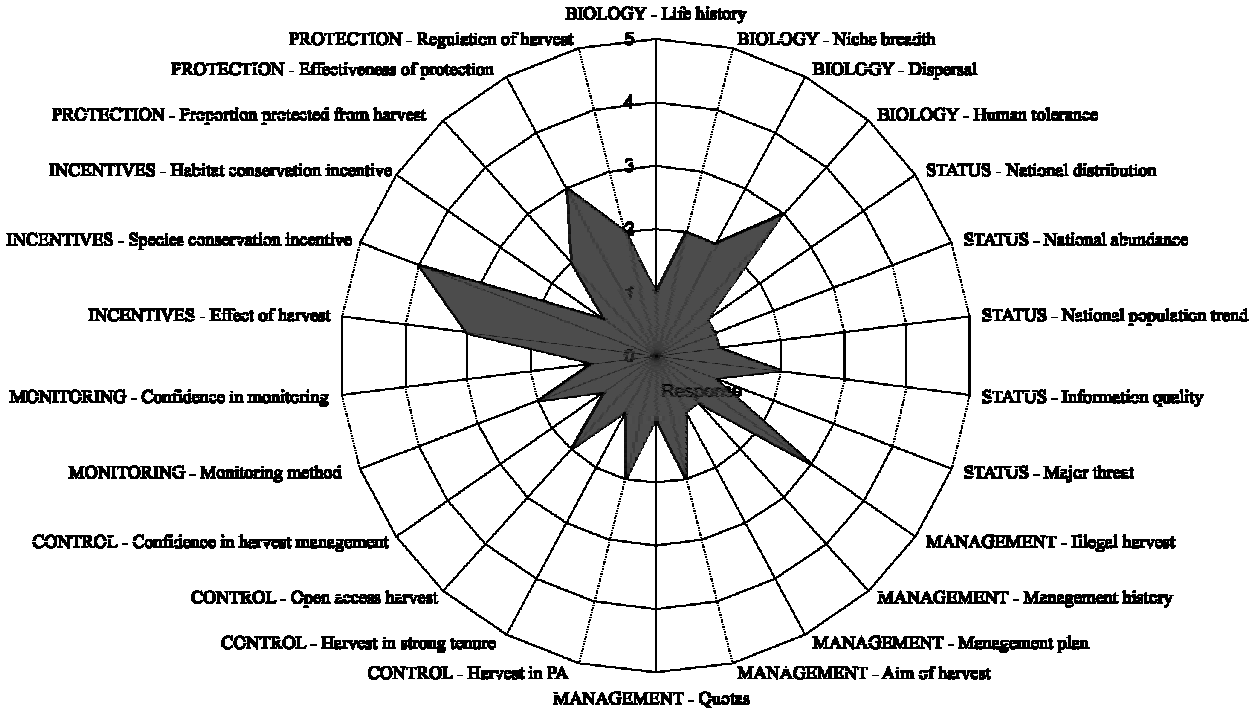
Table 2. Factors affecting management of the harvesting regime (cont.)

Monitoring of harvest: Animals and plants		
2.19 Methods used to monitor the harvest: What is the principal method used to monitor the effects of the harvest?	Direct population estimates	
	Quantitative indices	
	Qualitative indices	
	National monitoring of exports	
	No monitoring or uncertain	
2.20 Confidence in harvest monitoring: Do budgetary and other factors allow effective harvest monitoring?	High confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	
Incentives and benefits from harvesting: Animals and plants		
2.21 Utilization compared to other threats: What is the effect of the harvest when taken together with the major threat that has been identified for this species?	Beneficial	
	Neutral	
	Harmful	
	Highly negative	
	Uncertain	
2.22 Incentives for species conservation: At the national level, how much conservation benefit to this species accrues from harvesting?	High	
	Medium	
	Low	
	None	
	Uncertain	
2.23 Incentives for habitat conservation: At the national level, how much habitat conservation benefit is derived from harvesting?	High	
	Medium	
	Low	
	None	
	Uncertain	
Protection from harvest: Animals and plants		
2.24 Proportion strictly protected: What percentage of the species' natural range or population is legally excluded from harvest?	>15%	
	5-15%	
	<5%	
	None	
	Uncertain	
2.25 Effectiveness of strict protection measures: Do budgetary and other factors give confidence in the effectiveness of measures taken to afford strict protection?	High confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	
2.26 Regulation of harvest effort: How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse?	Very effective	
	Effective	
	Ineffective	
	None	
	Uncertain	

Fig.1a. Example of an information evaluation to assist Scientific Authorities in making non-detriment findings – plot of responses to questions in Table 2.

Question number	Question category	Question	Responses – 1 to 5
2.1	Biology	BIOLOGY – Life history	1
2.2		BIOLOGY – Niche breadth	2
2.3		BIOLOGY – Dispersal	2
2.4		BIOLOGY – Human tolerance	3
2.5	Status	STATUS – National distribution	1
2.6		STATUS – National abundance	1
2.7		STATUS – National population trend	1
2.8		STATUS – Information quality	2
2.9		STATUS – Major threat	1
2.10	Management	MANAGEMENT – Illegal harvest	3
2.11		MANAGEMENT – Management history	1
2.12		MANAGEMENT – Management plan	1
2.13		MANAGEMENT – Aim of harvest	2
2.14		MANAGEMENT – Quotas	1
2.15	Control	CONTROL – Harvest in PA	2
2.16		CONTROL – Harvest in strong tenure	1
2.17		CONTROL – Open access harvest	2
2.18		CONTROL – Confidence in harvest management	1
2.19	Monitoring	MONITORING – Monitoring method	2
2.20		MONITORING – Confidence in monitoring	1
2.21	Incentives	INCENTIVES – Effect of harvest	3
2.22		INCENTIVES – Species conservation incentive	4
2.23		INCENTIVES – Habitat conservation incentive	1
2.24	Protection	PROTECTION – Proportion protected from harvest	2
2.25		PROTECTION – Effectiveness of protection	3
2.26		PROTECTION – Regulation of harvest	2

Fig. 1 Example of scoring system to assist Scientific Authorities in making non-detriment findings. Plot of responses to questions in Table 2.



Making a non-detriment finding – a visual scoring system for decision-making

Once all the relevant information has been collected in Tables 1 and 2, the Scientific Authority staff should be in a much better position to make a non-detriment finding based on their interpretation of the assembled material. Furthermore, a visual representation of the results collected in Table 2 can be produced using radar plots as described in the next paragraph.

An example of the Excel worksheet that should be drawn up is presented in Figure 1a entitled: *Example of an information evaluation to assist Scientific Authorities in making non-detriment findings – plot of responses to questions in Table 2*. A short title for each question is presented in the third column of the figure (from left hand margin) and the response, on a scale from one to five is included in the fourth column (from the left), entitled: *Responses – 1 to 5.*

An electronic template has been developed to automatically produce a plot, once the correct values are entered into the worksheet. This template is available from the CITES Secretariat.

The radar plot produces a central area of colour. If the harvest is likely to be non-detrimental, most of the answers will fall in the precautionary areas of Table 2, and will be depicted near the centre of the circle. Outlying points may indicate a low confidence in the probability that the harvest is sustainable and should prompt the Scientific Authority to look in more detail at the responses. It may be that further investigation is needed or that insufficient information exists on which to base a finding of non-detriment. Hence, this tool will not only assist with the decision-making process of making a non-detriment finding, but it will also allow possible problems to be identified and rectified as soon as possible.

Conclusions

To determine that a harvest is not detrimental to the survival of a species, the Scientific Authority of the State of export will ideally undertake a thorough review of the whole harvest management system. However, in many cases comprehensive information is not available and in others, it is not even clear what is meant by the management system. This checklist aims to draw attention to the more important aspects of harvest management systems and to provide a means for compiling such information. The checklist is designed to provide the first step in a process which it is hoped will evolve in response to recommendations from field testers. Above all, the checklist must appeal to its potential users and should not be unrealistic in terms of the information needed to complete the tables, consequently it uses qualitative data categories. In time, these may usefully develop into more quantitative definite categories. A

major strength of the current system is the ability to represent visually the importance of factors that affect the probability that a harvest could be detrimental or not. The visual representation allows quick comparisons to be made between species, and perhaps even between years to identify factors at the national level that could be changed to improve the likelihood that resource management will result in a sustainable harvest.

5.2 Practical example of the checklist approach

This section provides some examples of how the Checklist to assist CITES Scientific Authorities in making non-detriment findings can actually be used. The examples presented here were brought to the workshop by a range of participants, from government and non-government sources, but these analyses should not be interpreted either as reflecting an official government view or as an exhaustive analysis of the situation, they are simply the opinion of individuals involved as participants in these meetings. The background information on each of the Appendix II species considered is compiled from meeting participants and other readily available sources. This information was used to complete the table on the Factors Affecting Management of the Harvesting Regime (Table 2) and the results for five species are presented in Table 3. In addition, throughout the text, where the information is relevant to a particular section of Table 2/3, the section number is included in the text in parentheses e.g. (2.3). Finally, the scores for each species from Table 3 are plotted as radar graphs to provide a graphic representation of the likely confidence in the sustainability of the harvest and to allow areas for improved management to be highlighted. It is also easy to visualise the benefits of superimposing successive charts compiled from evaluations of the management system over successive years or even longer time periods. The resulting overlay could provide an effective temporal comparison to track progress and reveal discrepancies in key areas (biology, status, management, monitoring and protection) at a glance. This feedback can then be applied to channel future effort and resources in the quest for efficient and sustainable management.

Table 3. Factors affecting management of the harvesting regime, completed for five species.

Biological characteristics: Animals only		✓	✳	✖	●	◆
2.1 Life history: What is the species' life history?	High reproductive rate, long-lived		✳	✖		
	High reproductive rate, short-lived				●	
	Low reproductive rate, long-lived	✓				
	Low reproductive rate, short-lived					
	Uncertain					
2.2 Ecological adaptability: To what extent is the species adaptable (habitat, diet, environmental tolerance etc.)?	Extreme generalist		✳			
	Generalist			✖		
	Specialist	✓				
	Extreme specialist				●	
	Uncertain					
2.3 Dispersal efficiency: How efficient is the species' dispersal mechanism at key life stages?	Very good	✓				
	Good		✳	✖	●	
	Medium					
	Poor					
	Uncertain					
2.4 Interaction with humans: Is the species tolerant to human activity other than harvest?	No interaction					
	Pest/Commensal		✳	✖		
	Tolerant					
	Sensitive	✓				
	Uncertain					

Table 3. Factors affecting management of the harvesting regime, completed for five species (cont.).

		✓	✳	✖	●	◆
Biological characteristics: Plants only						
2.1 Life form: What is the life form of the species?	Annual					
	Biennial					
	Perennials (herbs)					◆
	Shrub and small trees (max. 12m)					
	Trees					
2.2 Regeneration potential: What is the regenerative potential of the species concerned?	Fast vegetatively					
	Slow vegetatively					◆
	Fast from seeds					
	Slow or irregular from seeds or spores					
	Uncertain					
2.3 Dispersal efficiency: How efficient is the species' dispersal mechanism?	Very good					
	Good					
	Medium					
	Poor					◆
	Uncertain					
2.4 Habitat: What is the habitat preference of the species?	Disturbed open					
	Undisturbed open					
	Pioneer					
	Disturbed forest					
	Climax					◆
National status: Animals and plants						
2.5 National distribution: How is the species distributed nationally?	Widespread, contiguous in country					
	Widespread, fragmented in country		✳	✖		◆
	Restricted and fragmented					
	Localized	✓			●	
	Uncertain					
2.6 National abundance: What is the abundance nationally?	Very abundant					
	Common		✳	✖		
	Uncommon	✓			●	◆
	Rare					
	Uncertain					
2.7 National population trend: What is the recent national population trend?	Increasing					
	Stable			✖	●	
	Reduced, but stable		✷			
	Reduced and still decreasing	✓				◆
	Uncertain					

Table 3. Factors affecting management of the harvesting regime, completed for five species (cont.).

		✓	✳	✖	●	◆
2.8 Quality of information: What type of information is available to describe abundance and trend in the national population?	Quantitative data, recent		✳			
	Good local knowledge			✖	●	
	Quantitative data, outdated					
	Anecdotal information	✓				◆
	None					
2.9 Major threats: What major threat is the species facing (underline following: overuse/habitat loss and alteration/ invasive species/other: and how severe is it?	None			✖		
	Limited/reversable				●	
	Substantial	✓	✳			◆
	Severe/irreversible					
	Uncertain					
Harvest management: Animals and plants						
2.10 Illegal harvest or trade: How significant is the national problem of illegal or unmanaged harvest or trade?	None	✳			●	
	Small					
	Medium	✓				◆
	Large					
	Uncertain			✖		
2.11 Management history: What is the history of harvest?	Managed harvest: ongoing with adaptive framework				●	
	Managed harvest: ongoing but informal		✳	✖		◆
	Managed harvest: new	✓				
	Unmanaged harvest: ongoing or new					
	Uncertain					
2.12 Management plan or equivalent: Is there a management plan related to the harvest of the species?	Approved and co-ordinated local and national management plans				●	◆
	Approved national/state/provincial Management plan(s)		✳			
	Approved local management plan					
	No approved plan: informal unplanned management	✓		✖		
	Uncertain					
2.13 Aim of harvest regime in management planning: What is harvest aiming to achieve?	Generate conservation benefit				●	
	Population management/control					
	Maximize economic yield	✓	✳	✖		◆
	Opportunistic, unselective harvest, or none					
	Uncertain					
2.14 Quotas: Is the harvest based on a system of quotas?	Ongoing national quota: based on biologically derived local quotas			✖		
	Ongoing quotas: “cautious” national or local					
	Untried quota: recent and based on biologically derived local quotas					
	Market-driven quota(s), arbitrary quota(s), or no quotas	✓	✳		●	◆
	Uncertain					

Table 3. Factors affecting management of the harvesting regime, completed for five species (cont.).

		✓	✳	✖	●	◆
Control of harvest: Animals and plants						
2.15 Harvesting in Protected Areas: What percentage of the legal national harvest, occurs in State-controlled Protected Areas?	High				●	
	Medium		✳			
	Low	✓				◆
	None			✖		
	Uncertain					
2.16 Harvesting in areas with strong resource tenure or ownership: What percentage of the legal national harvest occurs outside Protected Areas, in areas with strong local control over resource use?	High			✖	●	
	Medium					
	Low	✓	✳			◆
	None					
	Uncertain					
2.17 Harvesting in areas with open access: What percentage of the legal national harvest occurs in areas where there is no strong local control, giving *de facto* or actual open access?	None			✖	●	
	Low					
	Medium					
	High	✓	✳			◆
	Uncertain					
2.18 Confidence in harvest management: Do budgetary and other factors allow effective implementation of management plan(s) and harvest controls?	High confidence				●	
	Medium confidence					◆
	Low confidence		✳			
	No confidence	✓		✖		
	Uncertain					
Monitoring of harvest: Animals and plants						
2.19 Methods used to monitor the harvest: What is the principal method used to monitor the effects of the harvest?	Direct population estimates		✳			
	Quantitative indices					
	Qualitative indices				●	
	National monitoring of exports	✓		✖		◆
	No monitoring or uncertain					
2.20 Confidence in harvest monitoring: Do budgetary and other factors allow effective harvest monitoring?	High confidence		✳		●	
	Medium confidence					
	Low confidence	✓				◆
	No confidence			✖		
	Uncertain					
Incentives and benefits from harvesting: Animals and plants						
2.21 Utilization compared to other threats: What is the effect of the harvest when taken together with the major threat that has been identified for this species?	Beneficial			✖	●	
	Neutral		✳			
	Harmful	✓				
	Highly negative					
	Uncertain					◆

Table 3. Factors affecting management of the harvesting regime, completed for five species (cont.).

		✓	✳	✖	●	◆
2.22 Incentives for species conservation: At the national level, how much conservation benefit to this species accrues from harvesting?	High				●	
	Medium					
	Low		✳	✖		
	None	✓				◆
	Uncertain					
2.23 Incentives for habitat conservation: At the national level, how much habitat conservation benefit is derived from harvesting?	High				●	
	Medium					
	Low		✳			
	None	✓		✖		◆
	Uncertain					
Protection from harvest: Animals and plants						
2.24 Proportion strictly protected: What percentage of the species' natural range or population is legally excluded from harvest?	>15%	✓	✳			
	5–15%			✖		
	<5%					◆
	None				●	
	Uncertain					
2.25 Effectiveness of strict protection measures: Do budgetary and other factors give confidence in the effectiveness of measures taken to afford strict protection?	High confidence			✖		
	Medium confidence				●	
	Low confidence	✓				◆
	No confidence		✳			
	Uncertain					
2.26 Regulation of harvest effort: How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse)?	Very effective					
	Effective				●	
	Ineffective					
	None	✓				
	Uncertain		✳	✖		◆

Key: ✓ *Agapornis fischeri* ✳ *Crocodylus niloticus* ✖ *Python curtus* ● *Ornithoptera rothschildii* ◆ *Panax quinquefolius*

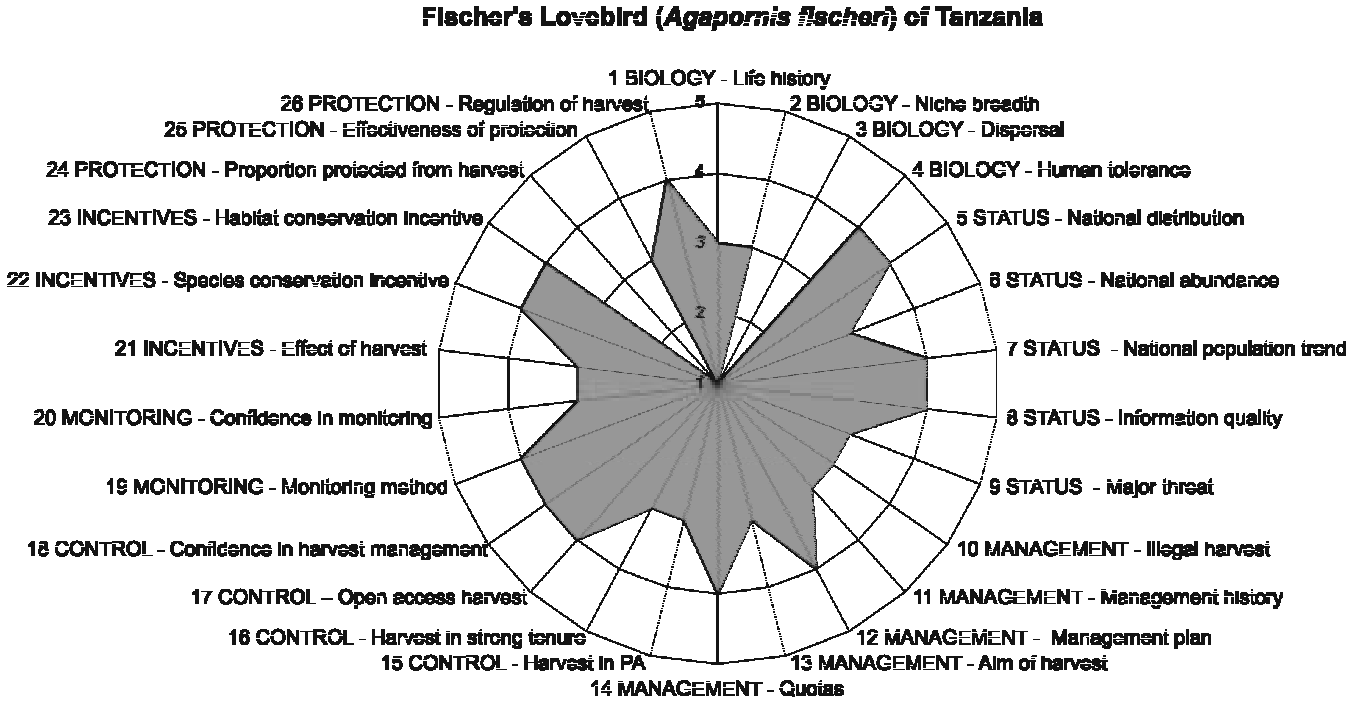
Assessment for Fischer's Lovebird *Agapornis fischeri* in Tanzania prior to 1991

This assessment of the status of trade in the Fischer's Lovebird *Agapornis fischeri*, from Tanzania, was conducted on the basis of information obtainable before the species was included in the CITES Significant Trade Review in 1991. An assessment based on data collected during that review and subsequent field project would present a different picture. *Agapornis fischeri* or Fischer's Lovebird occupies the inland plateau (1100–1700m) predominately in the North of Tanzania. Within its localized range (2.5) it resides in wooded grasslands (in the East) and heavily cultivated areas (in the West). Hence *A. fischeri* is considered a specialist with regard to habitat. The dietary niche is also rather narrow and consists solely of seeds taken from the ground (2.2). This species breeds annually between June–July or January–February (district dependent) and clutches of 4 young have been recorded (2.1). Unfortunately there is a lack of detailed information on the species dispersal mechanism(s) at key life stages (2.3); but it is assumed to be very good.

Fischer's Lovebird used to be common and widespread. Although population estimates were not available in 1991, visits to areas where the species had been common revealed evidence of a widespread and large population decline (2.6, 2.8, 2.22). The species is apparently protected under the Wildlife Conservation National Game Order (1974). However, despite such measures, the species has been subject to poaching since 1988 in the Serengeti National Park (2.25). The proportion of the population or range that occurs within these protected areas is thought to be >15% (2.24).

The recorded trade in *Agapornis fischeri* (minimum net import figures) doubled from 1983 to 1987. In addition to legal and illegal harvesting within the native range, the market was fueled by prolific captive breeding in some non-range States. Capture and export from the United Republic of Tanzania were permitted via a quota system. The quota in 1989 was 500 birds per exporter. However, there was no limit on the number of exporters (2.11, 2.12). The quota figures appear to be somewhat arbitrary and it seems that the aim of the harvest was to maximize economic yield (2.13, 2.14, 2.23). In addition, there was no strong local control over particular areas resulting in an open access situation (2.17). Aside from national monitoring of exports, there has been no attempt at population monitoring and even anecdotal feedback does not appear to have been incorporated in the management system (2.18, 2.19, 2.20, 2.26). Over-exploitation through illegal harvest, coupled with the legal harvest appeared to be the major threat to this species (2.9, 2.12, 2.15, 2.16, 2.21). The fact that *A. fischeri* sometimes aggregate in large flocks of over 100 birds to feed on grain and is a colonial nesting species renders the species particularly vulnerable to such hunting pressure.

Fig. 2. Radar Plot of the factors affecting the management of Fischer's Lovebird, *Agapornis fischeri* in Tanzania prior to 1991 (see Table 3 for data).



Assessment for the Nile crocodile *Crocodylus niloticus* in Tanzania

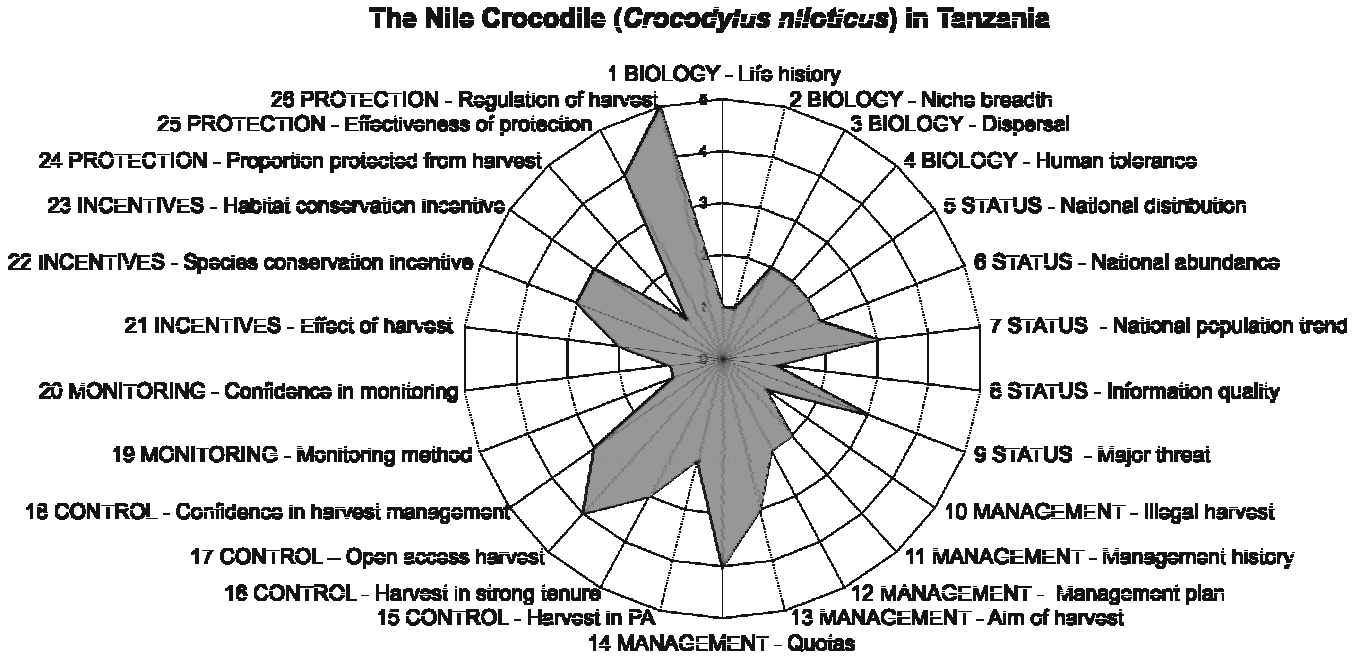
This assessment of the status of the management of the Nile crocodile *Crocodylus niloticus* harvest in the United Republic of Tanzania is based on information presented to the CITES Parties in 2000. The Nile crocodile is a large, slow growing and long-lived reptile. The female nests annually and lays between 40–60 eggs (Britton 2000) (2.1). Such high reproductive potential facilitates resistance to intense harvesting of eggs, and dampens fluctuations in population size (Webb 1999, Ross 1999) (2.2). Whilst hatchlings feed upon insects and small aquatic invertebrates, the adults are voracious predators. Although the mature crocodile is predominantly piscivorous this species is also known to take ungulates, cattle, dogs, and even young hippos (Britton 2000) (2.2). *Homo sapiens*, however, tend to be the most controversial of prey items. The resulting human-crocodile conflict has become the greatest threat to future population stability of *C. niloticus* in Tanzania (2.4).

C. niloticus is widely distributed in the waterways and wetlands of Tanzania. The population is fragmented by natural drought effects and the impact of human habitation (Woodward 1990). However, because the bulk of the population resides within protected areas (National Parks and Game Reserves) this fragmentation is likely to hold little biological significance (Ross 1999) (2.5).

After a population decline around the middle of the century due to overhunting, legal protection has resulted in significant recoveries in several areas and large populations can now be found (Britton 2000) (2.6). A combination of regular aerial and spotlight surveys have even revealed a recent localized increase within protected areas (Games and Severre 1999, Ross 1999). However, it is the unprotected populations which are considered most vulnerable in the face of uncontrolled revenge killings as human lives, property and livestock are taken (2.19, 2.20). Indeed, survey data does suggest possible decline in some unprotected areas of human habitation (Games and Severre 1999, Ross 1999) (2.7,2.8, 2.9, 2.19).

Until recently, it was thought that ranching would be the optimal solution for the conservation of this species. Theoretically, such legal ranching would meet market demand, help to conserve habitat and pose no threat to the thriving crocodile population. The Tanzanian population of *C. niloticus* was transferred in 1985 to Appendix II for ranching purposes, subject to an annual quota. The initial quota allowed the export of wild collected skins to generate income for the ranching programme (2.11, 2.12). By 1993, the annual quota of wild caught specimens had been reduced to 200 with the hope that the ranching programmes would have been sufficiently developed to replace the wild harvest or

Fig. 3. Radar Plot of the factors affecting the management of the Nile crocodile *Crocodylus niloticus* in Tanzania (see Table 3 for data).



limit it to actual problem animals through sport hunting. However, by COP10 it became evident that ranching was not a success. Prospective ranchers simply did not have the finances to employ staff, regulate water temperature or supply adequate food. Whilst ranching involves the removal of eggs from the wild, capture of wild adults as ranch stock is prohibited. Thus the only solution that ranching offers on the growing problem of human-crocodile conflict, is the incentive associated with collecting eggs for the ranches (2.21). Since 1985, figures for Tanzania alone reveal that 500 people were killed and a further 462 wounded. This is likely to be an underestimate as many incidents go unrecorded (Games and Severre 1999).

The only solution then, was to compose a management plan that could deal with "problem animals" by legal wild harvest thus providing an incentive for habitat protection and ultimately, conservation of the Nile crocodile(2.22, 2.23). Tanzania consequently devised a proposal for submission at COP11 for retention of the species in Appendix II but with an increased quota. Experts agree that on a biological basis, quotas have been conservative. The financial benefits from the harvest would then encourage local tolerance and conservation of the crocodile (2.22, 2.23). Local residents should have the power to protect themselves and their property through legal control over this resource. However, the current situation is one of open access with ranchers taking the majority of permits to meet the national quotas (2.17). For example, in 1999 permits were issued with a specific area in mind and in response to problem animal complaints. However, access was restricted to ranchers. In the future, it has been proposed that permits will be granted to ranchers on the basis of performance of the ranching operation and more permits will be allocated to landowners and local people. The wild adult harvest plan should not give cause for conservation concern as the bulk of the crocodile population is protected within the National Parks and Game reserves (Anon 1999, Webb 1999). The controlled harvest of adults may facilitate market development as the demand for adult skins is greater than for the smaller ranched skins (Anon 1999). Skins will continue to be inspected and tagged by the staff of the Wildlife Division in accordance with Res. Conf. 9.22. Such control measures have already stamped out the illegal trade that may have threatened sustainability of an increased quota (2.10). Under current management however, there is little incentive for local communities to tolerate crocodilians (2.22, 2.23).

Restrictions on harvesting include a minimum size limit of 3m (total length) and 60cm belly skin width. Hunting shall be limited to 1st July–31st December or on special permits to control problem animals. Quotas shall not exceed 5% of the non-hatchling population. In addition no hunting will be permitted in protected areas (Anon 1999) (2.24). The actual effectiveness of such measures, however, remains to be ascertained (2.26).

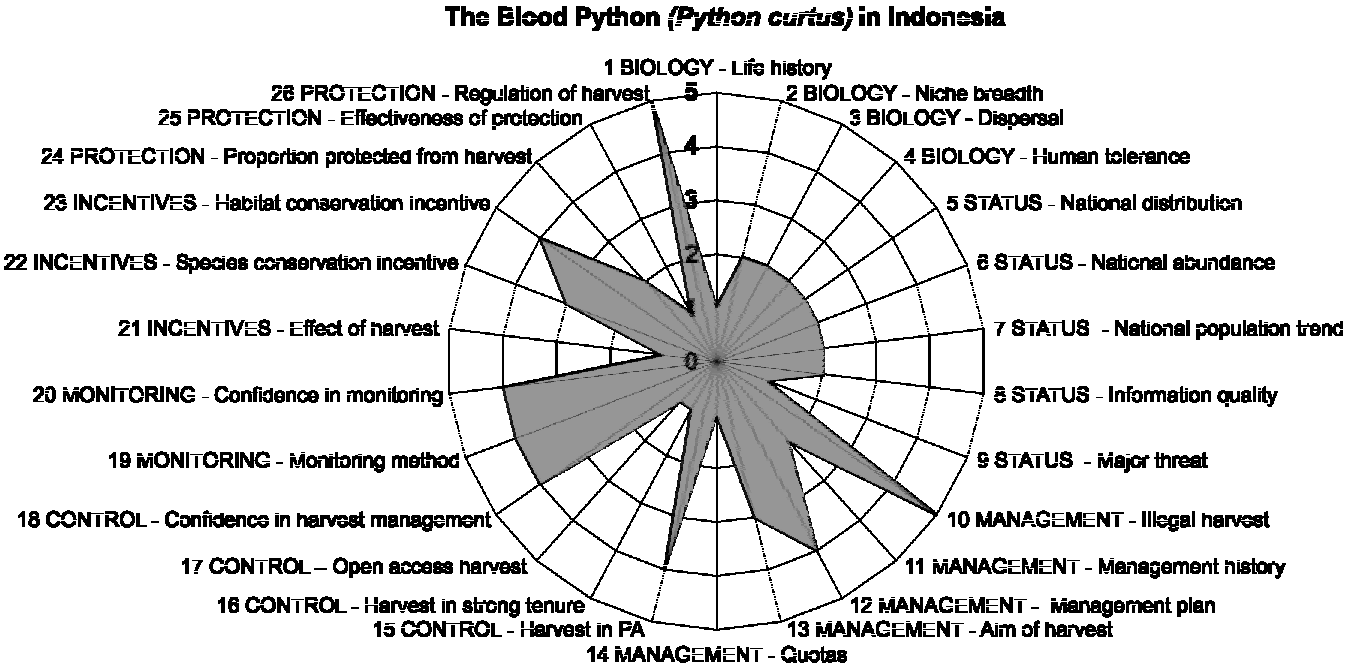
There is a general consensus that the success of the proposed management system will depend upon successful implementation, community involvement and close monitoring (2.11, 2.25).

Assessment for the blood python *Python curtus* in Indonesia

The blood python, *Python curtus* is a small, South East Asian python. This snake is restricted to, but widespread within, the Southern half of the Malay peninsula, Bangka, Borneo and Sumatra. It also occurs on certain islands of the Indo-Australian peninsula (IUCN 1988, Stuebing 1996) (2.5). Within these regions the blood python occupies a somewhat broad ecological niche (2.2). It favours lowland streams and is associated with relatively low elevations and semi-aquatic conditions (Stuebing 1996). Because of this preference for swamp forest along water courses the species is believed to have a rather sporadic distribution in some parts (2.5). However, the species also thrives in secondary vegetation and oil palm plantations (IUCN 1988; Prijono, pers. comm.). With this ability to inhabit disturbed habitats and a fondness for consuming rats (among other small vertebrates) *P. curtus* can be classified as a commensal species regarding its interaction with humans (IUCN 1988) (2.4). *P. curtus* is a relatively long-lived species with a high reproductive rate. The female lays clutches of 10–15 eggs (IUCN 1988) (2.1).

Although no major threats have been adequately documented, overexploitation of *P. curtus* is a possible threat (2.9). The volume of the skin trade increased sharply from 935 skins in 1980 to 58500 skins in 1985. This sudden and dramatic increase in trade is likely be due to protection of some larger congeners and possibly reduced availability of others. Most of the traded skins originate from Indonesia. Data on population levels, distribution and the effects of exploitation are lacking (IUCN 1988). Current information is anecdotal and derived from local knowledge (2.8). Such sources suggest that *P. curtus* is moderately common in Indonesia and the population is believed to be stable (IUCN 1988) (2.7). In addition, Stuebing suggests that this python may be more common than it appears due to its secretive behaviour (Stuebing 1996) (2.6).

Fig. 4. Radar Plot of the factors affecting the management of the blood python *Python curtus* in Indonesia (see Table 3 for data).



Despite the establishment of a hunting quota for the Indonesian population, the management system remains informal (2.14). There are no management plans and virtually no ecological data on which to base them (Stuebing 1996) (2.11, 2.12, 2.18, 2.26). The bulk of the harvest derives from opportunistic collection by villagers within local plantations (Prijono, pers. comm.). All harvesting is therefore executed in areas of strong local resource control (2.15, 2.16, 2.17). The aim of the harvest is to maximise financial benefit from the snake skin market (2.13). As a result, there are low incentives for species conservation and negligible habitat conservation benefit (2.23). Fortunately, the species' tendency to occupy natural refugia under stream banks is likely to provide considerable natural protection from over exploitation (Stuebing 1996). In addition, 5–15% of the population is strictly protected from harvest within state controlled land (2.24, 2.26) However, the volume of illegal harvest or trade remains uncertain (2.10).

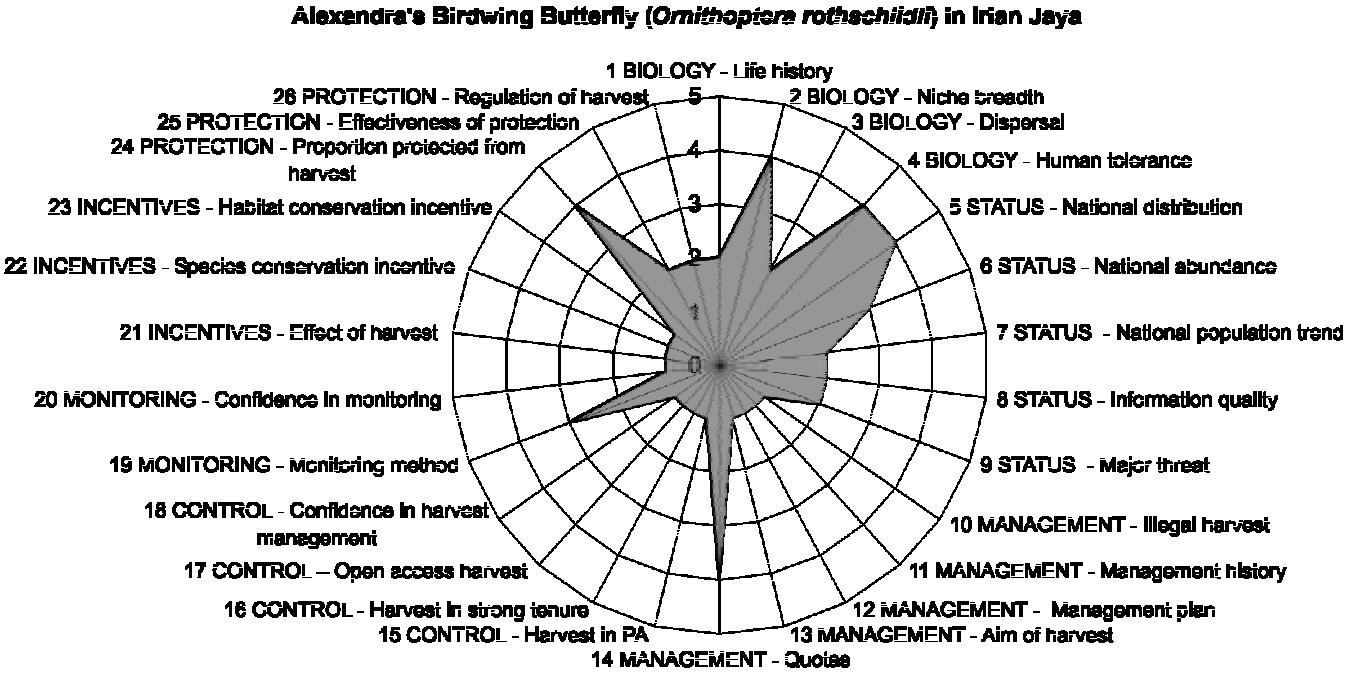
As well as the lack of confidence in the management system the harvest monitoring strategy is far from adequate. There is a need for field level studies of harvest impact. The current system of national export monitoring is likely to be relatively unreliable considering the lack of knowledge regarding levels of illegal trade (2.19, 2.20).

Assessment for Alexandra's Birdwing butterfly *Ornithoptera rothschildii* in Irian Jaya

Ornithoptera rothschildii is one of six of the Birdwing butterfly species (2.1) of the Arfak Mountains, Irian Jaya, Indonesia (2.5) (Neville 1993). Local knowledge confirms that it has a localized distribution to the west of the mountains (2.5, 2.8) (Neville 1999). Although common within its range *O. rothschildii* is a habitat specialist, restricted to sunny, sheltered valleys and ravines in high elevation zones (1800–2450m) (2.2, 2.5) (WCMC *et al*. 1999). Although population data are unavailable, the global population is considered vulnerable (IUCN 1996). This may be due, at least in part, to the host specificity of the larvae on food-plants of the Aristolochlia family (Neville 1993) (2.2). These food- plants tend to be rather sporadically distributed in both space and time. Hence, any form of habitat disturbance e.g. clearance for agriculture, is potentially disastrous (2.4, 2.9, 2.21) (Neville 1999).

However, thanks to recent management efforts, population stability is the worst case scenario (2.7). In fact, anecdotal evidence suggests that the population may be

Fig. 5. Radar Plot of the factors affecting the management of Alexandra's Birdwing butterfly *Ornithoptera rothschildii* in Irian Jaya (see Table 3 for data).



increasing (2.8, 2.19, 2.22). This is due to the link between sustainable ranching and habitat enhancement (2.13, 2.21, 2.23). This link was established with encouragement from WWF project staff who made regular visits to farmers on the western periphery of the Arfak Mountains Nature Reserve (AMNR). By 1993, almost 1500 farmers, from 47 mountain villages, had signed up for the proposed ranching initiative. The farmers agreed to collect eggs from the wild and rear the larvae in special gardens planted with *Aristolochlia* spp. Next came the establishment of a foundation called the Yayasan Bina Lestari Bumi Cendrawasih (YBLBC). Formed to manage the farming and marketing aspects, the agency was granted a farming permit (2.26), appointed staff and bought pupae from farmers. Ranching was fully underway by 1993 and has since been responsible for all legal trade in *O. rothschildii* specimens (2.12, 2.15, 2.16) (Neville 1993). This is reflected in the noticeable increase in Indonesia's export figures (WCMC *et al*. 1999). Furthermore, illegal trade appears to be decreasing as the ranched stock are generally in much better condition than wild-caught specimens. However, YBLBC cannot always buy all the stock and farmers may sell their surplus to illegal tradesmen. Nevertheless, dealers prefer legally traded specimens and favour the pristine condition of farmed stock (2.10) Although there was no quota for the period 1995–99 (2.14), it has been agreed that future implementation of quotas may help to stabilize prices (2.11) (Neville 1993, 1999).

A major factor in the continued success of the programme is the financial feasibility (2.18, 2.20). Little capital input is required to plant native species and the rearing of larvae requires little expertise. Anyone can become involved and participants have strong local control of the resource (2.17).

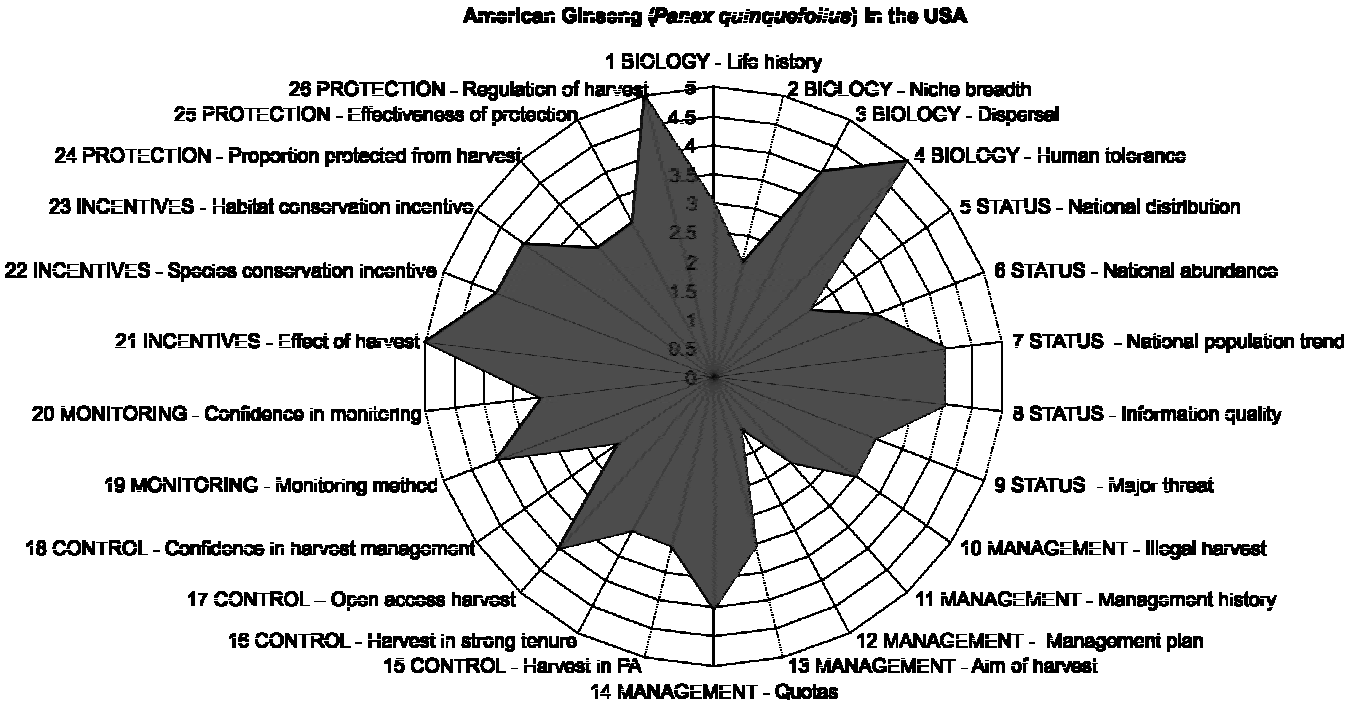
To conclude, rather than opting for (unrealistic) legal prevention of butterfly exploitation (2.24), ranching certainly seems a superior alternative as a means of sustainable harvest. The local people, their economy, the butterflies and their habitat are all beneficiaries.

Assessment for American ginseng *Panax quinquefolius* in North America

The primary source for the following information is a report on analysis of sustainability of ginseng harvesting in North America, compiled by Gagnon (1999).

American ginseng *Panax quinquefolius* is a herbaceous perennial plant endemic to the Eastern Deciduous Forest of North America (Greller 1988), where it is widespread (2.1, 2.5). The distribution range extends

Fig. 6. Radar Plot of the factors affecting the management of American ginseng *Panax quinquefolius* in North America (see Table 3 for data).



from the Great Smoky Mountains National Park in Tennessee and North Carolina, Shenandoah National Park in Virginia and also from Missouri and Ontario and Quebec in Canada. American ginseng is undoubtedly a very valuable resource. It is the most sought after plant in the entire US and its harvest from the wild brings in considerable revenue (2.13) (Gagnon 1999). The roots of *P. quinquefolius* were included in CITES Appendix II in 1975, but the listing was revised in 1985 to cover trade in the entire plant. The US regulates American ginseng harvest and export under a national programme established by the US CITES Authority, the USFWS (2.12). This contrasts with the situation in Canada where the species is classified as Threatened in Canada and no export of wild-harvested ginseng roots has been allowed since 1975 from Quebec and since 1989 from Ontario. The species prefers stable habitats and is found in the understorey of mid to late successional deciduous forests (2.4). Within such habitats, ginseng seeds may be bird dispersed, but they are small in number and large in size and most seeds fall to the ground near the parent plant (2.3). This may prevent *P. quinquefolius* from re-colonizing habitats where it used to grow. As a result, populations may become restricted and isolated as suitable habitat is being increasingly fragmented by logging (2.5). Regeneration of the species is rather slow with a pre-reproductive period of 3 years or more. Both this delayed regeneration and limited dispersal contribute to impeded recovery after harvest.

In theory, ginseng is easy to age and monitor. The total number of leaves provides a reliable index of size class. It is therefore surprising how little is known of the population dynamics of *P. quinquefolius* particularly in the US where such knowledge forms the basis for management of any harvested wild species. Population dynamics research is more advanced in Canada where detailed information is available for Southern Quebec. Whilst recent population models have not incorporated environmental variation and do not make the impact of harvest explicit they do highlight sensitive parameters (e.g. Sverdlove 1981, Charron and Gagnon, 1991). Evidence from the Quebec models reveals that population stability is most affected by the removal/loss of large, seed-producing adults (age classes 3 and 4). These are the very specimens that are targeted for the ginseng root trade. At best this leaves a post harvest population consisting only of small plants and the seeds in the soil. In this reduced state the population may have difficulty rebounding especially when subject to herbivory or a poor growing season (2.2, 2.9). Although ginseng pickers are required to plant the seeds of collected plants on site, it should not be assumed that they do so (2.18, 2.26).

Without doubting the value of such demographic data it is important to consider that the Quebec populations are at the northern tip of the species range. Thus the information may not be representative of the entire range. For example, the central Appalachian populations may possess population dynamics that would

make them less vulnerable to harvesting. Clearly, there is a need for further research, particularly in the US (2.8).

Wild exported roots are now known to be smaller in size than in previous years of the harvest. So, although the total export tonnage has declined from 300 tons in the 1800s to 65 tons in recent years, it is believed that the latter yield represents a greater number of individual plants than in the 1800s (Haber 1990). This decline in plant size is also supported by the results from one field study started in the 1980s where many of the study populations have been wiped out (Gagnon 1999)(2.8).

However, despite the qualitative nature of the information, the general consensus points to a reduction and continuing decline of North American ginseng populations (2.7). Although harvesting is allowed in many state lands (2.17), poaching of ginseng roots is widely reported outside protected areas throughout the species range (see paragraph 1) (2.25). This includes the Canadian populations in Quebec and Ontario. There are indications that protected areas may be becoming the last refuge for American ginseng (2.7, 2.10, 2.15). So, whilst it is generally agreed that ginseng has become uncommon, field verification is urgently required to support these indirect data (2.6, 2.8).

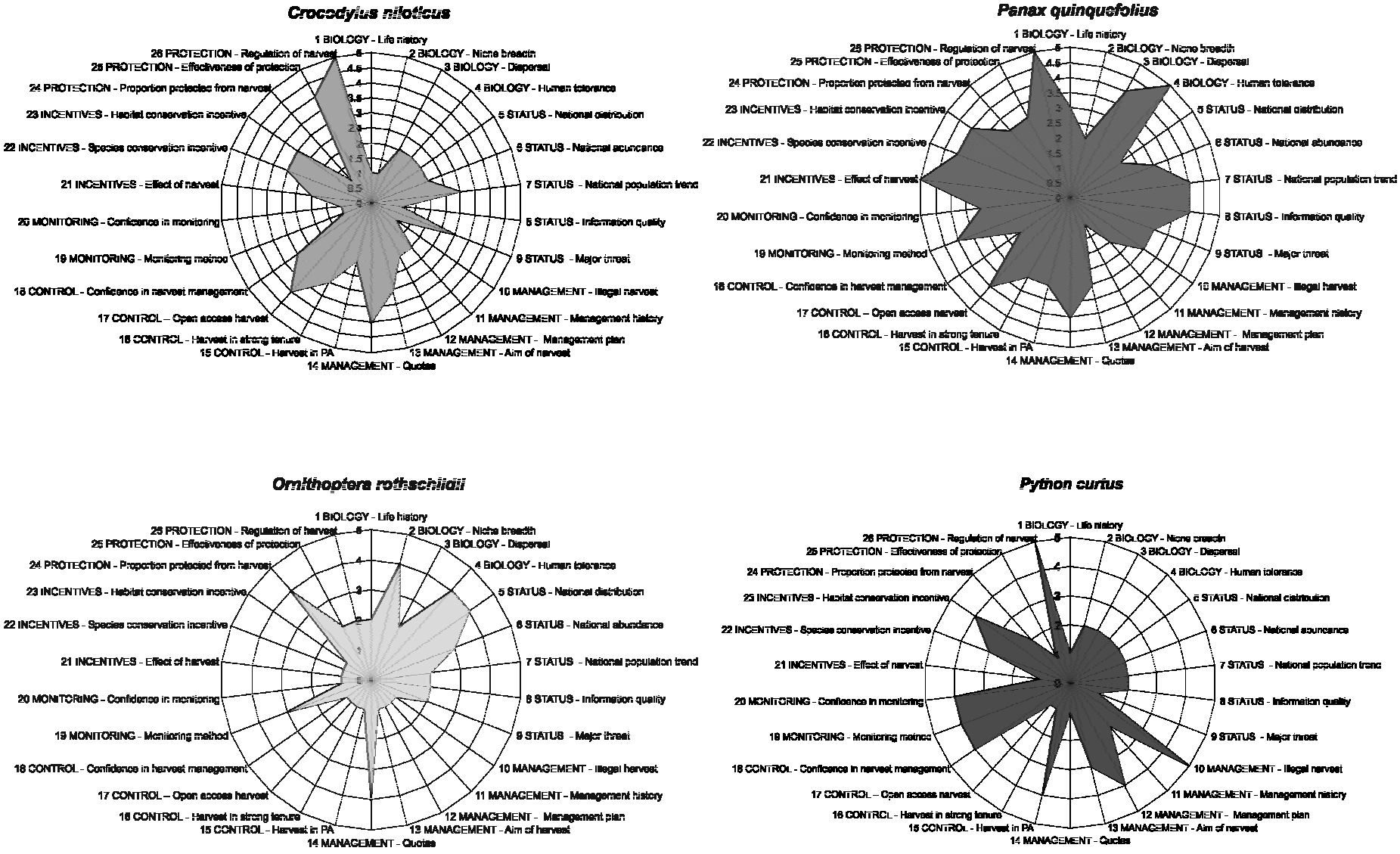
Overexploitation is definitely the most substantial threat to ginseng populations today (2.9). Compared with the situation in the eighteenth century there are many more harvesters, fewer and smaller ginseng populations and decreasing suitable habitat for the species. According to Gagnon, harvesting is generally thought to be biologically unsustainable and offers no incentive for species or habitat conservation (2.13, 2.21, 2.22, 2.23) (Gagnon 1999). Because multiple harvesters are now likely to encounter the same populations there is no longer any benefit in harvesting just enough to allow recovery. The conservative harvester is likely to lose out to the selfish exploiter (2.18, 2.25). This also makes it difficult to establish a harvest quota and to implement strict management regulations (2.14). In addition, harvesters of today do not rely on ginseng to make a living. In most cases the revenue is merely a supplement to social security benefit (2.13), hence future sustainability of the harvest is a low priority for many harvesters.

Monitoring of the impact of the harvest on population status is needed, and a three-tiered monitoring system has been proposed for the US that will map populations on the larger scale, regularly observe the progress of size-classed populations and monitor the fate of marked individuals. A similar monitoring programme is currently being implemented in Canada (Quebec and Ontario). There is concern that the present system of US export figure inspection is inadequate (2.19). Despite export levels appearing stable over the years it is possible that a recent decline has been masked by an increased export of woodsgrown roots sold as wild ginseng (2.20).

Conclusions and comparison of radar plots for species assessments

Four of the radar plots presented above have been reduced and placed together for comparative purposes (Figure 7). It is clear that the level of impact of the factors affecting the management of each of the species differ and consequently produce a differently shaped graphic in each case. Where the shaded area in each figure is close to the centre of the plot, there is a greater likelihood that the exports will be non-detrimental to the survival of the species, conversely where the area of shading is closer to the periphery of the plot the chances of exports being non-detrimental are reduced. Comparing the plots for the two reptiles, *C. niloticus* and *P. curtus*, the results for the sections dealing with the biology and status of the species are close to the centre of the plot suggesting that these species are fairly robust to harvest on account of life history and status factors. In contrast, the results for the *O. rothschildii* and *P. quinquefolius* suggest that they are more susceptible on account of their biology. Strikingly for *O. rothschildii*, the management, incentive and protected area section results are very close to the center of the plot. Thus for *O. rothschildii* one could conclude that any susceptibility to harvest on account of the biology is likely to be compensated for by the good management, incentive and protective structures in place and so the chance of the harvest being non-detrimental is high. In contrast to the other three species, for *P. quinquefolius* the plot shows that the majority of factors other than management are scored towards the periphery of the plot, suggesting that the likelihood that exports are sustainable may not be high and the system may require more oversight. Alternatively, because the scoring is qualitative, some respondents may be using a more precautionary approach than others and so the harvest of some species may appear to be more problematic. If this is the case, the checksheet does provide a means of articulating the decisions and allowing comparisons to be made between different respondents.

Fig. 7. Comparison of the radar plots resulting from the non-detriment finding assessments for four species from left to right and top to bottom, *Crocodylus niloticus*, *Panax quinquefolius*, *Ornithoptera rothschildii*, and *Python curtus*



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ANNEX I
French and Spanish translations of the Checklist to assist Scientific Authorities in making Non-detriment Findings

1. Autorités Scientifiques CITES: Fiche d'évaluation pour aider à émettre un avis de commerce non préjudiciable pour les exportations de spécimens de l'Annexe II

1.1 Introduction

La Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction (CITES) est un instrument d'importance majeure pour la conservation et compte quelque 147 signataires. Elle a pour but de protéger les espèces contre les effets préjudiciables de la surexploitation aux fins de commerce international, de garantir l'utilisation durable des autres espèces et d'encourager les Parties à la Convention à coopérer afin de réaliser cet objectif. La Convention a trois Annexes qui contiennent des règlements plus ou moins rigoureux pour les espèces qui y sont inscrites. Au niveau national, la Convention est administrée par les Autorités scientifiques et les Organes de gestion.

Pour que les objectifs de la Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction (CITES) soient réalisés, il est essentiel de pouvoir déterminer à quel moment le commerce international (qu'il s'agisse d'un seul envoi ou d'envois annuels), risque de porter préjudice à la survie d'une espèce. Si des espèces sont menacées d'extinction par suite d'une utilisation incompatible avec leur survie, les Parties à la CITES seront amenées à envisager d'inscrire davantage d'espèces à l'Annexe I. En fait, tout transfert d'espèces de l'Annexe II à l'Annexe I qui serait la conséquence d'une absence de réglementation appropriée du commerce, notamment d'un point de vue scientifique, peut être considéré comme un échec pour les Parties qui n'auraient pas réussi à s'acquitter de leurs obligations au titre de la Convention. De toute évidence, il convient d'agir pour améliorer la situation et d'aider les Autorités scientifiques à rendre des avis de commerce non préjudiciable.

1.2 Définition opérationnelle de «commerce non préjudiciable»

Sachant les difficultés que rencontrent certaines Autorités scientifiques lorsqu'elles sont appelées à émettre un avis de commerce non préjudiciable, nous avons identifié les éléments d'une définition opérationnelle à la lumière des paragraphes pertinents de l'article 4 de la Convention.

Selon ces paragraphes de l'article 4, l'Autorité scientifique doit établir que les exportations proposées ne nuiront pas à la survie de l'espèce. En outre, lorsqu'il s'agit d'exportations en cours, l'Autorité scientifique doit surveiller les exportations réelles afin de garantir que, dans toute son aire de répartition, l'espèce se maintient à un niveau conforme à son rôle dans l'écosystème et nettement supérieur à celui qui entraînerait son inscription à l'Annexe I. En pratique, l'Autorité scientifique doit évaluer le niveau total du prélèvement à l'échelle nationale tant pour les nouvelles exportations que pour les exportations en cours afin de pouvoir émettre un avis de commerce non préjudiciable. L'exportation pour le commerce international n'est pas préjudiciable lorsqu'elle s'intègre dans un prélèvement globalement durable en ce qu'elle n'entraîne pas de réduction imprévue de l'aire de répartition ou de déclin à long terme de la population ou d'autres changements

CITES Article IV.2
L'exportation d'un spécimen d'une espèce inscrite à l'Annexe II nécessite la délivrance et la présentation préalables d'un permis d'exportation. Ce permis doit satisfaire aux conditions suivantes:

Article IV.2 a)
Une autorité scientifique de l'Etat d'exportation a émis l'avis que cette exportation ne nuit pas à la survie de l'espèce intéressée;

Article IV.3
Pour chaque Partie, une autorité scientifique surveillera de façon continue la délivrance par ladite Partie des permis d'exportation pour les spécimens d'espèces inscrites à l'Annexe II, ainsi que les exportations réelles de ces spécimens. Lorsqu'une autorité scientifique constate que l'exportation de spécimens d'une de ces espèces devrait être limitée pour la conserver dans toute son aire de distribution, à un niveau qui soit à la fois conforme à son rôle dans les écosystèmes où elle est présente, et nettement supérieur à celui qui entraînerait l'inscription de cette espèce à l'Annexe I, elle informe l'organe de gestion compétent des mesures appropriées qui doivent être prises pour limiter la délivrance de permis d'exportation pour le commerce des spécimens de ladite espèce.

dans la population susceptibles d'entraîner l'inscription de l'espèce à l'Annexe I.

La gestion adaptative, fondée sur une surveillance continue pertinente et les données d'expérience appropriées, est vitale pour garantir que le prélèvement d'espèces sauvages est durable. Les problèmes qui se posent actuellement aux Autorités chargées d'émettre un avis de commerce non préjudiciable résultent essentiellement d'un manque de capacités et de ressources qui empêche d'appliquer les plans de surveillance continue pour toute la gamme des espèces faisant l'objet d'un commerce international. Il conviendrait de s'intéresser de plus près à l'élaboration et à la promotion de méthodes pratiques de surveillance des ressources d'un bon rapport coût-efficacité et de doter les Autorités scientifiques des compétences et des moyens adéquats. Il n'est pas nécessaire que les programmes de surveillance continue soient complexes ou consommateurs de ressources. Dans bien des cas, la surveillance peut être réalisée par le personnel affecté à protection de la faune sauvage ou par des pisteurs locaux, dans le cadre de patrouilles antibraconnage. L'information utile aux fins de la surveillance porte sur: les effectifs de la population; l'aire de répartition/ distribution; les tendances de la population; les plans de gestion et la protection des populations contre la surexploitation; la surveillance du prélèvement et des structures du commerce ainsi que les données démographiques. Elles permettront d'établir la chaîne de réaction nécessaire à la gestion adaptative.

1.3 Aider les Autorités scientifiques à émettre des avis de commerce non préjudiciable – mise au point d'une fiche d'évaluation

La fiche d'évaluation contenant des informations utiles à la surveillance a été conçue pour renforcer les capacités des Autorités scientifiques lorsqu'elles sont amenées à vérifier que les exportations de spécimens de l'Annexe II ne portent pas préjudice à la survie des espèces concernées. Cette fiche d'évaluation permet aussi aux Autorités scientifiques de comparer leurs résultats avec ceux des Autorités scientifiques d'autres pays, pour des espèces semblables ou pour des produits semblables faisant l'objet de commerce. Dans cette phase initiale, nous avons adopté, à dessein, des catégories de données qualitatives et cela pour deux raisons. Premièrement, parce qu'il s'est révélé extrêmement difficile d'élaborer des critères stricts d'utilisation durable pour un grand nombre de taxons, dans différents écosystèmes (Allen et Edwards, 1995). Deuxièmement, vu le nombre et la diversité des espèces faisant l'objet d'un commerce international, il est très difficile d'extrapoler des données quantitatives à partir des quelques espèces dont le prélèvement a été étudié. Les points de la fiche d'évaluation qui resteront sans réponse permettront de mettre en lumière les domaines où il convient d'améliorer les plans de gestion ou la collecte de l'information.

Même si la fiche d'évaluation semble, à première vue, longue ou complexe, le but n'est pas d'effaroucher l'utilisateur. Les premiers essais effectués avec des espèces pour lesquelles on disposait de suffisamment d'informations ont prouvé qu'elle peut être remplie assez vite. Toutefois, il n'est pas exclu que l'on prépare une liste plus courte lorsque celle-ci aura été testée de manière exhaustive par une utilisation généralisée. A noter que la pertinence de certaines questions relatives à la gestion varie selon les régions et selon les pays. Enfin, il importe de considérer cette fiche d'évaluation comme une première étape dans un processus permanent qui verra l'adoption de plus en plus fréquente de plans de gestion et des améliorations dans la collecte des informations. A mesure que le processus permettant d'émettre des avis de commerce non préjudiciable prendra corps, il conviendra de mettre au point des catégories plus quantitatives convenant à des groupes d'espèces particuliers et s'appuyant sur des études de cas réalisées dans les états de l'aire de répartition.

2. La fiche d'évaluation

2.1 Introduction

La liste comprend deux tableaux à remplir pour chaque espèce de l'Annexe II dont des spécimens sont prélevés dans la nature aux fins d'exportation. Les tableaux et le texte pour les plantes et les animaux ont été mis au point simultanément pour que la présentation et le contenu soient aussi normalisés que possible. Dans certains cas, il a fallu mettre au point des éléments de texte différents mais les tableaux ont la même logique fondamentale ce qui, pour les Parties dans lesquelles une seule personne est responsable des questions relatives aux plantes et aux animaux, devrait limiter les possibilités de confusion.

2.2 Explication des tableaux sur les caractéristiques du prélèvement

Les tableaux 1 – Animaux et 1 – Plantes invitent le personnel de l'Autorité scientifique à préparer un examen préliminaire, au niveau national, des effets probables du prélèvement d'une espèce cible. L'information à recueillir portera sur le type de prélèvement, le contrôle du prélèvement, le segment prélevé dans la population, le taux de prélèvement total (commerce interne et international), la raison du prélèvement et la destination finale des spécimens prélevés. Les Autorités scientifiques doivent faire la différence entre le prélèvement

réglementé et le prélèvement illicite ou non géré. L'examen de ces données marquera le début du processus de consultation entre l'Autorité scientifique et l'Organe de gestion ou contribuera à le faire progresser. Pour certains types de prélèvement, il permettra à l'Autorité scientifique d'émettre rapidement un avis de prélèvement non préjudiciable.

Le tableau 2 invite les Autorités scientifiques à examiner plus en profondeur les aspects généraux de la biologie et de la gestion, notamment pour les espèces pour lesquelles le tableau 1 a laissé entrevoir des problèmes. On y demande également des informations sur l'histoire et la planification de la gestion, la gestion du prélèvement, le statut du territoire sur lequel le prélèvement a lieu, les capacités de contrôle du prélèvement, les avantages et les risques du prélèvement, le pourcentage de protection intégrale et le rapport entre les spécimens élevés en ranch et en captivité d'une part et les spécimens prélevés dans la nature, d'autre part.

Les tableaux ont été conçus de manière que l'on puisse procéder à des vérifications qualitatives simples pour obtenir une évaluation élémentaire de la confiance avec laquelle l'Autorité scientifique peut émettre un avis de prélèvement non préjudiciable. Une fois que les tableaux 1A et 1P seront remplis, les régimes de prélèvement réglementé dans lesquels les produits sont prélevés sans entraîner la mort ou la destruction des spécimens ou dans le cadre d'un élevage en ranch ne seront plus examinés. Pour tous les autres régimes de prélèvement, il convient de remplir également le tableau 2. A cet égard, il convient de noter qu'en cas de grande incertitude, l'Autorité scientifique devrait conclure qu'il n'existe pas suffisamment d'informations pour pouvoir émettre un avis de prélèvement non préjudiciable. En conséquence, la plupart des Parties devraient décider de ne pas autoriser le commerce tant que la qualité de l'information n'est pas améliorée.

2.2.1 Tableau 1 – Animaux

Les explications de ce tableau sont organisées dans l'ordre des colonnes correspondantes. Pour chaque espèce évaluée, chaque type de prélèvement (1.1 à 1.6) auquel la population nationale de cette espèce est soumise doit être vérifié: il peut y avoir plusieurs options. Par exemple, dans le cadre d'un prélèvement bien réglementé, la laine peut être obtenue par la tonte de vigognes vivantes tandis que dans le cadre d'un prélèvement non géré, il est possible que des braconniers tuent les vigognes pour leur laine et leur viande. Les cases ombrées correspondent à des informations non applicables. Par exemple, l'élevage en ranch n'entraîne ni un prélèvement d'adultes ni un prélèvement non sélectif.

Type de prélèvement

Les différents types de prélèvement réglementés sont organisés selon les effets sur la population sauvage.

1.1 Elevage en captivité

Dans cette ligne, il convient d'enregistrer le nombre de spécimens provenant d'établissements d'élevage en captivité en vue de l'exportation. Les animaux prélevés dans la population sauvage afin d'établir ou d'augmenter une population reproductrice en captivité sont réellement perdus pour la population sauvage et leur nombre doit donc être enregistré sous 1.5 qui correspond à la capture d'animaux vivants.

1.2 Prélèvement pour les parties/produits n'entraînant pas la mort

Cette ligne fait référence au prélèvement de parties et produits qui n'entraîne pas la mort de l'animal. Par exemple, il peut s'agir du prélèvement de laine par la tonte de la vigogne ou du duvet des eiders (cette espèce n'est pas inscrite aux Annexes). Le principal **type de produit** provenant du prélèvement doit être identifié. Le ramassage des œufs N'ENTRE PAS dans cette catégorie; voir 1.3.

1.3 Elevage en ranch

Cette ligne fait référence au ramassage des œufs ou des jeunes vivants pour l'élevage en captivité, le principe étant d'améliorer les chances de survie par rapport l'état sauvage par le prélèvement de ce stade du cycle biologique. La production en surplus peut être prélevée sans porter préjudice à la survie à long terme de la population. Cela comprend à la fois l'élevage en ranch d'espèces de l'Annexe II lorsque des quotas d'exportation sont fixés par l'Etat de l'aire de répartition et d'espèces de l'Annexe I qui sont transférées à l'Annexe II sous réserve d'un quota approuvé par la Conférence des Parties. Cela **ne** comprend **pas** l'élevage en captivité d'adultes ou de subadultes en vue d'une exportation ultérieure, sans aucun avantage pour l'habitat, ni le maintien en captivité d'adultes capturés dans la nature, en attendant une exportation éventuelle. Ces cas doivent être examinés sous 1.5, Capture d'animaux vivants.

Tableau 1. Animaux. Description résumée du régime de prélèvement d'une espèce animale (ou de populations d'une espèce animale)

Espèce: . . . . . Pays (le cas échéant, état ou province): . . . . . .

Date (avis de commerce non préjudiciable): . . . . . Période concernée: . . . . . .

Nom: . . . . . Poste au sein de l'Autorité scientifique: . . . . . .

L'espèce est-elle endémique, présente dans quelques pays seulement ou largement répandue? . . . . . .

Etat de l'espèce (si connu): Catégorie mondiale UICN: . . . . . Statut national autre: . . . . . .

Type de prélèvement	Produit principal	Degré de contrôle	Segment démographique prélevé dans la population sauvage					Taux relatif de prélèvement (comprenant le nombre ou la quantité exact(e) le cas échéant)				Raison du prélèvement			Destination(s) commerciale(s) (nombre et pourcentage le cas échéant)		
			Oeufs	Juv	Mâles adultes	Femelles adultes	Non sélectif	Faible	Moyen	Elevé	Inconnu	Subsistance	Commerciale	Autres	Locale	Nationale	Internationale
1.1 Elevage en captivité		a) Réglementé															
		b) Illicite ou non réglementé															
1.2. Prélèvement pour des parties ou des produits n'entraînant pas la mort		a) Réglementé															
		b) Illicite ou non réglementé															
1.3. Prélèvement pour l'élevage en ranch		a) Réglementé															
		b) Illicite ou non réglementé															
1.4. Contrôle des ravageurs ou des animaux à problème		a) Réglementé															
		b) Illicite ou non réglementé															
1.5. Capture d'animaux vivants		a) Réglementé															
		b) Illicite ou non réglementé															
1.6. Abattage de spécimens		a) Réglementé															
		b) Illicite ou non réglementé															

1.4 Contrôle des ravageurs ou des animaux à problème
Cette ligne fait référence aux spécimens prélevés dans le cadre d'une politique gouvernementale de lutte contre les ravageurs. Les spécimens entrent dans le commerce parce qu'en tout état de cause, ils seraient détruits pour protéger les populations humaines ou les cultures et tout produit éventuel peut servir d'incitation à la conservation.

1.5 Capture d'animaux vivants et **1.6 Abattage de spécimens**
Cette ligne fait référence au prélèvement de spécimens vivants dans la population sauvage par le ramassage, la chasse, le piégeage ou la pêche pouvant entraîner la mort par blessure mortelle, négligence, prise incidente ou la mort incidente suite au défrichement des terres, de spécimens qui n'entrent pas ultérieurement dans le commerce international. Différents types de prélèvement, chasse, piégeage ou pêche ciblent des **segments différents de la population**. Le principal type de produit dérivé de l'abattage d'un spécimen devrait être identifié dans la ligne 1.6.

2.2.2 Tableau 1 – Plantes

Les explications de ce tableau sont organisées selon les lignes correspondantes. Pour chaque espèce évaluée, chaque type de prélèvement (1.1 à 1.6) auquel la population nationale de cette espèce est soumise doit être coché: il peut y avoir plusieurs options. Dans le cas des plantes à bulbes, par exemple, *Galanthus* peut être prélevé dans le cadre d'un programme réglementé et bien géré, tandis que des amateurs spécialisés peuvent procéder à une cueillette illicite. La partie ombrée correspond à des informations non applicables.

N.B. Peuplements sauvages «replantés»: il s'agit de plantes sauvages prélevées et replantées avant d'être exportées. Par exemple, de grandes quantités de bulbes prélevés dans la nature sont fréquemment «stockés» dans des champs. Au moment de l'exportation, les bulbes sont prélevés dans ces champs de stockage. L'évaluation de l'Autorité scientifique doit se fonder sur le prélèvement d'origine, dans la nature.

Type de prélèvement

Les types de prélèvement réglementés sont organisés selon leur impact sur la population sauvage.

1.1 Reproduction artificielle
Avant de remplir le tableau 1 – Plantes, l'Autorité scientifique devrait établir si les plantes sont reproduites artificiellement ou prélevées dans la nature. Dans le cas d'une reproduction artificielle, les plantes doivent satisfaire aux critères contenus dans la résolution Conf. 9.18 (Rev.) qui définit la «reproduction artificielle».

1.2 Prélèvement des fruits/fleurs/graines/feuilles n'entraînant pas la destruction du spécimen
Cette ligne doit servir à enregistrer la cueillette de parties et produits qui n'entraîne pas la destruction d'une plante.

1.3 Prélèvement de l'écorce, des racines, du bois n'entraînant pas la destruction du spécimen
Cette ligne devrait servir à enregistrer le prélèvement d'écorce, de racines et de bois qui n'entraîne pas la destruction d'une plante. Par exemple, le prélèvement sélectif de l'écorce de *Prunus africana* dans le cadre d'un programme de gestion planifié garantit la survie de l'arbre dans la nature.

1.4 Prélèvement de la plante entière
Cette ligne devrait servir à enregistrer les cas où c'est la plante entière qui est prélevée et donc retirée de la population sauvage ou détruite.

1.5 Prélèvement du bulbe entier
Dans le cas d'un prélèvement de bulbes dans la nature, par exemple de *Sternbergia*, les bulbes doivent être traités comme des plantes entières; toutefois, le prélèvement de spécimens adultes seulement n'a peut-être pas le même impact que le prélèvement de tous les bulbes.

1.6 Prélèvement de graines, de feuilles, d'écorce, de racines et de bois entraînant la destruction du spécimen:
Bois: la ligne devrait servir à enregistrer la récolte de bois pour le bois d'œuvre, la fabrication de charbon de bois, de copeaux, etc., lorsque la plante ne survit pas à ce type de prélèvement.

Ecorce: le prélèvement destructeur de toute l'écorce ou la coupe de l'arbre entraînera la mort de l'arbre (par exemple *Prunus africana*).

Racines: le prélèvement de tout le système radiculaire ou de sections importantes de la racine à des fins médicinales entraîne presque toujours la mort de la plante (par exemple *Panax quinquefolius*).

Graines: le ramassage des graines, tel qu'il est pratiqué sur certains cactus qui sont étêtés entraînera probablement la destruction de la plante.

Tableau 1. Plantes. Description résumée du régime de prélèvement pour les plantes

Espèce: . . . . . Pays (le cas échéant, Etat ou province): . . . . . .

Date (avis de commerce non préjudiciable): . . . . . Période concernée: . . . . . .

Nom: . . . . . Poste au sein de l'Autorité scientifique: . . . . . .

L'espèce est-elle endémique, présente dans quelques pays seulement ou largement répandue? . . . . . .

Etat de l'espèce (si connu): Catégorie mondiale UICN:. . . . . Statut national autre: . . . . . .

Type de prélèvement	**Produit principal**	**Degré de contrôle**	**Segment démographique prélevé dans la population**			**Taux relatif de prélèvement (comprenant le nombre ou la quantité exact(e) le cas échéant)**				**Raison du prélèvement et pourcentage (le cas échéant)**			**Destination(s) commerciale(s) (et pourcentage le cas échéant)**		
			Immature	Adulte	Sexe	Faible	Moyen	Elevé	Inconnu	Subsistance	Commerciale	Autres	Locale	Nationale	Internationale
1.1 Reproduction artificielle		a) Réglementé													
		b) Illicite ou non réglementé													
1.2. Prélèvement de fruits/ fleurs/ graines/ feuilles n'entraînant pas la destruction du spécimen		a) Réglementé													
		b) Illicite ou non réglementé													
1.3. Prélèvement d'écorce/racines/ bois entraînant la destruction du spécimen		a) Réglementé													
		b) Illicite ou non réglementé													
1.4. Prélèvement de la plante entière		a) Réglementé													
		b) Illicite ou non réglementé													
1.5. Prélèvement du bulbe entier		a) Réglementé													
		b) Illicite ou non réglementé													
1.6. Prélèvement de graines, feuilles, écorce, racines et bois entraînant la destruction du spécimen		a) Réglementé													
		b) Illicite ou non réglementé													

2.2.3 Tableau 1 – Animaux et plantes

Degré de contrôle: dans cette colonne il y a deux options:

a) Réglementé: il s'agit d'un prélèvement licite (approuvé par le gouvernement ou officiel) placé sous le contrôle d'un gestionnaire, réglementé par des quotas à base scientifique avec une répartition appropriée du prélèvement entre différents destinataires.

b) Illicite ou non géré: dans ce cas, le gestionnaire n'a pas le contrôle plein et entier et le prélèvement est réparti entre différents destinataires par celui qui prélève les collecteurs. Bien que le traitement juridique du prélèvement illicite et celui du prélèvement non géré diffèrent, ces deux modes de prélèvement peuvent avoir le même effet sur la population sauvage et présentent la caractéristique commune de ne pas être soutenus par un système officiel de collecte de données. En conséquence, un prélèvement peut être licite sans être géré. Il y a aussi des cas où le prélèvement a lieu hors de tout cadre législatif ou réglementaire local ou national; ce prélèvement doit également être considéré comme non géré.

Il est fréquent qu'un prélèvement réglementé et un prélèvement illicite de type semblable ou différent se produisent simultanément dans une même population. Ainsi, pour de nombreuses espèces, l'information sur le(s) type(s) de prélèvement peut être consignée dans deux lignes ou sous-lignes ou plus. Par exemple, dans le cas de *Prunus africana* il peut y avoir à la fois une récolte réglementée d'écorce sur les arbres vivants (1.1.4) et une récolte illicite d'écorce ou de bois qui entraîne la mort de l'arbre (1.1.6).

Segment démographique prélevé dans la population

Cette colonne concerne le segment prélevé dans la population. L'impact du prélèvement sur la structure globale de la population dépendra du stade du cycle biologique ciblé.

Animaux. La mortalité naturelle tend à être le plus élevée pour les œufs, nouveau-nés ou les juvéniles. En conséquence, le prélèvement d'œufs, de nouveau-nés et de juvéniles pour l'élevage en ranch aura moins d'effets sur la population que le prélèvement d'animaux reproducteurs. En général, un prélèvement ciblant les mâles adultes aura moins d'impact sur la population qu'un prélèvement de femelles pour les espèces polygames où une petite proportion des mâles adultes est responsable de la majorité des accouplements. Toutefois, si l'objectif est la chasse non sélective pour de grandes quantités de viande, les effets sur la population seront plus marqués. Dans cette colonne, il est possible de cocher un assortiment de cases pour chaque type de prélèvement. Toutefois, si le prélèvement n'est pas sélectif, par ex. pour l'un ou l'autre des types de prélèvement (de 1.4 à 1.6) il convient de cocher uniquement la case «Non sélectif». Les cases « Mâles» ou «Femelles» ou les classes d'âge pourraient être cochées ainsi qu'un assortiment de ces cases.

*Plantes***.** Il importe de tenir compte de toute la gamme des plantes qui sont soumises à un prélèvement: par exemple, prélève-t-on des plantes adultes et des plantes immatures? Si les plantes sont des cycadées, les femelles seules sont-elles ciblées? Pour les besoins de ces tableaux, les plantes adultes sont considérées capables de reproduction tandis que les plantes immatures ne sont pas capables de se reproduire. Dans le cas des espèces dioïques, veuillez indiquer, si vous le savez, si ce sont des plantes ou parties mâles ou femelles qui sont ciblées

Taux de prélèvement

Les informations quantitatives **(nombre ou quantité)** dont on dispose à propos du prélèvement réglementé, doivent être inscrites afin d'améliorer la fiabilité de l'évaluation. Si ce n'est pas le cas, y compris pour le prélèvement illicite et non réglementé, une évaluation qualitative peut fournir une indication du taux de prélèvement. Les colonnes «Faible», «Moyen» et «Elevé» doivent être interprétées dans le contexte de l'espèce visée. Par exemple, un prélèvement annuel de 10 grands pandas serait considéré comme «Élevé» parce que la population sauvage ne contient que quelques centaines d'individus et que le taux de reproduction du panda est faible. En revanche, le prélèvement de 100 cyclamens serait considéré comme «Faible» étant donné que la population mondiale comprend des millions de spécimens. Dans cette colonne, une seule case doit être cochée pour chaque type de prélèvement.

Raison du prélèvement

Dans l'en-tête de cette colonne sont mentionnées les raisons du prélèvement. L'indication d'un pourcentage, le cas échéant, serait utile. Lorsque le prélèvement se fait à des fins de subsistance seulement, il est probable que la population locale pratique un prélèvement durable géré. Lorsque les intérêts commerciaux prévalent, les pressions économiques incitent peut-être moins au prélèvement durable. On peut remplir, une case ou plus, au besoin, pour chaque type de prélèvement.

Destination(s) commerciale(s)

Cette colonne apporte des précisions aux raisons du prélèvement. Si le prélèvement se fait à des fins de subsistance uniquement, le destinataire est la population locale. Si la population locale utilise une partie du prélèvement et vend le reste, il convient de remplir plus d'une case. Si le prélèvement a un but commercial, les

destinataires sont aussi bien au niveau local qu'international. On a toujours pensé que, l'impact du commerce augmentait lorsqu'on passait du niveau local au niveau international mais cette perception dépend beaucoup du bien en question. Pour les spécimens de grande valeur sur le marché international, telles que certaines espèces de perroquets ou d'orchidées rares, le commerce international a certainement stimulé un prélèvement non durable. Pour des produits qui ont une valeur locale ou nationale, tels que les produits médicinaux, le commerce à l'intérieur des frontières nationales peut être le moteur d'un prélèvement non durable; cependant, le commerce national n'entre pas dans les compétences de la CITES. Dans cette colonne, une case ou plus doivent être remplies, au besoin, pour chaque type de prélèvement.

Donner un avis de commerce non préjudiciable sur la base du tableau 1 – Animaux

Avec l'information rassemblée dans le tableau 1A, on peut déterminer, avec une forte probabilité, que les exportations ne nuiront pas à la survie de l'espèce dans trois cas spécifiques:

- ligne 1.1a, lorsqu'une population fait uniquement l'objet d'un élevage en captivité bien réglementé;
- ligne 1.2a, lorsqu'une population est uniquement soumise à un prélèvement bien réglementé des produits, qui ne cause pas la mort de l'animal et lorsque l'échelle de l'impact du prélèvement peut être quantifiée;
- ligne 1.3a, lorsqu'une population est uniquement soumise à un élevage en ranch bien réglementé et lorsque l'échelle et l'impact du prélèvement peuvent être quantifiés.

Si des cases correspondant au prélèvement réglementé en vue du contrôle des ravageurs, ou à la capture d'animaux vivants ou à l'abattage de spécimens (lignes 1.4a, 1.5a et 1.6a), ou des cases correspondant à tout type de prélèvement illicite ou non réglementé (lignes 1.1b à 1.6b), ou encore des cases correspondant à différents types de prélèvement ont été cochées, l'Autorité scientifique devrait aussi remplir le tableau 2A avant de donner un avis de commerce préjudiciable ou non préjudiciable à la survie de l'espèce.

Donner un avis de commerce non préjudiciable sur la base du tableau 1 – Plantes

Avec l'information rassemblée dans le tableau 1 – Plantes, on peut déterminer, avec une forte probabilité, que les exportations ne nuiront pas à la survie de l'espèce dans trois cas spécifiques:

- ligne 1.1, lorsqu'une population fait uniquement l'objet d'une reproduction artificielle bien réglementée;
- ligne 1.2, lorsqu'une population est uniquement soumise à un prélèvement bien réglementé des fruits, des fleurs et des graines qui ne détruit pas les plantes et lorsque l'échelle et l'impact du prélèvement peuvent être quantifiés;
- ligne 1.3, lorsqu'une population est uniquement soumise à un prélèvement bien réglementé de feuilles qui ne détruit pas la plante et lorsque l'échelle et l'impact du prélèvement peuvent être quantifiés.

Si les cases correspondant au contrôle des ravageurs, au prélèvement de spécimens vivants, à la destruction de spécimens, au prélèvement illicite ou non géré ont été cochées d'une manière ou d'une autre, ou s'il y a des coches dans plus de deux lignes, les Autorités scientifiques devraient aussi remplir le tableau 2 avant de rendre un avis d'exportation préjudiciable ou non préjudiciable à la survie de l'espèce.

2.2.4 Explication du tableau 2 «facteurs affectant la gestion du régime de prélèvement»

Le tableau 2 conduit l'évaluateur à répondre à des questions organisées de manière à indiquer la vulnérabilité des espèces aux effets du prélèvement et de l'utilisation commerciale:

- la première section porte sur les caractéristiques biologiques générales de l'espèce (elles diffèrent pour les animaux et les plantes);
- la deuxième section concerne l'information sur le statut de l'espèce au niveau national;
- la troisième section s'intéresse à l'aspect gestion du prélèvement;
- la quatrième section traite du contrôle du régime de prélèvement;
- la cinquième section porte sur la surveillance du prélèvement;
- la sixième section examine les incitations et les avantages du prélèvement pour la conservation; et
- la dernière section vise à évaluer la mesure dans laquelle l'espèce est protégée contre le prélèvement.

Ce tableau comporte deux colonnes: dans celle de gauche est inscrite une question et dans celle de droite cinq réponses possibles. Les réponses qui permettront d'établir en toute certitude le caractère durable du prélèvement se trouvent en haut de la colonne de droite, face à chaque question numérotée. En général, une seule réponse doit être cochée mais, dans certains cas, plusieurs réponses se justifient (par exemple, voir sous 2.19 ci-après). Il faut cependant ajouter que seule la réponse la plus prudente (c'est-à-dire le pire scénario) doit être retenue lors de la notation de l'information. Un simple

système de notation basé sur l'emplacement des coches en réponse à chaque question aidera les Autorités scientifiques à déterminer si ce prélèvement effectué à des fins commerciales nuit ou non à la survie de l'espèce (voir Figure 1b pour une représentation visuelle du système de notation).

Il convient de souligner que la compilation (et, par la suite, la représentation graphique) de la fiche d'évaluation ne constitue pas nécessairement un avis de commerce non préjudiciable. La fiche d'évaluation devrait apporter l'information nécessaire à cet avis et aider l'Autorité scientifique à obtenir l'information nécessaire. Lorsque les facteurs indiquant un préjudice éventuel dominent, l'Autorité scientifique devrait signaler à l'Organe de gestion que l'exportation proposée ne doit pas être autorisée.

Caractéristiques biologiques: animaux seulement

2.1 Cycle biologique

Les caractéristiques fondamentales du cycle biologique déterminent la sensibilité d'une espèce au prélèvement. Par exemple, les espèces «à stratégie r» qui ont un taux de croissance intrinsèque élevé souffriront probablement moins du prélèvement que les espèces «à stratégie K» dont la croissance est plus lente et qui ont un taux de reproduction plus faible (par exemple, la souris par rapport à l'éléphant, l'alouette par rapport au rapace).

2.2 Capacité d'adaptation écologique

La capacité d'adaptation écologique est une mesure de la sensibilité probable au prélèvement et comprend des facteurs tels que l'étendue de l'habitat utilisé par l'espèce, l'étendue de son régime alimentaire et sa tolérance au milieu (en d'autres termes, l'étendue de sa niche). Ces facteurs sont répartis dans les catégories «généraliste» ou «spécialiste». Un généraliste peut changer de proie ou d'habitat relativement facilement; il est moins affectés par des perturbations de son habitat qu'un spécialiste qui occupe une niche écologique étroite. Un spécialiste ayant une faible capacité d'adaptation écologique risque d'être plus sensible aux effets négatifs du prélèvement à des fins commerciales qu'un généraliste (mais ce n'est pas toujours le cas). Par exemple, une population particulière d'un prédateur en haut de la chaîne alimentaire sera plus sensible au prélèvement qu'une population d'herbivores placée plus bas dans la chaîne alimentaire.

2.3 Efficacité de la dispersion

Les espèces qui possèdent des mécanismes garantissant une large dispersion des individus à un moment donné du cycle biologique peuvent être moins sensibles aux effets du prélèvement (cela dépend du cycle biologique de l'espèce). Ces espèces peuvent plus facilement recoloniser des régions d'où elles ont localement disparu. Par exemple, plusieurs organismes marins dépendent de la dispersion en grand nombre de larves planctoniques largement distribuées pour pouvoir recoloniser des habitats où les adultes plus sédentaires ont été victimes de la surpêche, par exemple les tridacnes géants.

2.4 Interaction avec les humains

La tolérance d'une espèce à l'activité humaine peut indiquer sa sensibilité probable aux effets du prélèvement. Les espèces les plus tolérantes à l'intervention humaine seront sans doute aussi celles qui sont le moins affectées par le prélèvement. Les ravageurs que l'on a de la peine à éradiquer et les espèces commensales qui bénéficient de l'expansion des milieux artificiels tels que la superficie agricole seront sans doute les moins sensibles au prélèvement. Par exemple, dans les habitats modifiés des plantations de palmiers à huile, en Indonésie, il y a des populations beaucoup plus élevées de rongeurs et, en conséquence, de pythons malais, que dans des régions équivalentes d'habitat naturel (mais d'autres espèces présentes dans les habitats non perturbés sont absentes des plantations de palmiers à huile).

Caractéristiques biologiques: plantes seulement

2.1 Forme de vie

La forme de vie d'une espèce de plante donne des indications sur sa sensibilité probable au prélèvement. Plus une plante pérenne à une longue durée de vie, plus l'impact du prélèvement peut être ressenti par la population totale. Les types de forme de vie de base sont mentionnés.

2.2 Potentiel de renouvellement

Le potentiel de renouvellement d'une plante définit la capacité de la plante de se reproduire. Quatre types simples de renouvellement potentiel de base sont indiqués. Dans cette section, il est possible de cocher plus d'un type de renouvellement. Par exemple, dans le cas de *Galanthus elwesii*, une espèce de perce-neige soumise à un prélèvement contrôlé en Turquie, le renouvellement est «Végétatif rapide» et «Lent ou irrégulier à partir de graines ».

2.3 Efficacité de la dispersion

L'efficacité de la dispersion d'une espèce peut lui permettre de surmonter les effets d'un prélèvement excessif. En conséquence, l'espèce possédant des mécanismes qui garantissent une large dispersion des individus à un moment donné du cycle biologique peut être moins sensible aux effets du prélèvement car elle est apte à recoloniser des régions d'où elle a été localement éliminée. Par exemple, un certain nombre de plantes dépendent d'une dispersion en grand nombre de graines ou de spores largement distribués et peuvent donc recoloniser des habitats où les plantes adultes ont fait l'objet d'un prélèvement excessif.

2.4 Habitat

Les plantes sont présentes dans de vastes gammes

d'habitats qui ne peuvent tous être inclus dans ce tableau. Cependant, cinq types de base sont mentionnés. Les exemples vont d'habitats qui nécessitent peu de temps pour se rétablir à des forêts climaciques et autres types climaciques (tels que la savane) dont le rétablissement est long et souvent impossible (par ex. le «buisson épineux» de Madagascar). Ce sujet particulier nécessitera une évaluation plus approfondie.

Animaux et plantes

Etat au niveau national

2.5 Répartition au plan national

La structure de la répartition d'une espèce est indicative de la sensibilité de cette espèce au prélèvement. Des espèces dont la distribution est vaste et ininterrompue, au niveau national ou régional, seront sans doute moins sensibles au prélèvement ou à d'autres facteurs susceptibles de leur nuire que les espèces dont la distribution est vaste mais fragmentée. La fragmentation de la population peut donner lieu à des sous-populations adaptées à des habitats spécialisés ou limités, trop peu nombreuses pour être viables. Des espèces endémiques localisées, adaptées à des habitats spécifiques qui sont naturellement fragmentés tels que les chaînes de montagne, seront probablement plus menacées par une perturbation de l'habitat et par les effets du prélèvement. Les espèces qui sont localisées au plan national, c'est-à-dire que l'on ne trouve que dans quelques localités au niveau national, pourraient être tout particulièrement menacées par un prélèvement non géré.

2.6 Abondance au niveau national

À première vue, des espèces qui sont généralement très abondantes et présentes en fortes densités seront moins sensibles au prélèvement que des espèces moins communes dont la densité naturelle est faible. Toutefois, certaines espèces dont la densité est élevée sont exposées à de fortes fluctuations dans l'effectif de la population, soit de manière régulière, soit de manière aléatoire et les effets du prélèvement, dans une année néfaste du point de vue climatique (pour les espèces) peuvent se traduire par une forte réduction de la population dont l'espèce a du mal à se remettre rapidement (par ex. le saïga). Pour les espèces qui, dès le départ, sont non communes ou rares, la marge d'erreur pour le prélèvement est probablement faible. Par exemple, les prédateurs sont généralement moins nombreux que les espèces proies, les acajous sont généralement moins nombreux que les marguerites.

2.7 Tendances de la population au niveau national

Les tendances de la population au niveau national donnent une indication de la sensibilité possible de l'espèce au prélèvement: les espèces dont la population augmente seront probablement moins sensibles au prélèvement que les espèces dont la population diminue. Pour bien faire, les tendances de la population au niveau national devraient être mesurées sur une période de temps indépendante du régime de prélèvement et devraient reconnaître le phénomène de «référence mobile» dans lequel chaque gestionnaire adopte la première évaluation de la population comme niveau de référence. Ce phénomène joue un rôle très important pour une espèce ou une population qui a déjà une histoire de prélèvement et d'utilisation commerciale. D'après les modèles mathématiques on peut déduire qu'une période de temps indépendante de trois générations au minimum est nécessaire. Toutefois, pour un certain nombre d'espèces faisant l'objet de commerce, on ne connaît pas précisément la durée d'une génération. Dans ce cas, le temps d'une génération devrait être extrapolé d'après les paramètres biologiques connus pour des espèces étroitement apparentées. Quoi qu'il en soit, la période de temps sur laquelle les tendances de la population sont évaluées devrait être notée dans la colonne de droite de la ligne 2.7. Si l'on dispose de données provenant d'études réelles des populations, il serait bon d'utiliser les résultats de trois comptages au moins pour évaluer les tendances. Au fur et à mesure des progrès de la surveillance des populations il serait utile d'évaluer également la structure de répartition des âges et des sexes. A défaut, les tendances des mesures ou les indices d'abondance relative peuvent également être utilisés. En l'absence de telles données provenant du terrain, on peut, d'après l'indice de destruction de l'habitat, déduire la probabilité de déclin d'une population.

2.8 Qualité de l'information

La qualité des données qui servent à décrire les tendances de la population est un des éléments qui détermine la solidité de l'avis de commerce non préjudiciable. Par exemple, si toutes les données présentées sont récentes et quantitatives, la fiabilité des résultats de l'évaluation sera très élevée. En revanche, si la plupart des données sont anecdotiques, la probabilité de rendre un avis solide de commerce non préjudiciable sera plus faible. En conséquence, il vaut mieux privilégier une bonne connaissance qualitative locale que des données quantitatives obsolètes.

2.9 Principales menaces

L'évaluation de la gravité des effets des principales menaces offre un moyen de peser les effets relatifs du prélèvement. La principale menace pour les espèces, au niveau national, devrait être indiquée (soulignée) dans la colonne de gauche et la gravité de la menace, dans la case pertinente de la colonne de droite. Par exemple, si la «destruction de l'habitat» est la principale menace et que son effet sur l'espèce est «grave et irréversible», il sera difficile de justifier le moindre prélèvement dans une zone qui n'est pas touchée par la destruction de l'habitat. En revanche, si les effets de la destruction de l'habitat sont réversibles, un prélèvement bien

réglementé pourrait être une incitation à restaurer l'habitat (voir aussi 2.13). Il est vital, pour toute évaluation conduite dans le but d'émettre un avis de commerce non préjudiciable, que l'Autorité scientifique évalue les effets du commerce par rapport à celui d'autres menaces pour l'espèce.

Gestion du prélèvement

2.10 Prélèvement ou commerce illicite

Pour évaluer les effets du prélèvement, il convient d'examiner le prélèvement total auquel une population est soumise au niveau national. En conséquence, il faut essayer d'évaluer à la fois le niveau du prélèvement non géré et celui du prélèvement illicite bien qu'il soit particulièrement difficile de rassembler des informations fiables à ce sujet (voir aussi tableaux 1A et 1P). Néanmoins, les gestionnaires peuvent souvent déduire, intuitivement, l'importance de ce prélèvement d'après le niveau du prélèvement licite et réglementé. De bonnes informations locales et des informations transmises par les gardes et le personnel chargé de la lutte contre la fraude sont souvent extrêmement utiles pour évaluer le niveau de prélèvement illicite.

2.11 Histoire de la gestion

L'histoire de la gestion du prélèvement fournit un bon point de départ pour évaluer si le prélèvement est durable. Lorsqu'il y a une longue histoire de gestion efficace, en particulier de gestion adaptative bien réglementée, le prélèvement est sans doute plus durable qu'un prélèvement non géré. Un prélèvement qui fait l'objet d'une gestion adaptative, fondée sur un suivi fiable des effets du prélèvement sur la population est l'idéal. Un prélèvement géré, officiellement ou officieusement, fait appel à une certaine surveillance et à des données d'expérience. Tout régime de prélèvement présente nécessairement un aspect expérimental et, pour que la sécurité soit absolue, nécessite des données d'expérience et un suivi. Un prélèvement permanent mais géré de manière informelle, sans avoir de structure nationale approuvée, peut présenter néanmoins une bonne chance de durabilité, en particulier s'il est associé avec une appropriation locale forte de la ressource. En revanche, un programme de prélèvement nouvellement établi ne disposera pas des données d'expérience nécessaires de sorte que la probabilité de la durabilité ne sera peut-être pas encore assurée. Un prélèvement non géré se caractérise par une absence de surveillance; le prélèvement se fait de manière purement opportuniste et la probabilité de durabilité est au plus bas.

2.12 Plan de gestion ou équivalent

Il est nécessaire, pour faire naître la volonté politique d'établir le processus d'utilisation durable, d'élaborer et d'adopter un plan national de gestion ou son équivalent. En outre, il est probable qu'un prélèvement géré dans le cadre d'un plan de gestion approuvé au niveau national aura été soumis à un processus d'examen et de vérification avant adoption officielle; il sera donc probablement plus fiable. Pour bien faire, les plans de gestion nationaux devraient être élaborés dans un contexte de participation locale parce que la majorité des espèces prélevées sont probablement réparties de manière fragmentée plutôt qu'uniforme sur le territoire de l'Etat de l'aire de répartition. Tout prélèvement devrait être géré au niveau local pour éviter des extinctions au niveau local. Dans les pays régis selon un système fédéral fort, des plans de gestion forts au niveau des états ou des provinces sont l'équivalent de plans de gestion nationaux forts. En conséquence, dans une situation optimale, la gestion du prélèvement comprendra des plans de gestion locaux et nationaux approuvés et coordonnés. En l'absence de plans approuvés et lorsque la gestion est informelle ou non planifiée, il est très peu probable que le prélèvement soit durable et le commerce non préjudiciable.

2.13 Objectif du régime de prélèvement dans le plan de gestion

L'objectif du régime de prélèvement d'une espèce a des incidences considérables sur la durabilité du prélèvement. C'est lorsque l'objectif premier est d'obtenir des avantages pour la conservation, notamment au niveau de l'habitat ou de l'écosystème que la probabilité d'un prélèvement non préjudiciable pour la population sauvage est la plus forte. Par exemple, l'élevage de papillons en Iran Jaya, Indonésie, a été encouragé pour servir d'incitation économique au maintien de la végétation naturelle qui entretient les populations de papillons. Lorsque l'objectif consiste à contrôler la population ciblée, une situation gérée vaut mieux pour la conservation qu'une situation non gérée. Par exemple, les gens toléreront probablement mieux les crocodiliens et leur habitat s'il existe une forme tangible de gestion et de protection de la vie humaine ainsi que des retombées économiques. Lorsque le but est de maximiser le rendement économique, le programme sera sans doute moins durable, selon la stratégie à long terme. Cependant, si l'exploitation totale de la ressource apporte un rendement économique maximal à court terme, on peut essayer d'instaurer un programme plus durable en adoptant une stratégie qui vise le rendement économique à long terme. Mais cela n'est peut-être vrai qu'en théorie car, dans bien des cas, le prélèvement est opportuniste et non sélectif ce qui met fortement en doute la durabilité du prélèvement. Il en résulte souvent une surexploitation de la ressource aboutissant à la quasi-extinction commerciale suivie par l'exploitation d'autres espèces.

2.14 Quotas

Depuis un certain temps déjà, on utilise les quotas pour réglementer et gérer le prélèvement et l'instauration de

quotas d'exportation est devenue pratique courante dans le cadre de la CITES, chaque fois que des régimes de prélèvement soulèvent des questions. Comme pour l'adoption d'un plan de gestion (2.12), la situation optimale serait: a) un quota national tenant compte de quotas locaux instaurés pour empêcher la surexploitation au niveau local et b) un quota basé sur la connaissance de la biologie, du cycle biologique, de la démographie et de la capacité de reproduction de l'espèce. Les quotas peuvent être basés sur le nombre d'individus prélevés dans la nature ou sur des classes d'âge ou de taille spécifiques dans une population. Un programme de prélèvement bien géré et s'appuyant sur des critères biologiques peut n'autoriser que le prélèvement de plantes ou d'animaux immatures, selon le cycle biologique de l'espèce concernée. Pour de nombreuses espèces faisant l'objet d'un commerce, on ne dispose pas d'informations biologiques. Dans ce cas, on peut adopter un système de quotas «prudent», coordonné aux niveaux local et national. Un quota national «prudent» est très petit par rapport à l'effectif probable de la population nationale. Enfin, un quota local expérimental, fondé sur la connaissance biologique de l'espèce, a plus de chances de favoriser la durabilité qu'un quota fixé sous l'influence du marché, un quota arbitraire ou pas de quota du tout.

L'expression «sous l'influence du marché» décrit une situation, dans certains pays, où les négociants ont le pouvoir d'exiger un certain quota ou encore une situation où les quotas sont fixés en fonction de la demande commerciale prévue. Un quota arbitraire ne se fonde sur aucune connaissance apparente de l'espèce.

Contrôle du prélèvement

2.15 Prélèvement dans les aires protégées (AP)
La propriété et le régime de propriété des ressources peuvent être déterminants du point de vue de la durabilité du prélèvement. Si le régime foncier et le régime de propriété sont forts, il est probable que l'incitation à bien gérer et réglementer sera plus forte. Les aires protégées ont des appellations et des objectifs divers qui dépendent du système juridique et politique national en place. L'expression «aire protégée d'Etat» est utilisée ici pour recouvrir une diversité d'aires protégées et de types de zones à utilisations multiples où l'utilisation et le prélèvement durables sont autorisés, notamment les réserves forestières, de gibier et marines ainsi que les «parcs nationaux» de Chine et du Royaume-Uni. Les Etats de l'aire de répartition peuvent avoir plusieurs types d'aires protégées qui offrent des degrés différents de protection contre le prélèvement. En général, on peut estimer avec une bonne certitude que le prélèvement sera plus durable s'il est effectué, pour l'essentiel, soit dans une aire protégée d'Etat, soit dans une région sous régime foncier fort (voir aussi 2.16).

2.16 Prélèvement dans des régions sous régime foncier ou de propriété fort
Les systèmes de gestion communautaires ou du domaine privé tels qu'ils se pratiquent en Afrique australe, le contrôle local fort exercé, en Indonésie, par les communautés proches des plantations de palmiers à huile où elles prélèvent des pythons malais, sont des exemples où un contrôle local fort s'exerce sur l'utilisation de ressources. Dans tous ces cas, soit la communauté locale, soit le propriétaire privé est responsable de la gestion et du contrôle du prélèvement. Dans de tels systèmes, il est généralement du meilleur intérêt à long terme du propriétaire de la ressource de garantir qu'elle soit utilisée de façon durable. En conséquence, il est plus probable que le prélèvement sera durable s'il est effectué en majeure partie dans des régions où le régime de propriété des ressources est fort (voir aussi 2.15).

2.17 Prélèvement dans des zones où l'accès est libre
Lorsqu'il n'y a pas de régime foncier d'Etat, communautaire ou privé fort, c'est un système d'accès libre qui prévaut. Dans ce cas, il n'y a pas de contrôle local sur les ressources et sans doute aucune incitation à réglementer le prélèvement ce qui aboutit à une situation de «self-service». On peut douter de la durabilité de ce prélèvement si l'essentiel de celui-ci a lieu dans des zones où l'accès est libre, soit explicitement, soit de fait.

2.18 Fiabilité de la gestion du prélèvement:
Cette question appelle à juger de l'efficacité des contrôles du prélèvement. Il se peut que les contrôles du prélèvement ne puissent être appliqués correctement pour une diversité de facteurs tels que: maigres budgets, pénurie de personnel formé, autres insuffisances de capacités ou absence de volonté politique. La personne qui remplit le tableau ne doit pas voir dans un résultat dénotant une absence de fiabilité de la gestion du prélèvement une accusation contre son gouvernement mais un simple constat des carences de cette gestion.

Surveillance du prélèvement

2.19 Méthodes utilisées pour surveiller le prélèvement
La surveillance est un moyen vital et incontournable de garantir que le prélèvement est durable. En général, on considère que les meilleures méthodes de surveillance sont celles qui consistent à réaliser une estimation directe de la population soumise au prélèvement ou à mesurer la densité absolue ou l'abondance de cette population. Cependant, l'application de ces méthodes peut être fort consommatrice de temps et d'argent et se révéler inadaptée pour certaines espèces, pour des raisons biologiques. En l'absence de mesures démographiques directes, on peut recourir aux indices quantitatifs de l'abondance de la population et des tendances (mesure de la densité relative ou de l'abondance

relative) de la population subissant le prélèvement. D'autres indices qualitatifs peuvent être utilisés qui, s'ils s'appuient sur de bonnes connaissances locales, donnent une bonne idée des effets du prélèvement. Dans le cadre de la CITES, toutes les Autorités scientifiques ont l'obligation de surveiller les exportations afin de pouvoir y mettre un terme ou de les limiter si elles jugent qu'elles nuisent à la survie de l'espèce ou que l'espèce est utilisée d'une manière qui n'est pas compatible avec son rôle dans l'écosystème. Les données des rapports annuels à la CITES peuvent jouer un rôle très important dans la surveillance continue et une meilleure utilisation de ces données, accompagnée d'une communication améliorée entre les Autorités scientifiques des différents pays, permettrait à ces Autorités scientifiques de se faire une image de plus en plus exacte des effets du commerce international sur les tendances des populations. Cette question peut avoir plusieurs réponses mais seul le système de surveillance principal/le plus efficace doit être noté.

2.20 Fiabilité de la surveillance du prélèvement
Il s'agit ici de juger de l'efficacité du système de surveillance utilisé. Une Autorité scientifique peut savoir, par exemple, que des dénombrements directs de la population ont lieu mais que, pour des raisons budgétaires, de manque de personnel et d'autres ressources, l'intervalle entre deux dénombrements est trop long pour que l'on puisse surveiller les effets d'un programme de prélèvement annuel. La personne qui remplit le tableau ne doit pas voir dans un résultat dénotant une absence de fiabilité de la surveillance du prélèvement une accusation contre son gouvernement mais un simple constat des carences de la surveillance.

Incitations et avantages du prélèvement

2.21 L'utilisation comparée aux autres menaces
La principale menace pour l'espèce a été déterminée sous le point 2.9 et la présente question vise à définir comment l'utilisation affecte l'espèce par rapport à la principale menace. Dans certains cas, l'utilisation de l'espèce peut être avantageuse pour la conservation en atténuant les effets d'autres menaces graves telles que la destruction de l'habitat. Dans d'autres cas, l'utilisation ne nuit pas à l'espèce et n'a aucun effet atténuateur sur les autres menaces principales: elle est neutre. Mais le prélèvement, conjugué avec les principales menaces, peut devenir de plus en plus préjudiciable. Dans d'autres cas encore, l'utilisation peut exacerber d'autres menaces (par ex. les maladies, les espèces envahissantes ou la détérioration de l'habitat) et l'avis de commerce non préjudiciable doit être encore plus prudent. L'avis de commerce non préjudiciable ne doit jamais être rendu hors du contexte des effets des autres menaces sur l'espèce et des avantages pour la conservation.

2.22 Incitations à la conservation de l'espèce
A quelques rares occasions, l'espèce tire un avantage direct du programme de prélèvement. Bien souvent, l'avantage n'est pas d'ordre financier mais, si c'est le cas, le programme de prélèvement peut contribuer à réduire de manière significative le prélèvement illicite.

2.23 Incitations à la conservation de l'habitat
Cette question concerne les conséquences plus générales du prélèvement pour la conservation de l'habitat. Tout avantage potentiel pour la conservation de l'habitat doit être connu et démontré. Si des avantages sont prévus mais ne peuvent pas être démontrés, la réponse à la question doit être «Faibles». Si aucun avantage pour la conservation n'est prévu, la réponse à la question doit être «Nuls».

Protection contre le prélèvement

2.24 Proportion intégralement protégée
La protection intégrale, aussi bien légale que pratique, de portions représentatives de l'aire de répartition de l'espèce ou d'une partie de la population suffisante pour garantir la survie de l'espèce devrait empêcher que le prélèvement ne menace la population entière d'une espèce à l'échelon national. Cette question a pour objet d'évaluer le pourcentage intégralement protégé (où la protection intégrale équivaut à une interdiction de prélèvement dans la nature).Pour de nombreuses espèces, l'existence d'aires intégralement protégées où le prélèvement n'est pas autorisé et où le contrôle exercé est rigoureux garantit que le recrutement sera assuré dans une population soumise au prélèvement.

2.25 Efficacité des mesures de protection intégrale
Il s'agit ici d'évaluer l'efficacité des mesures de protection. Un certain nombre de facteurs, y compris les budgets et la propriété des ressources de ces aires protégées, peuvent avoir une incidence sur l'efficacité. La personne qui remplit le tableau ne doit pas voir dans un résultat dénotant une absence d'efficacité des mesures de protection intégrale une accusation contre son gouvernement mais un simple constat des problèmes à surmonter.

2.26 Réglementation de l'effort de prélèvement
Le but est d'évaluer l'efficacité des limites imposées au prélèvement. Ces limites comprennent généralement des saisons de fermeture ou l'interdiction de prélever certains segments de la population (selon leur taille, par exemple). Une bonne partie du succès de ces mesures dépendra de la volonté politique de les appliquer et de la mesure dans laquelle les personnes qui prélèvent les ressources respectent la loi.

Tableau 2. Facteurs affectant la gestion du régime de prélèvement

Caractéristiques biologiques: animaux seulement		
2.1 Cycle biologique: Quel est le cycle biologique de l'espèce?	Taux de reproduction élevé, longue durée de vie	
	Taux de reproduction élevé, vie brève	
	Taux de reproduction faible, longue durée de vie	
	Taux de reproduction faible, vie brève	
	Pas de certitude	
2.2 Capacité d'adaptation écologique: Dans quelle mesure l'espèce est-elle adaptable (habitat, régime alimentaire, tolérance à l'environnement, etc.)?	Généraliste extrême	
	Généraliste	
	Spécialiste	
	Spécialiste extrême	
	Pas de certitude	
2.3 Efficacité de la dispersion: Quelle est l'efficacité des mécanismes de dispersion de l'espèce à des stades clés de son cycle biologique?	Très bonne	
	Bonne	
	Moyenne	
	Mauvaise	
	Pas de certitude	
2.4. Interaction avec les humains: L'espèce tolère-t-elle les activités humaines autres que le prélèvement?	Aucune interaction	
	Ravageur/commensal	
	Tolérant	
	Sensible	
	Pas de certitude	
Caractéristiques biologiques: plantes seulement		
2.1 Forme de vie: Quelle est la forme de vie de l'espèce?	Annuelle	
	Bisannuelle	
	Pérenne (plantes herbacées)	
	Arbustes et petits arbres (max. 12m)	
	Arbres	
2.2 Potentiel de renouvellement: Quel est le potentiel de renouvellement de l'espèce concernée?	Végétatif rapide	
	Végétatif lent	
	Rapide à partir de graines	
	Lent ou irrégulier à partir de graines ou de spores	
	Pas de certitude	
2.3 Efficacité de la dispersion: Quelle est l'efficacité des mécanismes de dispersion de l'espèce?	Très bonne	
	Bonne	
	Moyenne	
	Mauvaise	
	Pas de certitude	

Tableau 2. Facteurs affectant la gestion du régime de prélèvement

2.4 Habitat: Quelle est la préférence de l'espèce en matière d'habitat?	Ouvert perturbé	
	Ouvert non perturbé	
	Pionnier	
	Forêt perturbée	
	Climacique	
Etat au niveau national: animaux et plantes		
2.5 Répartition au plan national: Comment se caractérise la répartition de l'espèce au plan national?	Largement répandue, d'un seul tenant dans le pays	
	Largement répandue, fragmentée dans le pays	
	Limitée et fragmentée	
	Localisée	
	Pas de certitude	
2.6 Abondance au plan national: Comment se caractérise l'abondance de l'espèce au plan national?	Très abondante	
	Commune	
	Non commune	
	Rare	
	Pas de certitude	
2.7 Tendances de la population au niveau national: Quelle est la tendance récente de la population nationale?	En augmentation	
	Stable	
	Réduite mais stable	
	Réduite et en déclin	
	Pas de certitude	
2.8 Qualité de l'information: Quel type d'information est disponible pour décrire l'abondance et les tendances de la population nationale?	Données quantitatives récentes	
	Bonne connaissance locale	
	Données quantitatives obsolètes	
	Information anecdotique	
	Pas d'information	
2.9 Principales menaces: Quelles sont les principales menaces pour l'espèce (soulignez ce qui convient: surexploitation/destruction et modification de l'habitat/espèces envahissantes/autres: quelle est leur gravité)?	Aucune menace	
	Limitée/réversible	
	Substantielle	
	Grave/irréversible	
	Pas de certitude	
Gestion du prélèvement: animaux et plantes		
2.10 Prélèvement ou commerce illicite: Quelle est l'importance du prélèvement ou du commerce illicite ou non géré au niveau national?	Aucune	
	Faible	
	Moyenne	
	Grande	
	Pas de certitude	

Tableau 2. Facteurs affectant la gestion du régime de prélèvement

2.11 Histoire de la gestion: Quelle est l'histoire du prélèvement?	Prélèvement géré: en cours avec cadre adaptatif	
	Prélèvement géré: en cours mais informel	
	Prélèvement géré: nouveau	
	Prélèvement non géré: en cours ou nouveau	
	Pas de certitude	
2.12 Plan de gestion ou équivalent: Y a-t-il un plan de gestion du prélèvement pour cette espèce?	Plans de gestion locaux et nationaux approuvés et coordonnés	
	Plan(s) de gestion approuvé(s) aux niveaux national/provincial/des états	
	Plan de gestion local approuvé	
	Aucun plan approuvé: gestion informelle non planifiée	
	Pas de certitude	
2.13 Objectif du régime de prélèvement dans le plan de gestion: Quel est le but du prélèvement?	Produire des avantages pour la conservation	
	Gestion/contrôle de la population	
	Maximiser le rendement économique	
	Prélèvement opportuniste, non sélectif ou aucun	
	Pas de certitude	
2.14 Quotas: Le prélèvement repose-t-il sur un système de quotas?	Quota national en vigueur: basé sur des quotas locaux reposant sur des critères biologiques	
	Quota en vigueur: national ou local «prudent»	
	Quota expérimental: récent et fondé sur des quotas locaux d'après des critères biologiques	
	Quota(s) sous influence du marché, quota(s) arbitraire(s) ou pas de quota du tout	
	Pas de certitude	
Contrôle du prélèvement: animaux et plantes		
2.15 Prélèvement dans les aires protégées: Quel pourcentage du prélèvement légal national est effectué dans les aires protégées contrôlées par l'Etat?	Elevé	
	Moyen	
	Faible	
	Aucun	
	Pas de certitude	
2.16 Prélèvement dans des régions sous régime foncier ou de propriété fort: Quel pourcentage du prélèvement national licite est effectué en dehors des aires protégées, dans des régions où s'exerce un contrôle local fort sur l'utilisation des ressources?	Elevé	
	Moyen	
	Faible	
	Aucun	
	Pas de certitude	
2.17 Prélèvement dans des zones où l'accès est libre: Quel pourcentage du prélèvement national licite est effectué dans des régions où il n'y a pas de contrôle local fort et où, en conséquence, l'accès est libre ?	Aucun	
	Faible	
	Moyen	
	Elevé	
	Pas de certitude	

Tableau 2. Facteurs affectant la gestion du régime de prélèvement

2.18 Fiabilité de la gestion du prélèvement: Les facteurs budgétaires, entre autres, permettent-ils une application efficace du (des) plans(s) de gestion et des contrôles du prélèvement?	Fiabilité élevé	
	Fiabilité moyenne	
	Fiabilité faible	
	Aucune fiabilité	
	Pas de certitude	
Surveillance du prélèvement: animaux et plantes		
2.19 Méthodes utilisées pour surveiller le prélèvement: Quelle est la principale méthode utilisée pour surveiller les effets du prélèvement?	Comptage direct de la population	
	Indices quantitatifs	
	Indices qualitatifs	
	Surveillance nationale des exportations	
	Aucune surveillance ou pas de certitude	
2.20 Fiabilité de la surveillance du prélèvement: Les facteurs budgétaires, entre autres, permettent-ils une surveillance efficace du prélèvement?	Fiabilité élevé	
	Fiabilité moyenne	
	Fiabilité faible	
	Aucune fiabilité	
	Pas de certitude	
Incitations et avantages du prélèvement: animaux et plantes		
2.21 L'utilisation comparée aux autres menaces: Quel est l'effet du prélèvement par rapport aux principales menaces identifiées pour cette espèce?	Bénéfique	
	Neutre	
	Préjudiciable	
	Très négatif	
	Pas de certitude	
2.22 Incitations à la conservation de l'espèce: Au niveau national, comment sont les avantages pour la conservation de cette espèce qui découlent du prélèvement?	Elevés	
	Moyens	
	Faibles	
	Nuls	
	Pas de certitude	
2.23 Incitations à la conservation de l'habitat: Au niveau national, comment sont les avantages pour la conservation de l'habitat qui découlent du prélèvement?	Elevés	
	Moyens	
	Faibles	
	Nuls	
	Pas de certitude	
Protection contre le prélèvement: animaux et plantes		
2.24 Proportion intégralement protégée: Quel pourcentage de l'aire de répartition naturelle ou de la population de l'espèce est légalement protégé contre le prélèvement ?	>15%	
	5–15%	
	<5%	
	Aucun	
	Pas de certitude	

Tableau 2. Facteurs affectant la gestion du régime de prélèvement

2.25 Efficacité des mesures de protection intégrale: Les facteurs budgétaires, entre autres, permettent-ils de garantir l'efficacité des mesures prises pour assurer la protection intégrale?	Fiabilité élevé	
	Fiabilité moyenne	
	Fiabilité faible	
	Aucune fiabilité	
	Pas de certitude	
2.26 Réglementation de l'effort de prélèvement: Les restrictions imposées au prélèvement sont-elles efficaces (par exemple âge ou taille, saison ou équipement) et empêchent-elles la surexploitation?	Très efficaces	
	Efficaces	
	Inefficaces	
	Aucune réglementation	
	Pas de certitude	

2.3 Donner un avis de commerce non préjudiciable – système visuel de notation aux fins de la prise de décisions

Lorsque les informations pertinentes auront été rassemblées dans les tableaux 1 et 2, le personnel de l'Autorité scientifique devrait être mieux en mesure de donner un avis de commerce non préjudiciable après interprétation du matériel rassemblé. En outre, une présentation visuelle des résultats peut être effectuée à l'aide d'un graphique radar.

La Figure 1a intitulée *Exemple de système d'évaluation de l'information pour aider les Autorités scientifiques à donner un avis de commerce non préjudiciable – Représentation des réponses aux questions contenues dans le tableau 2* est un exemple de tableau Excel que l'on peut préparer. Un libellé court pour chaque question se trouve dans la troisième colonne de la figure (depuis la gauche) et la réponse, sur une échelle de 1 à 5 est inscrite dans la quatrième colonne (depuis la gauche) intitulée *Réponses – 1 à 5*.

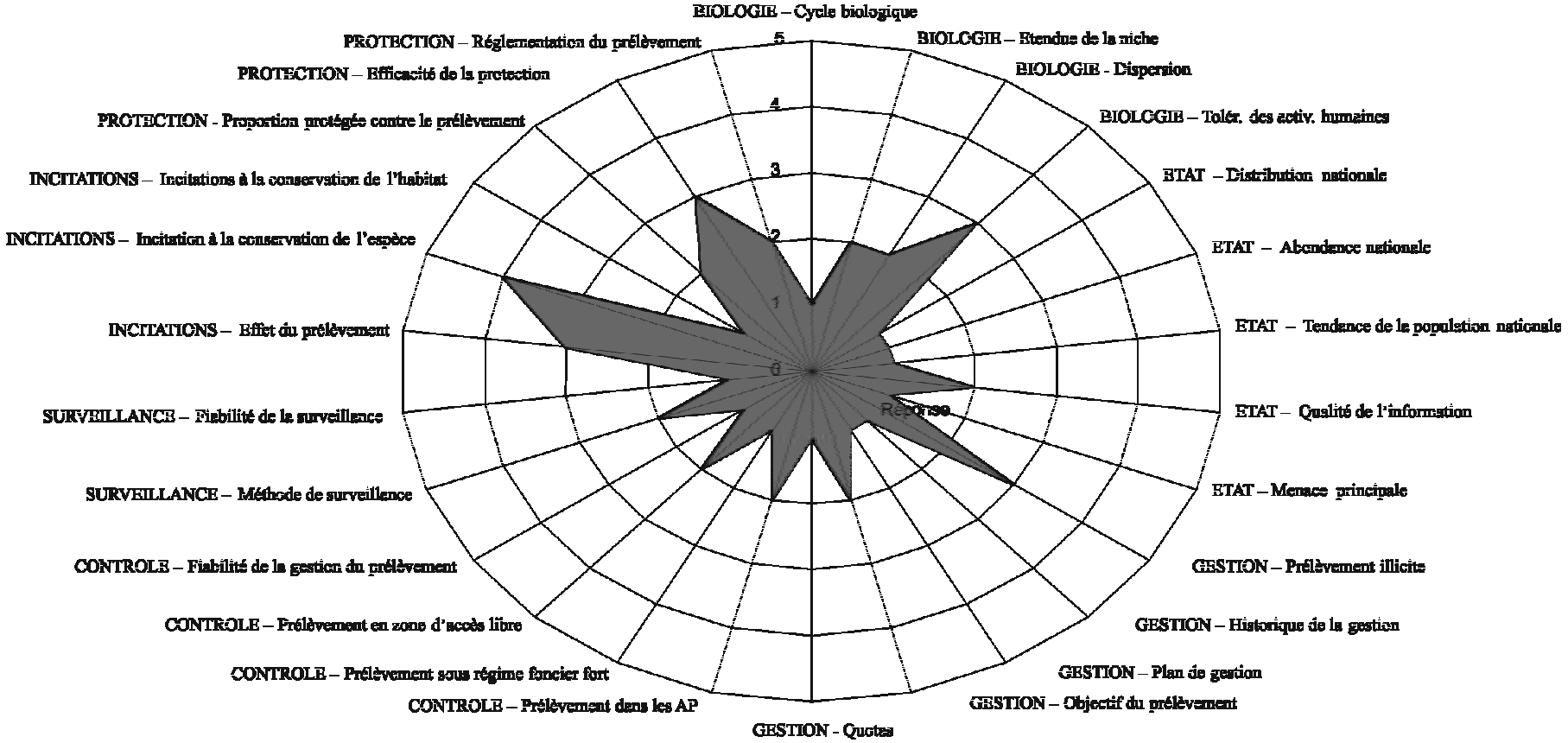
Le modèle électronique qui produit automatiquement le graphique lorsque les valeurs correctes sont saisies dans le tableau est disponible auprès du Secrétariat de la CITES.

Le graphique radar produit une zone centrale colorée. Si le prélèvement n'est pas préjudiciable, la plupart des réponses seront concentrées dans les zones de précaution du tableau 2 – Plantes et seront représentées près du centre du cercle. Les points qui se trouvent à l'extérieur peuvent indiquer qu'il est peu probable que le prélèvement soit durable et devraient inciter l'Autorité scientifique à examiner les réponses de plus près. Il est possible qu'une enquête supplémentaire soit nécessaire ou qu'il n'y ait pas assez d'informations sur lesquelles rendre un avis de commerce non préjudiciable. En conséquence, cet instrument n'aidera pas seulement à prendre des décisions concernant un avis de commerce non préjudiciable mais permettra peut-être aussi d'identifier des problèmes et de les résoudre le plus vite possible.

Figure 1a. Exemple de système d'évaluation de l'information pour aider les Autorités scientifiques à donner un avis de commerce non préjudiciable – Représentation des réponses aux questions du tableau 2.

Numéro de la question	Catégorie de la question	Question	Réponses – 1 à 5
2.1	Biologie	BIOLOGIE – Cycle biologique	1
2.2		BIOLOGIE – Etendue de la niche	2
2.3		BIOLOGIE – Dispersion	2
2.4		BIOLOGIE – Tolérance des activités humaines	3
2.5	Etat	ETAT – Distribution nationale	1
2.6		ETAT – Abondance nationale	1
2.7		ETAT – TendanceS de la population nationale	1
2.8		ETAT – Qualité de l'information	2
2.9		ETAT – Principale menace	1
2.10	Gestion	GESTION – Prélèvement illicite	3
2.11		GESTION – Historique de la gestion	1
2.12		GESTION – Plan de gestion	1
2.13		GESTION – Objectif du prélèvement	2
2.14		GESTION – Quotas	1
2.15	Contrôle	CONTROLE – Prélèvement dans les AP	2
2.16		CONTROLE – Prélèvement sous régime foncier fort	1
2.17		CONTROLE – Prélèvement en zone d'accès libre	2
2.18		CONTROLE – Fiabilité de la gestion du prélèvement	1
2.19	Surveillance	SURVEILLANCE – Méthodes de surveillance	2
2.20		SURVEILLANCE – Fiabilité de la surveillance	1
2.21	Incitations	INCITATIONS – Effets du prélèvement	3
2.22		INCITATIONS – Incitation à la conservation de l'espèce	4
2.23		INCITATIONS – Incitation à la conservation de l'habitat	1
2.24	Protection	PROTECTION – Proportion protégée contre le prélèvement	2
2.25		PROTECTION – Efficacité de la protection	3
2.26		PROTECTION – Réglementation du prélèvement	2

Fig. 1b. Exemple de système de notation pour aider les Autorités scientifiques à rendre un avis de commerce non préjudiciable Graphique des réponses aux questions du Tableau 2



3. Conclusions

Pour déterminer si un prélèvement ne nuit pas à la survie d'une espèce, l'Autorité scientifique de l'Etat d'exportation entreprendra, de préférence, un examen exhaustif de l'ensemble du système de gestion du prélèvement. Bien souvent, cependant, il n'y a pas d'informations complètes et, parfois, on ne sait même pas très bien ce que signifie système de gestion. Cette fiche d'évaluation a pour objet d'attirer l'attention sur les aspects les plus importants des systèmes de gestion du prélèvement et de fournir un moyen de rassembler cette information. Elle est conçue de manière à servir de première étape dans un processus qui, nous l'espérons, évoluera en réponse aux recommandations des enquêteurs sur le terrain. Avant tout, la fiche d'évaluation ne doit pas rebuter les utilisateurs potentiels et doit se borner à demander des informations que la personne chargée de remplir le tableau peut obtenir, de manière réaliste. En conséquence, elle adopte des catégories de données qualitatives qui, avec le temps, pourraient devenir plus quantitatives. Un des atouts principaux du système est la possibilité de représenter visuellement l'importance des facteurs déterminant la probabilité qu'un prélèvement puisse ou non être durable. La représentation visuelle facilite la comparaison entre les espèces, et peut-être même entre les années. On peut ainsi identifier les facteurs qui, au niveau national, pourraient être modifiés pour que la gestion de la ressource puisse aboutir à un prélèvement durable.

1. Autoridades cientificas de CITES: Listado de apoyo para la elaboracion de dictamenes de no-perjudicial para las exportaciones del Apendice II

1.1 Introducción

El Convenio sobre Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestre (CITES) es una herramienta de conservación de gran importancia, contando con alrededor de 147 signatarios. Su propósito es proteger las especies de los efectos perjudiciales de la sobreexplotación con destino al comercio internacional, asegurar la utilización sostenible de otras, y a estimular la cooperación internacional entre las Partes firmantes para lograr este objetivo. El Convenio tiene tres apéndices que mantienen diferentes niveles de reglamentación para las especies listadas en cada uno. El Convenio es administrado a nivel nacional por una Autoridad de Administración y una Autoridad Científica.

El determinar cuando el comercio internacional (ya sea de un embarque individual o sobre una base anual) es probable que resulte no-perjudicial a la supervivencia de las especies es esencial para lograr los objetivos del Convenio sobre Comercio Internacional de Especies Amenazadas de Flora y Fauna Silvestres (CITES). Si las especies pasan a ser amenazadas de extinción como resultado de un uso que es incompatible con su supervivencia, las Partes de CITES encaran la perspectiva de incluir especies adicionales al Apéndice I. Sin duda, cada transferencia de una especie del Apéndice II al Apéndice I como resultado de una falta de reglamentación apropiada del comercio, particularmente desde una perspectiva científica, puede ser considerada como un fracaso de las Partes en el cumplimiento de sus obligaciones según el Convenio. Claramente, es necesaria tomar medidas para mejorar la ituación y ayudar a las Autoridades Científicas a elaborar dictámenes no-perjudiciales.

1.2 Una definición operacional de no-perjudicial

Reconociendo las dificultades que algunas Autoridades Científicas tienen para elaborar dictámenes no-perjudiciales, los elementos de una definición operacional pueden ser identificados examinando los principales párrafos del Artículo IV del Convenio.

Estos párrafos del Artículo IV exigen a la Autoridad Científica que determine que las exportaciones propuestas no serán perjudiciales para la supervivencia de las especies. Además, una vez que las exportaciones están en marcha, la Autoridad Científica debe vigilar los niveles reales de exportación para asegurar que la especie se mantiene a lo largo de toda su área de distribución a un nivel consistente con su papel en el ecosistema y lo suficientemente por encima a aquel en el cual la especie podría volverse elegible para su inclusión en el Apéndice I. En la práctica, la Autoridad Científica debe considerar los niveles totales nacionales de la cosecha incluyendo tanto las nuevas exportaciones como las que ya están en marcha para elaborar dictámenes no-perjudiciales. En consecuencia, la exportación para el comercio internacional no es perjudicial cuando es parte de una extracción, cuyo total es sostenible, y que no resulta en una reducción no planificada de su área de distribución, o en una

CITES Artículo IV.2.
La exportación de cualquier ejemplar de una especie incluida en el Apéndice II requerirá la autorización previa y la presentación de un permiso de exportación. Este permiso de exportación se concederá solamente una vez satisfechos los siguientes requisitos:

Artículo IV.2.a)
Que una Autoridad Científica del Estado que exporta haya recomendado que esa exportación no perjudicará la supervivencia de esa especie;

Artículo IV.3.
Una Autoridad Científica de cada parte vigilará los permisos de exportación expedidos por ese Estado para especímenes de especies incluidas en el Apéndice II y las exportaciones efectuadas de dichos especímenes. Cuando una Autoridad Científica determine que la exportación de especímenes de cualquiera de esas especies debe limitarse a fin de conservarla, a través de su hábitat, en un nivel consistente con su papel en los ecosistemas donde se halla y en un nivel suficientemente superior a aquel en el cual esa especie sería susceptible de inclusión en el Apéndice I, la Autoridad Científica comunicará a la Autoridad Administrativa competente las medidas apropiadas a tomarse, a fin de limitar la concesión de permisos de exportación para especimenes de dicha especie.

declinación de la población a largo plazo, o que cambie a la población de modo que podría esperarse que lleve a la especie a que sea elegible para su inclusión en el Apéndice I.

El manejo adaptativo en base a una vigilancia adecuada y a una retroalimentación apropiada es vital para asegurar la sostenibilidad de la cosecha de la vida silvestre. Los problemas actuales en la elaboración de dictámenes no-perjudiciales resultan principalmente de la falta de capacidad y de recursos para llevar a cabo la ejecución de esquemas de vigilancia que cubran la amplia gama de especies en el comercio internacional. Debe prestarse más atención al desarrollo y promoción de métodos económicamente efectivos y prácticos de la vigilancia de los recursos, y en proporcionar a las Autoridades Científicas de las habilidades y de los medios para hacer estas determinaciones. En muchos casos tales esquemas de vigilancia no necesitan ser complejos ni exigentes en recursos. Por ejemplo, la vigilancia puede ser llevada a cabo por personal de vida silvestre o por guardias de la comunidad mientras se llevan a cabo los patrullajes contra el furtivismo. La información que debería ser considerada con propósitos de vigilancia incluye: el tamaño de la población; el área de distribución; las tendencias de la población; los planes de manejo y la protección de las poblaciones de una sobreexplotación. La vigilancia de los niveles de extracción y los tipos de comercialización, así como los datos poblacionales, permitirán el establecimiento de los lazos de retroalimentación necesarios para el manejo adaptativo.

1.3 Apoyo a las autoridades científicas en la elaboración de dictámenes no-perjudiciales – Desarrollo de un listado de verificación

Se ha diseñado un listado de verificación de la información a ser incluida en la vigilancia para ayudar a la capacitación de las Autoridades Científicas para poder aconsejar sobre si las exportaciones de los taxones listados en el Apéndice II son no-perjudiciales para la supervivencia de las especies. Este listado de verificación también permite a las Autoridades Científicas comparar sus dictámenes con los de otros países para especies similares o artículos similares que se comercien. En esta fase inicial se han usado intencionalmente categorías de datos cualitativos, y ello por dos razones. Primeramente, porque se han encontrado serias dificultades en el desarrollo criterios “duros” para el uso sostenible aplicables a una gama amplia de taxones y a ecosistemas diversos (Allen y Edwards, 1995). En segundo término, con la gran variedad de especies en el comercio internacional, es muy difícil extrapolar datos cuantitativos a partir de esas pocas especies en las que la cosecha ha sido estudiada. Las preguntas sin respuesta en el listado de verificación servirán para resaltar aquellas áreas donde los esquemas de manejo o la colecta de información podrían mejorarse.

Además, el listado de verificación no apunta a ser largo o intimidatorio, aunque en una primera lectura puede parecerlo. Las primeras pruebas del listado de verificación utilizando especies para las que había suficiente información disponible muestra que el mismo puede completarse bastante rápidamente. Sin embargo, se podrá desarrollar un formato más conciso una vez que el listado de verificación se haya puesto a prueba totalmente mediante un uso mas extensivo. La pertinencia de algunos de los aspectos del manejo variarán entre regiones y entre países. Adicionalmente, el listado de verificación debería verse como una fase temprana de un proceso en evolución que será testigo de la creciente adopción de esquemas de manejo y del perfeccionamiento en la colecta de información. A medida que el proceso de elaboración de dictámenes no-perjudiciales se torne más aceptable, se justificaría el desarrollando de categorías más cuantitativas orientadas a grupos de especies particulares y derivados de los estudios de caso en los Estados de distribución.

2. El listado de verificación

2.1 Introducción

El listado de verificación comprende dos tablas que deben aplicarse a cada especie en el Apéndice II que sea el tema de exportación como resultado de la extracción de especímenes del medio silvestre. Las tablas y el texto para las plantas y animales se han desarrollado en conjunto para asegurar que el formato y el contenido sean lo mas uniforme posible para los dos reinos más importantes. Sin embargo, en algunas partes fue necesario desarrollar textos diferentes, pero las tablas tienen una lógica subyacente similar, así que la similitud debe reducir la posibilidad de confusión para aquellas Partes donde la misma persona tenga que tratar con los problemas tanto de animales como de plantas.

2.2 Explicación de las tablas sobre las características de la cosecha

Las Tablas 1-Animales y 1-Plantas estimulan al personal de la Autoridad Científica a hacer una revisión inicial, a nivel nacional, de los probables efectos de cosechar las especies objeto de uso. Se busca información sobre los tipos de cosecha, el grado de control sobre la cosecha, el segmento de la población cosechada, el nivel total de extracción (para uso doméstico e internacional), la finalidad de la cosecha, y los

usuarios finales de la cosecha. Las Autoridades Científicas deben distinguir entre cosecha regulada y cosecha ilegal o no manejada. La consideración de esta información permitirá iniciar o continuar la ayuda al proceso de consulta entre las Autoridades Científicas y las Autoridades de Administración. En el caso de ciertos tipos de cosechas, también permitirá a la Autoridad Científica recomendar rápidamente que la cosecha no es perjudicial para la supervivencia.

La Tabla 2 estimula a las Autoridades Científicas a revisar con mayor profundidad la información biológica general y de manejo de aquellas especies para las que la Tabla 1 genera preocupaciones. También se solicita información sobre la historia y la planificación de la administración, el manejo de la cosecha, la condición de la tierra en la que la cosecha se aplica, la capacidad de vigilancia de la cosecha, los beneficios y los riesgos de la cosecha, los niveles de protección estricta, y la relación entre los especímenes criados en granjas y en cautiverio y aquellos que son capturados en el medio silvestre.

Las tablas han sido diseñadas para posibilitar un uso fácil de tipo cualitativo mediante marcas o tildes que permiten una evaluación básica de la confianza con la que un dictamen de no-perjudicial puede ser realizado por las Autoridades Científicas. Aquellos regímenes reglamentados de cosecha donde los productos son extraídos sin matar las especies, o donde se utiliza la cría en granja, se excluyen de consideraciones adicionales una vez que la Tabla 1P se haya completado. Para todos los otros regímenes de cosecha también deben completarse las Tablas 2P y 2A. En la confección de las Tablas 2P y 2A, debe notarse que un alto grado de incertidumbre debe llevar a la Autoridad Científica a concluir que existe información insuficiente sobre la que basar un dictamen de no-perjudicial. En estos casos la mayoría de las Partes debe decidir no permitir el comercio hasta que mejore la calidad de información.

2.2.1 Tabla 1-Animales

La explicación para esta tabla está dispuesta de acuerdo a las respectivas columnas. Para cada especie en consideración, se debe verificar cada tipo de cosecha (1.1 a 1.6) a la que la población nacional de esa especie está sometida, para lo cual puede haber varias opciones disponibles. Por ejemplo, puede esquilarse la lana de las vicuñas vivas en una cosecha bien reglamentada, mientras cazadores furtivos pueden matar las vicuñas para obtener su lana y su carne en una cosecha no controlada. El sombreado indica cuando una casilla no puede tildarse. Por ejemplo, la cría en granjas no permite la colecta de adultos o la cosecha no selectiva.

Tipo de cosecha

Cuando los tipos de cosecha están reglamentados, los mismos se ordenan en filas de acuerdo a sus niveles de impacto en la población silvestre.

1.1 Cría en cautiverio: esta fila debe usarse para registrar la cantidad de especímenes que se obtienen de las operaciones de cría en cautiverio para exportación. Los animales extraídos de la población silvestre para establecimiento o incremento de las operaciones de la cría en cautiverio que están definitivamente perdidos para la población silvestre, por lo que sus números deben registrase bajo 1.5, captura viva.

1.2 Cosecha no letal para partes / productos: esta fila se refiere a la colecta de partes y derivados que no demandan de la muerte del animal. Esto podría incluir, por ejemplo, la esquila de lana de la vicuña viva o el plumón de los patos de flojel (esta especie no está incluida en los apéndices). El **tipo principal de producto** derivado de la cosecha debe ser identificado. La colecta de huevos NO cae en esta categoría; véase 1.3 .

1.3 Cría en granja: esta fila se refiere al extracción de huevos o juveniles vivos para su cría en cautiverio, en base a la premisa que la supervivencia se incrementará en comparación con la del medio silvestre cuando es ésta la fase del ciclo de vida la que está siendo colectada. Por consiguiente, este excedente de producción puede ser cosechado sin perjuicio para la supervivencia a largo plazo de la población. Esto incluye tanto la cría en granjas de especies del Apéndice II para las que cualquier cupo de exportación es fijado por los Estados del área de distribución, como las especies del Apéndice I que se transfieren al Apéndice II con posterioridad a un cupo aprobado por la Conferencia de las Partes. Esto no incluye la cría en cautiverio de individuos adultos o subadultos para su posterior exportación, sin ningún beneficio para el hábitat, o la tenencia en cautividad de individuos adultos capturados hasta su eventual exportación. Tales casos deben ser considerados bajo 1.5, captura viva.

1.4 Control de animales plaga o animales problema: esta fila se refiere a especímenes extraídos bajo una política gubernamental de control de plagas**.** Estos especímenes están incluidos en el comercio porque ellos de todas maneras hubieran sido destruidos para proteger la vida humana o las cosechas, y cualquier producto potencial puede ser usado para proporcionar incentivos para promover los propósitos de conservación.

1.5 Captura viva y **1.6 Matanza del individuo:** estas filas se refieren a la extracción del espécimen vivo de la población silvestre, a través de la colecta, la caza, el trampeo, o la pesca, y puede incluir herido de muerte,

abandonados, captura incidental, o muertes incidentales como resultado de deforestación, y que no llegan en definitiva al comercio internacional. Los diferentes tipos de colección, caza, trampeo, o pesca afectan a diferentes segmentos de la población. El tipo principal de producto derivado de la matanza debe identificarse en la fila 1.6.

2.2.1 Tabla 1 – Animales. Resumen del Régimen de Cosecha para Especies Animales (o población de una especie animal)

Especie: . . . . . País (si se aplica Estado o Provincia): . . . . . .

Fecha (del dictamen de no-perjudicial): . . . . . Período cubierto por el dictamen: . . . . . .

Nombre: . . . . . Posición en la Autoridad Científica: . . . . . .

La especie ¿es endémica, sólo se encuentra en pocos países, o está ampliamente distribuida? . . . . . .

Estado de conservación de la especie (si es conocido): Condición global para UICN: . . . . . .

Condición nacional: . . . . . Otro: . . . . . .

Tipo de cosecha	**Producto principal**	**Grado de control**	**Segmento demográfico extraído de la población silvestre**					**Nivel relativo de extracción (incluya el número real o la cantidad si se conoce)**				**Finalidad de la extracción**			**Destino(s) comercial(es) (números y porcentajes si se conocen)**		
			Huevos	Juve-niles	Machos adultos	Hembras adultas	No-selectivo	Bajo	Mediano	Alto	Desco-nocido	Subsis-tencia	Comercial	Otra	Local	Nacional	Inter-nacional
1.1. Cría en cautiverio		a) Reglamentado															
		b) Ilegal o no manejado															
1.2. Cosecha no letal de partes/ productos		a) Reglamentado															
		b) Ilegal o no manejado															
1.3. Extracción para cría en granjas		a) Reglamentado															
		b) Ilegal o no manejado															
1.4 Control de animales plaga o problema		a) Reglamentado															
		b) Ilegal o no manejado															
1.5. Captura viva		a) Reglamentado															
		b) Ilegal o no manejado															
1.6. Matanza de individuos		a) Reglamentado															
		b) Ilegal o no manejado															

2.2.2 Tabla 1-Plantas

Las explicaciones para esta tabla están ordenadas de acuerdo a las respectivas columnas. Para cada especie en consideración, se debe verificar cada tipo de cosecha (1.1 a 1.6) a la que la población nacional de esa especie está sometida, para lo cual puede haber varias opciones disponibles. En el caso de plantas bulbosas, por ejemplo *Galanthus*, la cosecha puede realizarse en base a un programa regulado y bien manejado, mientras que la colecta ilegal puede ser llevada a cabo por coleccionistas especializados. El sombreado indica que una casilla no puede tildarse.

N.B. Efectivos silvestres reubicados: las plantas silvestres son colectadas y replantadas antes de su exportación. Por ejemplo, en el caso de los bulbos, grandes cantidades de bulbos colectados del medio silvestre son frecuentemente "almacenados" en terrenos agrícolas. Al momento de la exportación los bulbos se cosechan de estos terrenos de "almacenamiento". La evaluación por parte de la Autoridad Científica debe estar basada en la extracción original del medio silvestre

Tipos de cosecha

Los tipos de cosecha, cuando están reglamentados, se han ordenado de acuerdo a sus niveles de impacto sobre la población silvestre.

1.1 Propagación artificial
Propagación artificial: Antes de completar la Tabla 1-Plantas, la Autoridad Científica debe evaluar si las plantas resultan de la propagación artificial o si son extraídas del medio silvestre. En el caso de propagación artificial las plantas deben cumplir con el criterio formulado en la Resolución. Conf. 9.18 (Rev) que incluye la definición de propagación artificial.

1.2 Cosecha no destructiva de frutas/flores/ semillas/hojas: esta fila se debe usar para registrar la colecta de partes y derivados que no resultan en la muerte de la planta.

1.3 Cosecha de corteza/raíces/madera: esta fila debe ser usada para registrar la colecta de corteza/raíces/ madera que no resultan en la destrucción de la planta. Por ejemplo, la remoción selectiva de la corteza de *Prunus africana* como parte de un programa de manejo planificado asegurará la supervivencia del árbol en el medio silvestre. Lo mismo para la colecta de semillas. Si la cosecha es llevada a cabo a mano de manera cuidadosa, las plantas no se dañarán, como ocurre con algunos cactus.

1.4 Remoción de la planta completa: esta fila se debe usar para registrar aquellos casos donde la planta completa es colectada, y por lo tanto removida de la población silvestre, o eliminada.

1.5 Remoción del bulbo completo: en el caso de la colecta de los bulbos del medio silvestre, Vg. *Sternbergia,* los bulbos deben tratarse como plantas completas; sin embargo la remoción de especímenes completamente desarrollados sólo pueden tener un impacto diferente que cuando todos los bulbos son removidos.

1.6 Muerte de individuos por remoción de semillas, hojas, cortezas, raíces, madera.

Madera: esta fila debe ser usada para registrar la extracción de madera como madera de construcción, carbón de leña, troceado de madera, etc., donde la planta no sobrevive a este tipo de cosecha.

Corteza: la remoción destructiva de la corteza completa o el corte del árbol resultará en la muerte del árbol (Vg. *Prunus africana);*

Raíces: la colecta de sistemas radiculares completos o partes significativas de la raíz para uso medicinal, etc. casi siempre resultan en la muerte de la planta. (Vg. *Panax quinquefolius);*

Semillas: la colecta de semillas de, por ejemplo, ciertos cactus donde se corta la parte superior de la planta es probable que produzca la muerte de la planta.

2.2.2 Tabla 1 – Plantas. Resumen de Régimen de Cosecha para Especies de Plantas

Especie: . . . . . País (si se aplica Estado o Provincia): . . . . . .

Fecha (del dictamen de no-perjudicial): . . . . . Período cubierto por el dictamen: . . . . . .

Nombre: . . . . . Posición en la Autoridad Científica: . . . . . .

La especie ¿es endémica, sólo se encuentra en pocos países, o está ampliamente distribuida?. . . . . .

Estado de conservación de la especie (si es conocido): Condición global para UICN: . . . . . .

Condición nacional: . . . . . Otro: . . . . . .

Tipo de cosecha	**Producto principal**	**Grado de control**	**Segmento demográfico extraído de la población silvestre**			**Nivel relativo de extracción (incluya el número real o la cantidad si se conoce)**				**Finalidad de la extracción y porcentaje (si se conoce)**			**Destino(s) comercial(es) y porcentajes (si se conocen)**		
			Inmaduro	Maduro	Sexo	Bajo	Mediano	Alto	Desconocido	Subsistencia	Comercial	Otra	Local	Nacional	Internacional
1.1 Propagación artificial		a) Reglamentado													
		b) Ilegal o no manejado													
1.2 Cosecha no destructiva de frutas/flores/ semillas/hojas		a) Reglamentado													
		b) Ilegal o no manejado													
1.3 Cosecha de corteza/raíces/ madera		a) Reglamentado													
		b) Ilegal o no manejado													
1.4 Remoción de la planta completa		a) Reglamentado													
		b) Ilegal o no manejado													
1.5 Remoción del bulbo completo		a) Reglamentado													
		b) Ilegal o no manejado													
1.6 Muerte de individuos por remoción de semillas, hojas, cortezas, raíces, madera		a) Reglamentado													
		b) Ilegal o no manejado													

2.2.3 Tabla 1 –Animales y Plantas

Grado de control: esta columna tiene dos opciones:

a) Regulado: se refiere a una cosecha autorizada (aprobada por el gobierno o de alguna manera oficial) que está bajo control total del administrador, en base a cupos científicamente establecidos, con apropiada adjudicación de la cosecha a los diferentes usuarios finales.

b) Ilegal o no manejada: se refiere a la cosecha sobre la que el administrador no tiene un control total, y donde la cosecha se adjudica a los diferentes usuarios finales por parte del que cosecha. Aunque las cosechas ilegales y las cosechas no manejadas difieren en términos de la penalidad legal a la que están expuestas, pueden tener el mismo efecto sobre la población silvestre, y comparten una característica común: la de no estar apoyadas por un sistema formal de recolección de los datos. De ahí, que una cosecha puede estar legalmente reconocida, aunque sea no manejada. Hay también casos donde una cosecha tiene lugar sin ningún marco de legislación o reglamentación local o nacional, y tales cosechas también deben ser consideradas como no manejadas.

Cosechas reguladas e ilegales de igual o diferente tipo pueden a menudo darse simultáneamente en una misma población. Por ello para muchas especies la información sobre los tipo(s) de cosecha pueden incluir tildes en dos o más filas y subfilas (Vg. en *Prunus africana,* donde puede haber una cosecha regulada de corteza de árboles vivos (1.1.4) y una cosecha ilegal de corteza o madera que producen la muerte del árbol (1.1.6).

Segmento demográfico removido de la población silvestre

Esta columna se refiere al segmento de la población que es cosechado. El impacto de la cosecha en la estructura global de la población dependerá de cuál es la fase de la historia de vida que es objeto de la cosecha.

Animales. La mortalidad natural tiende a ser máxima para los huevos y/o para los neonatos y juveniles. Por consiguiente, una extracción de huevos, neonatos o juveniles, manejada para cría en granjas tendrá menor impacto sobre la población que la remoción animales reproductivamente activos. En general una cosecha basada en machos adultos tendrá menor impacto sobre la población que la cosecha de hembras especies poliginias, en las que una pequeña proporción de los machos adultos son los responsables de la mayor parte de los apareamientos. Sin embargo, en los casos en que un gran volumen no selectivo de carne es el objetivo último, habrá un mayor impacto sobre la población. Una combinación apropiada de columnas dentro del encabezado de esta columna puede ser tildado para cada tipo de cosecha. Sin embargo, si la cosecha es no selectiva, i.e. cualquiera de los tipos de cosecha de 1.4–1.6, entonces solo la columna para “no-selectiva” debe ser tildada. Ejemplos de las columnas que pueden ser usadas incluyen: machos o hembras; clases de edad; y combinaciones a partir de ellas.

Plantas. Es importante incluir el espectro de las plantas que están sujetas a cosecha, i.e. ¿se cosechan plantas maduras e inmaduras? Si las plantas son cicadáceas, ¿son sólo las plantas femeninas el objeto de la cosecha? Para estas tablas, se consideran plantas maduras aquellas capaces de reproducirse, mientras que las plantas inmaduras no son capaces de reproducirse. En el caso de especies de dioicas, se debe indicar, si se conoce, si el objeto de uso son las plantas masculinas o femeninas o algunas de sus partes.

Nivel de extracción

Cuando hay información cuantitativa disponible sobre **Números o cantidad** para cosechas reguladas, la misma debe ser incluida para aumentar la confianza en la evaluación. En caso contrario, una evaluación cualitativa puede proporcionar cierta indicación de los niveles de extracción, tanto para la cosecha ilegal como para la no manejada. Las columnas Bajo, Mediano y Alto deben interpretarse en el contexto de las especies que van a ser cosechadas. Por ejemplo, una cosecha anual de diez pandas gigantes se consideraría como alto, porque la población silvestre sólo cuenta con algunos cientos de individuos, al mismo tiempo que la tasa reproductiva del panda es baja. En contraste, una cosecha de 100 Ciclamen sería considerada baja, respecto a una población mundial que cuenta con millones. En este encabezado debe tildarse sólo una columna para cada tipo de cosecha.

Finalidad de la extracción

El encabezado de esta columna da una idea acerca de los factores que motivan la cosecha. Indicar un porcentaje, si es que se conoce, puede ser de ayuda. Cuando la cosecha es sólo para propósitos de subsistencia, hay una mayor probabilidad que la cosecha sea sostenible bajo el manejo de personas locales. Donde los intereses comerciales prevalecen, puede haber menos incentivo para cosechar de manera sostenible debido a las presiones económicas. Para cada tipo de cosecha bajo este encabezado global, pueden tildarse una o más columnas según sea lo que corresponda.

Destinos comerciales

El encabezado de esta columna agrega información sobre los motivos para cosechar. Si la cosecha tiene sólo propósitos de subsistencia, los usuarios finales de esa cosecha serán personas locales. Si las personas locales están utilizando una parte de la cosecha y venden el resto, entonces deben tildarse ambas casillas. Si la cosecha tiene un destino comercial, los usuarios finales

pueden ir desde locales a internacionales. Históricamente, se pensaba que el impacto del comercio aumentaba desde el uso local al internacional, pero esta percepción depende muchísimo del tipo de artículo. Para los artículos de valores altos en mercados internacionales, como algunas especies de loro o las orquídeas raras, ciertamente el comercio internacional ha sido el estímulo para una cosecha no sostenible. Se manera similar, para los productos con valor local o nacional, como medicinas comercializadas dentro de las fronteras nacionales, éste puede ser el factor determinante para estimular una cosecha no sostenible, aunque dicho comercio nacional no cae bajo la esfera de CITES. Para cada tipo de cosecha bajo el encabezado de esta columna, pueden tildarse una o más columnas según sea lo que corresponda.

Elaboración de un dictamen de no-perjudicial utilizando la Tabla 1-Animales

La información colectada en Tabla 1-Animales puede ser usada para aconsejar acerca de una alta probabilidad que las exportaciones no serán perjudiciales para la supervivencia de la especie, en las siguientes tres situaciones muy específicas:

- Fila 1.1a, cuando una población está sujeta sólo a una cría en cautividad bien reglamentada;
- Fila 1.2a, cuando una población está sujeta sólo a una remoción bien reglamentada de productos, que no mate a los animales y en la cual se pueden cuantificar el nivel y el impacto de la cosecha; y
- Fila 1.3a, cuando una población está sólo sujeta a una operación de cría en granjas, y en la cual se pueden cuantificar el nivel y el impacto de la cosecha.

Elaboración de un dictamen de no-perjudicial utilizando la Tabla 1-Plantas

La información colectada en Tabla 1-Plantas puede ser usada para aconsejar acerca de una alta probabilidad que las exportaciones no serán perjudiciales para la supervivencia de la especie, en las siguientes tres situaciones muy específicas:

- Fila 1.1, cuando una población está sujeta sólo a una propagación artificial bien reglamentada;
- Fila 1.2, cuando una población está sujeta sólo a una remoción bien reglamentada de frutas/flores/semillas que no destruye las plantas y en la cual se pueden cuantificar el nivel y el impacto de la cosecha; y
- Fila 1.3, cuando una población está sólo sujeta a una cosecha de hojas bien reglamentada que no destruye la planta y en la cual se pueden cuantificar el nivel y el impacto de la cosecha

Si hay tildes en cualquier tipo de control de plagas, colecta de especimenes vivos, matanza de especímenes, cosecha ilegal o cosecha no manejada, o si hay tildes en más de dos filas, las Autoridades Científicas también deben completar la Tabla 2 antes de proceder a aconsejar si las exportaciones pudieran ser perjudiciales para la supervivencia de la especie.

2.2.4 Explicaciones para la tabla 2 sobre "Los Factores que Afectan la Gestión del Régimen de Cosecha"

La Tabla 2 guía al evaluador mediante preguntas ordenadas de tal manera que advierten acerca de la sensibilidad de la especie a los impactos de la cosecha y del uso comercial:

- la primera sección toma en consideración las características biológicas generales de la especie (éstas son diferentes para los animales y plantas);
- la segunda sección toma en consideración la información sobre la condición de la especie a nivel nacional;
- la tercera sección encara consideraciones sobre manejo de la cosecha;
- la cuarta sección lo hace en relación a la gestión del régimen de cosecha;
- la quinta sección trata sobre la vigilancia de la cosecha;
- la sexta sección examina los beneficios de los incentivos y de la conservación derivados de la cosecha; y
- la sección final trata de hasta que punto la especie está protegida de ser cosechada.

Esta tabla está dispuesta de tal manera que la columna de la izquierda de cada fila presenta una pregunta para la cual hay, en la columna de la derecha, desde una a cuatro respuestas preestablecidas, o una quinta respuesta posible para el caso de "incierto". Las respuestas preestablecidas aparecen ordenadas desde arriba hacia abajo para indicar desde una mayor a una menor confianza en la sostenibilidad de la cosecha. Generalmente, debe tildarse sólo una respuesta, aunque en algunos casos varias respuestas pueden ser apropiadas (Vg., véase 2.19 más abajo). Sin embargo, sólo la respuesta más cautelosa (Vg. la del peor escenario) deberá contar al momento de registrar la información. Un simple sistema de puntajes que depende del lugar en donde se ponen los tildes a las respuestas de cada pregunta ayudará a las Autoridades Científicas a aconsejar si un componente dado del comercio internacional llevado a cabo con propósitos comerciales es perjudicial o no para la supervivencia de la especie (véase la Figura 1b para una representación visual del sistema de puntajes).

Debe enfatizarse que el haber completado el listado de verificación (y su representación gráfica subsiguiente)

no necesariamente constituye en si mismo un dictamen de no-perjudicial. Más bien el uso del listado de verificación debe guiar la decisión de un dictamen de no-perjudicial, y puede encauzar a la Autoridad Científica en la obtención de la información necesaria. Cuando prevalecen factores que indican perjuicios potenciales, la Autoridad Científica debe informar a la Autoridad de Administración que no se debe proceder con la exportación propuesta.

Características biológicas: Animales solamente

2.1 Historia de vida
Las características básicas de la historia de vida indican la posible sensibilidad de una especie a la cosecha. Por ejemplo, las especies resultado de una selección "r" ("r-estrategas") que tienen una alta tasa intrínseca de crecimiento poblacional, probablemente están expuestas a menores riesgos por cosecha que las especies resultado de una selección "K" ("K-estrategas"), que maduran lentamente y tienen tasas reproductivas bajas (Vg., ratones *vs.* elefantes, estorninos *vs.* rapaces).

2.2 Adaptabilidad ecológica
La adaptabilidad ecológica indica la posible sensibilidad a la cosecha y abarca factores tales como la amplitud de uso del hábitat por la especie, amplitud de la dieta, y la tolerancia ambiental (en otras palabras, la amplitud del nicho). Estos factores están divididos en dos amplias categorías, generalistas o especialistas. Los generalistas pueden cambiar de tipo de presa o de hábitat con relativa facilidad y es probable que sean menos afectados por las perturbaciones en su área de distribución que los especialistas, que ocupan un nicho ecológico estrecho. Es probable que un especialista con un nivel bajo de adaptabilidad ecológica sea afectado más negativamente por la cosecha para el comercio que un generalista (aunque esto no es así en todos los casos). Por ejemplo, una población de depredadores en la cúspide de una cadena trófica, es probable que sea más sensible a la cosecha que una cierta población de herbívoros, que ocupan un nivel inferior en la cadena trófica.

2.3 Eficacia de la dispersión
Las especies que tienen mecanismos que aseguran una amplia dispersión de los individuos durante alguna parte de su historia de vida pueden ser menos susceptibles a los efectos de la cosecha que especies similares (dependiendo de la historia de vida de la especie). Tales especies pueden recolonizar más fácilmente áreas en las que han sido eliminadas localmente. Por ejemplo, varios organismos marinos dependen de la dispersión de un gran y ampliamente distribuido número de larvas de plancton, y ello hace que puedan ser capaces de recolonizar hábitats en los que los adultos más sedentarios han sido sobre-explotados, Vg. las almejas gigantes.

2.4 Interacción con los humanos
La tolerancia de una especie a la actividad humana puede indicar su probable sensibilidad a los efectos de la cosecha. Es probable que las especies mas tolerantes a la intervención humana también sean las menos afectadas por la cosecha. Las plagas, que la gente tiene dificultad en erradicar, y las especies comensales que se benefician del incremento de los ambientes modificados por el hombre, como la tierra agrícola, es probable que sean las menos sensibles a la cosecha. Por ejemplo los hábitats modificados de las plantaciones de la palma aceitera en Indonesia, toleran poblaciones mucho mas altas de roedores presa y, por consiguiente, de pitones malayas que una área equivalente de hábitat natural (aunque otras especies encontradas en hábitats no disturbados están ausentes de las plantaciones de la palma aceitera).

Características biológicas: Plantas solamente

2.1 Formas de vida
Las formas de vida de una especie de planta proveen una cierta indicación acerca de su probable sensibilidad a la cosecha. Cuando mayor sea la longevidad de una planta perenne, mayor es el impacto sobre la población total que puede resultar de cosechar esa planta. Se han incluido los tipos básicos de formas de vida.

2.2. Potencial de regeneración
La regeneración potencial de una planta define la capacidad de reproducción de la especie. Se han incluido cuatro tipos básicos y simples del potencial de regeneración. Al momento de completar esta sección se puede tildar más un tipo. Por ejemplo, en el caso de *Galanthus elwesii*, una especie de campanilla blanca sujeta a colecta controlada en Turquía, se podrían tildar Vegetativa rápida y Lenta o irregular a partir de semillas.

2.3 Eficacia de dispersión
La eficacia de la dispersión de una especie puede permitirle a ésta superar los efectos de la sobreexplotación. Por consiguiente, especies que tienen mecanismos que aseguran una amplia dispersión de individuos durante alguna parte de su historia de vida pueden ser menos susceptibles a los efectos de la cosecha ya que pueden ser capaces de colonizar áreas de las que han sido localmente eliminadas. Por ejemplo, muchas plantas dependen de la dispersión de un gran y ampliamente distribuido número de semillas o esporas, y poder así recolonizar los hábitats en los que los adultos han sido sobreexplotados.

2.4. Hábitat
Las plantas se encuentran en una amplia gama de hábitats y no todos ellos pueden ser incluidos en esta tabla. Pero se han incluido cinco tipos básicos. Los ejemplos van desde hábitats que exigen un tiempo corto para restablecerse hasta bosques "clímax" potenciales u

otros tipos de “clímax” (Vg. sabana) donde la recuperación es a largo plazo o a menudo imposible (Vg. el “arbusto espinoso” de Madagascar). Este aspecto particular necesitará de una evaluación más extensa.

Condición nacional

2.5 Distribución nacional
El tipo de distribución de una especie proporciona ciertos indicios acerca de su sensibilidad a la cosecha. Es probable que las especies ampliamente extendidas con una distribución continua a nivel nacional o regional sean menos sensibles a la cosecha u otros factores de amenaza que aquellas especies con una distribución extendida pero fragmentada. La fragmentación de la población puede producir subpoblaciones, adaptadas a un hábitat especializado o restringido, pero de tamaño demasiado pequeño para ser viable. Las especies endémicas localizadas, que están adaptadas a hábitats específicos y naturalmente fragmentados, como cadenas montañosas, probablemente estén expuestas a riesgo por cambios de hábitat y por los efectos de la cosecha. Las especies que se tienen un carácter localizado a nivel nacional, es decir, que sólo se encuentran en unos pocos lugares a nivel nacional, estarían particularmente expuestas a riesgo por una cosecha no manejada.

2.6 Abundancia nacional
Intuitivamente, es probable que especies que son generalmente muy abundantes y se encuentran en densidades altas sean menos sensibles a la cosecha que especies menos comunes que se encuentran en densidades naturalmente bajas. Sin embargo, algunas especies que se encuentran a densidades altas son propensas a mayores fluctuaciones en el tamaño de la población, ya sea de manera periódica o por eventos azarosos, y el impacto de la cosecha en un año climáticamente malo (para la especie) puede producir una gran reducción de la población de la cual la especie no puede recuperarse rápidamente, (caso del Antílope de Saiga). Para especies que ya son poco comunes o raras, el margen de error asociado con la cosecha es esperable que sea bajo. Por ejemplo, los depredadores generalmente son menos numerosos que las especies presa, o los árboles de caoba generalmente son menos numerosos que las margaritas.

2.7 Tendencias poblacionales nacionales
Las tendencias en la condición de las poblaciones nacionales proporciona ciertos indicios sobre la probable susceptibilidad de una especie a la cosecha: es probable que las especies con una población que se está incrementando sean menos sensibles a la cosecha que especies cuya población está disminuyendo. Idealmente, las tendencias en la condición de las poblaciones nacionales deben medirse a lo largo de un período de tiempo independiente del régimen de cosecha, y deben reconocer el fenómeno de “una línea de base cambiante” en el que cada administrador toma como línea de base el nivel poblacional que encontró por primera vez. Este fenómeno es muy importante para una especie o población que ha experimentado una historia de cosecha y uso comercial. La modelación matemática indica que es necesario, como mínimo, un período de tiempo independiente de tres generaciones. Sin embargo, no se conoce con precisión el tiempo generacional para muchas de las especies en el comercio y, en estos casos, el tiempo generacional debe predecirse en base a la información biológica conocida de especies estrechamente emparentadas. En todo caso, el período de tiempo sobre el que se evalúa la tendencia de la población debe indicarse en la casilla de la derecha de 2.7. Si están disponibles los datos de los relevamientos de población reales, para evaluar tendencias lo deseable sería usar los resultados de un mínimo de tres censos. A medida que las actividades de vigilancia se perfeccionan, también se debería evaluar la edad y estructura de sexos de la población. A falta de todo esto, también se pueden utilizar las tendencias de ciertas medidas o índices de abundancia relativa. En ausencia de tales datos de campo, se pueden utilizar índices de pérdida de hábitat para inferir si existe la posibilidad que las poblaciones estén declinando.

2.8 Calidad de la información
La calidad de los datos utilizados para describir las tendencias de la población es una consideración importante que determina la solidez de las recomendaciones de un dictamen de no-perjudicial. Por ejemplo, si todos los datos presentados son recientes y cuantitativos, entonces hará una alta confianza en los resultados de la evaluación. Por el contrario, si la mayoría de los datos son anecdóticos, la posibilidad de tomar elaborar un dictamen de no- perjudicial será más pequeño. Por consiguiente, se pone más énfasis en el buen conocimiento cualitativo local que en datos cuantitativos desactualizados.

2.9 Principales amenazas
Una evaluación de la severidad del impacto de la principal amenaza, proporciona una base para ponderar el impacto relativo de la cosecha. La principal amenaza para una especie a nivel nacional debe indicarse en la casilla de la izquierda y la gravedad de la amenaza registrada en la casilla correspondiente de la derecha. Por ejemplo, si la pérdida del hábitat es la mayor amenaza y su impacto en la especie es grave e irreversible, entonces puede ser difícil justificar una cosecha, cualquiera sea su nivel, en una área no afectada por la destrucción del hábitat. Por el contrario, si los efectos de pérdida del hábitat son reversibles, una cosecha bien reglamentada podría posiblemente proporcionar incentivos para revertir el proceso de pérdida del hábitat (también ver 2.13). Es esencial para cualquier

elaboración de un dictamen de no-perjudicial que la Autoridad Científica evalúe el impacto del comercio respecto a otras amenazas a la especie.

Gestión de la cosecha

2.10 Extracción o comercio ilegal

La extracción total a la que una población está sujeta a nivel nacional debe ser considerada al evaluar los impactos de una cosecha. Por consiguiente, es necesario intentar evaluar los niveles de las extracciones, tanto de las no manejadas como de las ilegales, aunque es particularmente difícil de obtener información confiable (también ver las Tablas 1P y 1A). No obstante, frecuentemente los administradores pueden hacer una evaluación intuitiva de la importancia de dicha extracción respecto del nivel de la extracción legal reglamentada. La buena información local y la información de los guardabosques y del personal de campo de la autoridad de aplicación es a menudo sumamente útil para evaluar el nivel de la extracción ilegal.

2.11 Historia de la gestión

La historia de la gestión de una cosecha proporciona un buen punto de partida para evaluar la posibilidad que la cosecha sea sostenible. Es probable que una cosecha con una larga historia de gestión eficaz, particularmente de un manejo adaptativo bien reglamentado, sea más sostenible que una cosecha no manejada. Una cosecha manejada, con un manejo adaptativo basado en una vigilancia confiable sobre cómo la cosecha afecta a la población es la situación óptima. Una cosecha manejada es aquella en la que hay algún grado de vigilancia y retroalimentación, independientemente que se lleve a cabo como un proceso formal o informal. Cualquier régimen de cosecha necesariamente contiene un elemento de prueba y error, y requiere retroalimentación y vigilancia para máxima seguridad. Una cosecha que ya está funcionando, aunque esté informalmente manejada sin tener una estructura nacionalmente aprobada, puede sin embargo tener una buena oportunidad de ser sostenible, particularmente si está asociada con una fuerte condición de propiedad local del recurso. Por el contrario, la necesaria retroalimentación no ocurrirá en un programa de cosecha recientemente establecido, y la probabilidad de su sostenibilidad puede quedar en discusión. Una cosecha no manejada es aquella en la que no hay vigilancia y la cosecha se obtiene de una manera completamente oportunista, otorgando menos confianza en su sostenibilidad.

2.12 El plan de gestión o su equivalente

Para instaurar una política que establezca el proceso de uso sostenible es necesario desarrollar y adoptar un plan de nacional gestión o su equivalente. Adicionalmente, una cosecha manejada según un plan de gestión nacionalmente aceptado probablemente haya pasado por un proceso de revisión e inspección minuciosa antes de su adopción oficial, y por lo tanto debería tener una mayor dosis de confianza. Es deseable que los planes de gestión nacionales se desarrollen contando con la participación local, ya que es probable que la mayoría de las especies cosechadas estén irregularmente y no uniformemente distribuidas a lo largo de un Estado dentro del área de distribución, de manera que cualquier extracción debería manejarse a nivel local para evitar exterminios locales. En los Estados dentro del área de distribución que tienen un fuerte sistema federal o provincial, sólidos planes de gestión a nivel estadual o provincial serían el equivalente a sólidos planes nacionales de gestión. Por consiguiente, la situación óptima de manejo de la cosecha incluirá planes de gestión aprobados y coordinados entre los niveles locales y nacionales. En casos donde no hay ningún plan aprobado y se realiza un manejo informal o no planificado, habrá poca confianza en la probabilidad que la cosecha sea sostenible o que la exportación sea no-perjudicial.

2.13. El objetivo del régimen de cosecha en la planificación de la gestión

El objetivo del régimen de cosecha para una especie tiene una considerable influencia sobre la probabilidad que una cosecha sea sostenible. Si el objetivo principal es generar beneficios de conservación, particularmente a nivel del hábitat o del ecosistema, la probabilidad que la cosecha no sea perjudicial para la población silvestre debería ser más alta. Por ejemplo, la cría en granja de mariposas en Irian Jaya, Indonesia, fue estimulada como un incentivo económico para mantener la vegetación natural que mantiene las poblaciones de la mariposa. Cuando el objetivo es el control de la población objeto del manejo, el razonamiento es que, en términos de conservación, una situación manejada es mejor que una situación no manejada. Por ejemplo, la gente probablemente podría ser más tolerante con los cocodrilos y sus hábitats si hay alguna forma palpable de manejo y de la protección de la vida humana y de los ingresos económicos. Donde el objetivo es aumentar al máximo el rendimiento económico, la sostenibilidad del programa tendrá una probabilidad más baja, dependiendo de la estrategia a largo plazo. Mientras que el máximo rendimiento económico a corto plazo conduce al agotamiento completo del recurso, una estrategia de aumentar al máximo el rendimiento económico a largo plazo debería producir un programa más. Sin embargo esto puede ser sólo cierto en teoría, y en muchos casos la cosecha es oportunista y no selectiva, confiriendo una escasa confianza en la sostenibilidad de la cosecha. A menudo el resultado es una extracción tipo “minera” del recurso con una casi extinción comercial, seguida por la explotación de otras especies.

2.14 Cupos
Se han usado cupos como un medio de reglamentar y manejar cosechas durante bastante tiempo, y los cupos de exportación se han hecho cada vez mas comunes en CITES a medida que se han planteado interrogantes sobre ciertos regímenes de cosecha particulares. Al igual que en la adopción de planes de gestión (2.12), la situación óptima es aquella en la que: a) un cupo nacional está basado en cupos locales que resguardan contra la sobreexplotación local, y b) el cupo está basado en el conocimiento de la biología, la historia de vida, la demografía, y la capacidad reproductora de la especie. Los cupos se pueden establecer en base a un cierto número de individuos extraído del medio silvestre, o en base a edades o tamaños específicos de la población. Un programa de cosecha basado en la biología y bien manejado, podría involucrar sólo la cosecha de plantas o animales inmaduros, dependiendo de las historias de vida de las especies en cuestión. Para muchas especies que se comercializan no se dispone fácilmente de la información biológica detallada, así podría adoptarse un sistema "cauteloso" de cupos locales y nacionales coordinados. Cupos nacionales "cautelosos" son aquellos en los que la extracción es muy pequeña en relación al posible tamaño poblacional nacional. Finalmente, se esperaría que cupos locales experimentales pero basados en un conocimiento biológico de la especie muestren mejores posibilidades de sostenibilidad que una situación determinada por el mercado, en la que no existen cupos o los cupos son fijados arbitrariamente. Una situación "determinada por el mercado" describe la situación de algunos países en los que los comerciantes pueden exigir un cierto cupo, o los cupos se asignan basados en la expectativa de una cierta demanda comercial. Un cupo arbitrario es aquel que no está basado en un claro conocimiento de las especies.

Control de la cosecha

2.15 Cosechas en Áreas Protegidas (AP)
La propiedad y la tenencia del recurso pueden jugar un papel importante en determinar la sostenibilidad de las cosechas. Si la tenencia y la propiedad son sólidas, el incentivo para un buen manejo y reglamentación probablemente sea mayor. Las áreas protegidas tienen una variedad de designaciones y propósitos, dependiendo de los sistemas nacionales legales y políticos vigentes. Se utiliza aquí el término Área Protegida Estatal abarcando una variedad de tipos de AP y zonas de uso múltiple, en los que se permite el uso sostenible y la cosecha, incluyendo reservas boscosas, de caza y marinas, y los también llamados "Parques Nacionales" de China y del Reino Unido. Los Estados en el área de distribución pueden tener varios tipos de AP los que ofrecen diferentes grados de protección a la cosecha. En general, puede tenerse una mayor confianza en la probable de la sostenibilidad de la cosecha si la mayor parte de la misma tiene lugar en las AP o en otras áreas con características sólidas de tenencia (véase también 2.16).

2.16 Cosechas en áreas con sólida tenencia o propiedad del recurso
Un fuerte control local sobre uso de los recursos puede ir desde el manejo por parte de la comunidad local o los sistemas de manejo en tierras privadas vigentes en África meridional hasta un fuerte control local como el practicado por las comunidades de los alrededores de las plantaciones de palma aceitera en Indonesia, donde se cosechan las pitones malayas. En todos estos casos una comunidad local o un hacendado privado es el responsable del manejo y de la reglamentación de la cosecha. En tales sistemas, es de creencia general que asegurar un uso sostenible redunda en beneficio de los intereses a largo plazo de aquellos que tienen la propiedad sobre el recurso. Por consiguiente, habrá mas confianza en la probable sostenibilidad de la cosecha si la mayor parte de la extracción se produce en áreas con sólidas condiciones de propiedad del recurso (véase también 2.15).

2.17 Cosechas en áreas de libre acceso
Cuando no hay ni estado fuerte, ni comunidad, ni tenencia privada, prevalece el sistema de acceso abierto. En tales casos no hay ningún control local sobre el recurso y existe el peligro que no habrá ningún incentivo para regular la cosecha, resultando en un "disponible para todos". No se puede confiar mucho en la sostenibilidad de la cosecha si la mayoría de la misma se produce en áreas de acceso abierto real o *de facto*.

2.18 Confianza en la gestión de la cosecha
Este problema requiere una apreciación sobre la efectividad de los controles de la cosecha. Una variedad de factores tales como los bajos presupuestos, la falta de personal especializado, otras carencias de capacidad, o una falta de voluntad política, pueden impedir que los controles de la cosecha se puedan llevar a cabo adecuadamente. Una respuesta que indica una falta de confianza en el manejo de la cosecha no debe ser tomada por quien responde como una acusación a su gobierno, sino mas bien como un reconocimiento de deficiencias existentes.

Vigilancia de la cosecha

2.19 Métodos usados para vigilar la cosecha
La vigilancia de la cosecha es vital y esencial para asegurar la sostenibilidad de cualquier extracción. La estimación directa de la población cosechada u otras medidas de abundancia o densidad absoluta se consideran en general como los mejores métodos, pero pueden ser muy caros y llevar mucho tiempo para realizarlos, o ello puede ser imposible de efectuar para las

especies involucradas por razones biológicas. En ausencia de mediciones poblacionales directas, se pueden usar índices cuantitativos de abundancia y tendencia de la población (medidas de abundancia o densidad relativa) de la población cosechada. Alternativamente pueden usarse índices cualitativos, que, si están basados en un buen conocimiento local, pueden constituirse en buenos indicadores de los efectos de la cosecha. De acuerdo a CITES se requiere que todas las Autoridades Científicas vigilen las exportaciones, para que éstas puedan detenerse o reducirse si se cree que los niveles de las mismas pueden ser perjudiciales para la supervivencia de la especie, o si la especie está siendo utilizada a un nivel inconsistente con su papel en su ecosistema. Los datos de los Informes Anuales de CITES pueden jugar un papel muy importante de vigilancia, y un mejor uso de estos datos, junto con una mejor comunicación entre las Autoridades Científicas de los diferentes países, permitiría a las Autoridades Científicas desarrollar cuadros de situación mas precisos de los efectos del comercio internacional en las tendencias poblacionales. Este pregunta podría recibir múltiples tildes de respuesta, pero debe registrarse sólo el principal y más efectivo sistema de vigilancia.

2.20 Confianza en la vigilancia de la cosecha
Esta pregunta requiere una apreciación sobre la efectividad del sistema de vigilancia existente. Por ejemplo una Autoridad Científica puede saber que se llevan a cabo estimaciones directas de la población, pero que restricciones presupuestarias, de personal y otro tipo de restricciones de recursos hacen que dichas estimaciones de la población sólo sean llevadas a cabo dejando pasar largos períodos de tiempo, de manera que son insuficientes para vigilar los efectos de un programa de cosecha anual. Una respuesta que indica una falta de confianza en la vigilancia de la cosecha no debe ser tomada por quien responde como una acusación a su gobierno, sino mas bien como un reconocimiento de deficiencias existentes.

Los incentivos y beneficios de la cosecha

2.21 El uso comparado con otras amenazas
La mayor amenaza a las especies se identificó en 2.9, y esta pregunta apunta a determinar cómo el uso afecta a la especie en relación a la mayor amenaza que afecta la especie. En algunos casos, el uso de la especie puede aportar beneficios de conservación que mitigan los efectos de alguna otra amenaza mayor como la destrucción del hábitat. En otros casos, el uso no perjudica a la especie y no tiene ningún efecto de mitigación sobre otras amenazas mayores, así que cualquier uso tiene un efecto neutro. En los demás casos, la cosecha puede volverse progresivamente perjudicial en conjunción con las amenazas mayores. Pero en aún otros casos, el uso puede exacerbar otras amenazas (como enfermedades, especies invasoras, o deterioro del hábitat), por lo que se hace necesario la elaboración de dictámenes de no-perjudicial más cautelosos o preventivos. El dictamen de no- perjudicial nunca debe ser tomado fuera de contexto de otros impactos y de beneficios de conservación que influyen sobre las especies.

2.22 Incentivos para la conservación de la especie. En algunos aunque raros casos la especie recibe un beneficio directo del programa de cosecha. En muchos casos, el beneficio puede no ser financiero, pero en tales casos, el programa de cosecha puede reducir significativamente la extracción ilegal.

2.23 Incentivos para la conservación del hábitat
Este pregunta considera las implicaciones más amplias de la cosecha como apoyo para la conservación del hábitat. Cualquier beneficio potencial para la conservación del hábitat debe conocerse y demostrarse. Si se propone un beneficio pero no puede mostrarse, esta pregunta debería contestarse como “bajo.” Si no se propone ningún beneficio de conservación, a esta pregunta se debe contestar con “ninguno.”

Protección del efecto de la cosecha

2.24 Proporción de la protección estricta del efecto de la cosecha
La protección estricta, tanto legalmente como en la práctica, de partes representativas del área de distribución de la especie, o de una porción de la población lo suficientemente grande como para asegurar su supervivencia, debería impedir que la cosecha amenace la población completa nacional de una especie. Esta pregunta apunta a evaluar el porcentaje que es protegido de manera estricta (donde protección estricta se define como una prohibición de la extracción del medio silvestre). Para muchas especies, la existencia de áreas protegidas estrictas donde la cosecha no está permitida, con controles adecuados de la autoridad de aplicación, es una importante garantía que las áreas centrales pueden proporcionar el reclutamiento a una población sujeta a cosecha.

2.25 Efectividad de las medidas de protección estrictas
Esta pregunta requiere una evaluación de la efectividad de las medidas de protección. Una variedad de factores, incluyendo los presupuestarios y la propiedad de los recursos de tales áreas protegidas, pueden tener influencia sobre el grado de eficacia de las mismas. Una respuesta que indica una falta de efectividad de las medidas de protección estricta no debe ser tomada por quien responde como una acusación a su gobierno, sino mas bien como un reconocimiento de problemas y desafíos presentes.

2.26 Reglamentación del esfuerzo de cosecha
Esta pregunta requiere una evaluación de la efectividad de las restricciones sobre la cosecha. Estas restricciones generalmente incluyen estaciones de veda, o porciones de la población que no pueden ser objeto de cosecha (es base al tamaño, por ejemplo). Gran parte del éxito de estas medidas dependerá de la voluntad política para su puesta en vigor por la autoridad de aplicación y del grado de respeto de las leyes de los que cosechan.

Tabla 2. Factores que Afectan la Gestión del Régimen de Cosecha

2.1 Historia de vida: ¿Cómo es la historia de vida de la especie?	De alta tasa reproductiva y de larga vida	
	De alta tasa reproductiva y de vida corta	
	De baja tasa reproductiva y de larga vida	
	De baja tasa reproductiva y de vida corta	
	Incierto	
2.2 Adaptabilidad ecológica: ¿hasta qué punto la especie es adaptable (hábitat, dieta, tolerancia ambiental etc)?	En extremo generalista	
	Generalista	
	Especialista	
	En extremo especialista	
	Incierto	
2.3 Eficacia de la dispersión: ¿Cuán eficaz es el mecanismo de dispersión en las fases críticas de la historia de vida de la especie?	Muy buena	
	Buena	
	Mediana	
	Pobre	
	Incierta	
2.4 Interacción con el hombre: ¿Es la especie tolerante a otras actividades humanas aparte de la cosecha?	No hay ninguna interacción	
	Plaga /Comensal	
	Tolerante	
	Sensible	
	Incierta	
Características biológicas: Sólo plantas		
2.1 Forma de vida: ¿Cuál es la forma de vida de la especie?	Anual	
	Bienal	
	Perenne (hierbas)	
	Arbusto y árboles pequeños (máx. 12m)	
	Árboles	
2.2 Regeneración potencial: ¿Cuál es el potencial regenerador de la especie en cuestión?	Rápido vegetativamente	
	Lento vegetativamente	
	Rápido de semillas	
	Lento o irregular de semillas o esporas	
	Incierto	

Tabla 2. Factores que Afectan la Gestión del Régimen de Cosecha

2.3 Eficacia de dispersión: ¿Cómo eficiente es el mecanismo de dispersión de la especie?	Muy bueno	
	Bueno	
	Mediano	
	Pobre	
	Incierto	
2.4 Hábitat: ¿Cuál es la preferencia de hábitats de la especie?	Perturbado abierto	
	No perturbado abierto	
	Pionero	
	Bosque perturbado	
	Clímax	
Condición nacional: Animales y plantas		
2.5 Distribución nacional: ¿Cómo se distribuye la especie a nivel nacional?	Extendida, contigua en el país	
	Extendida, fragmentada en el país	
	Restringida y fragmentada	
	Localizada	
	Incierta	
2.6 Abundancia nacional: ¿Cuál es la abundancia a nivel nacional?	Muy abundante	
	Común	
	Poco común	
	Rara	
	Incierta	
2.7. Tendencia de la población nacional: ¿Cuál es la tendencia reciente de la población a nivel nacional?	En aumento	
	Estable	
	Reducida, pero estable	
	Reducida pero aún disminuyendo	
	Incierta	
2.8 Calidad de información: ¿Qué tipo de información está disponible para describir la abundancia y la tendencia de la población a nivel nacional?	Datos cuantitativos, recientes	
	Buen conocimiento local	
	Datos cuantitativos, desactualizados	
	Información anecdótica	
	Ninguna	
2.9 Principales amenazas: ¿Cuál es la principal amenaza que está enfrentando la especie (subraye lo que corresponda: sobreexplotación / pérdida y alteración del hábitat / especie invasoras/ otra). ¿y cuán grave es?	Ninguna	
	Limitada/Reversible	
	Sustancial	
	Severa/Irreversible	
	Incierta	

Tabla 2. Factores que Afectan la Gestión del Régimen de Cosecha

Gestión de la cosecha: Animales y plantas		
2.10 Extracción ilegal o comercio: ¿Cuán importante es el problema nacional de extracción ilegal o no manejado, o el comercio?	Ninguno	
	Pequeño	
	Mediano	
	Grande	
	Incierto	
2.11 Historia de la gestión: ¿Cuál es la historia de la cosecha?	Cosecha manejada: en curso bajo un marco adaptativo	
	Cosecha manejada: en curso pero informal	
	Cosecha manejada: nueva	
	Cosecha no manejada: en curso o nueva	
	Incierta	
2.12 Plan de manejo o equivalente: ¿Hay un plan de manejo relacionado a la cosecha de la especie?	Planes de manejo aprobados y coordinados a nivel local y nacional	
	Planes de manejo aprobados nacional/estatal/provincial	
	Plan de manejo local aprobado	
	No hay ningún plan aprobado: manejo informal no planificado	
	Incierto	
2.13 Meta del régimen de cosecha en la planificación del manejo: ¿Qué es lo que la cosecha aspira lograr?	Generar beneficios de conservación	
	Manejo/control de la población	
	Maximizar el rendimiento económico	
	Oportunista, cosecha no selectiva, o ninguna	
	Incierta	
2.14 Cupos: ¿Está la cosecha basada en un sistema de cupos?	Cupo nacional en curso: basado en cupos locales con fundamento biológico	
	Cupos en curso: “cautelosos” a nivel nacional o local	
	Cupos experimentales: recientes y basados en cupos locales con fundamento biológico	
	Cupo(s) determinado(s) por el mercado, cupo(s) arbitrario(s), o sin cupos	
	Incierto	
Control de la cosecha: Animales y plantas		
2.15 Cosechas en Áreas Protegidas: ¿Qué porcentaje de la cosecha legal nacional proviene de Áreas Protegidas controladas por el Estado?	Alto	
	Mediano	
	Bajo	
	Ninguno	
	Incierto	
2.16 Cosecha en áreas con tenencia o propiedad firme del recurso: ¿Qué porcentaje de la cosecha legal nacional proviene de fuera de las Áreas Protegidas, en áreas con firme control local sobre el uso del recurso?	Alto	
	Mediano	
	Bajo	
	Ninguno	
	Incierto	

Tabla 2. Factores que Afectan la Gestión del Régimen de Cosecha

2.17 Cosecha en áreas con acceso abierto: ¿Qué porcentaje de la cosecha legal nacional proviene de áreas dónde no hay ningún control local firme, resultando en un acceso abierto real o de facto?	Ninguno	
	Bajo	
	Mediano	
	Alto	
	Incierto	
2.18 Confianza en la gestión de la cosecha: los factores presupuestarios y de otro tipo ¿permiten la aplicación eficaz de plan(es) de gestión y controles de la cosecha?	Confianza alta	
	Confianza mediana	
	Confianza baja	
	Ninguna confianza	
	Incierto	
Vigilancia de la cosecha: Animales y plantas		
2.19 Métodos usados para vigilar la cosecha: ¿cuál es el principal método utilizado para vigilar los efectos de la cosecha?	Estimaciones directas de la población	
	Índices cuantitativos	
	Índices cualitativos	
	Vigilancia nacional de las exportaciones	
	Ninguna vigilancia o incierta	
2.20 Confianza en la vigilancia de la cosecha: los factores presupuestarios y de otro tipo ¿permiten vigilar eficazmente la cosecha ?	Confianza alta	
	Confianza mediana	
	Confianza baja	
	Ninguna confianza	
	Incierto	
Los incentivos y los beneficios por la cosecha: Animales y plantas		
2.21 El uso comparado con otras amenazas: ¿cuál es el efecto de la cosecha cuando se toma junto con la mayor amenaza que se ha identificado para esta especie?	Beneficioso	
	Neutral	
	Dañino	
	Altamente negativo	
	Incierto	
2.22 Incentivos para la conservación de la especie: Al nivel nacional ¿cuánto beneficio para la conservación a esta especie resulta de la cosecha?	Alto	
	Mediano	
	Bajo	
	Ninguno	
	Incierto	
2.23 Incentivos para la conservación del hábitat: Al nivel nacional ¿cuánto beneficio para la conservación del hábitat resulta de la cosecha?	Alto	
	Mediano	
	Bajo	
	Ninguno	
	Incierto	

Tabla 2. Factores que Afectan la Gestión del Régimen de Cosecha

Protección por efectos de la cosecha: Animales y plantas		
2.24 Proporción estrictamente protegida: ¿qué porcentaje del área de distribución natural de la especie o de la población se excluye legalmente de la cosecha?	>15%	
	5–15%	
	<5%	
	Ninguna	
	Incierta	
2.25 Efectividad de las medidas de protección estrictas: ¿pueden los factores presupuestarios y de otro tipo dar confianza en la efectividad de las medidas tomadas para permitir la protección estricta?	Confianza alta	
	Confianza mediana	
	Confianza baja	
	Ninguna confianza	
	Incierto	
2.26 Reglamentación del esfuerzo de cosecha: ¿cuán efectiva es cualquier restricción sobre la cosecha (como la edad o el tamaño, la estación o el equipo) para evitar la sobreexplotación?	Muy efectiva	
	Efectiva	
	Inefectiva	
	Ninguna	
	Incierta	

2.3 Elaboración de un dictamen no-perjudicial – Un sistema visual de puntajes para la toma de decisiones

Luego que toda la información pertinente ha sido plasmada en las Tablas 1 y 2 el personal de Autoridad Científica debería estar en una posición muy superior para elaborar un dictamen de no-perjudicial en base a su interpretación del material reunido. Adicionalmente, una representación visual de los resultados recogidos puede producirse usando gráficos radiales.

Un ejemplo del tipo de gráfico que debe dibujarse en base a una planilla electrónica EXCEL se presenta en la Figura 1a titulada: *Ejemplo del Sistema de Puntaje de Apoyo a las Autoridades Científicas para la Elaboración de Dictámenes de No-perjudicial*. *Gráfica de las respuestas a las preguntas de la Tabla 2*. Un título corto para cada pregunta se ha presentado en la tercera columna de la planilla (desde el margen izquierdo) y la respuesta, en una escala de uno a cinco, está incluida en la cuarta columna (desde la izquierda), titulada: *Respuestas – 1 a 5*.

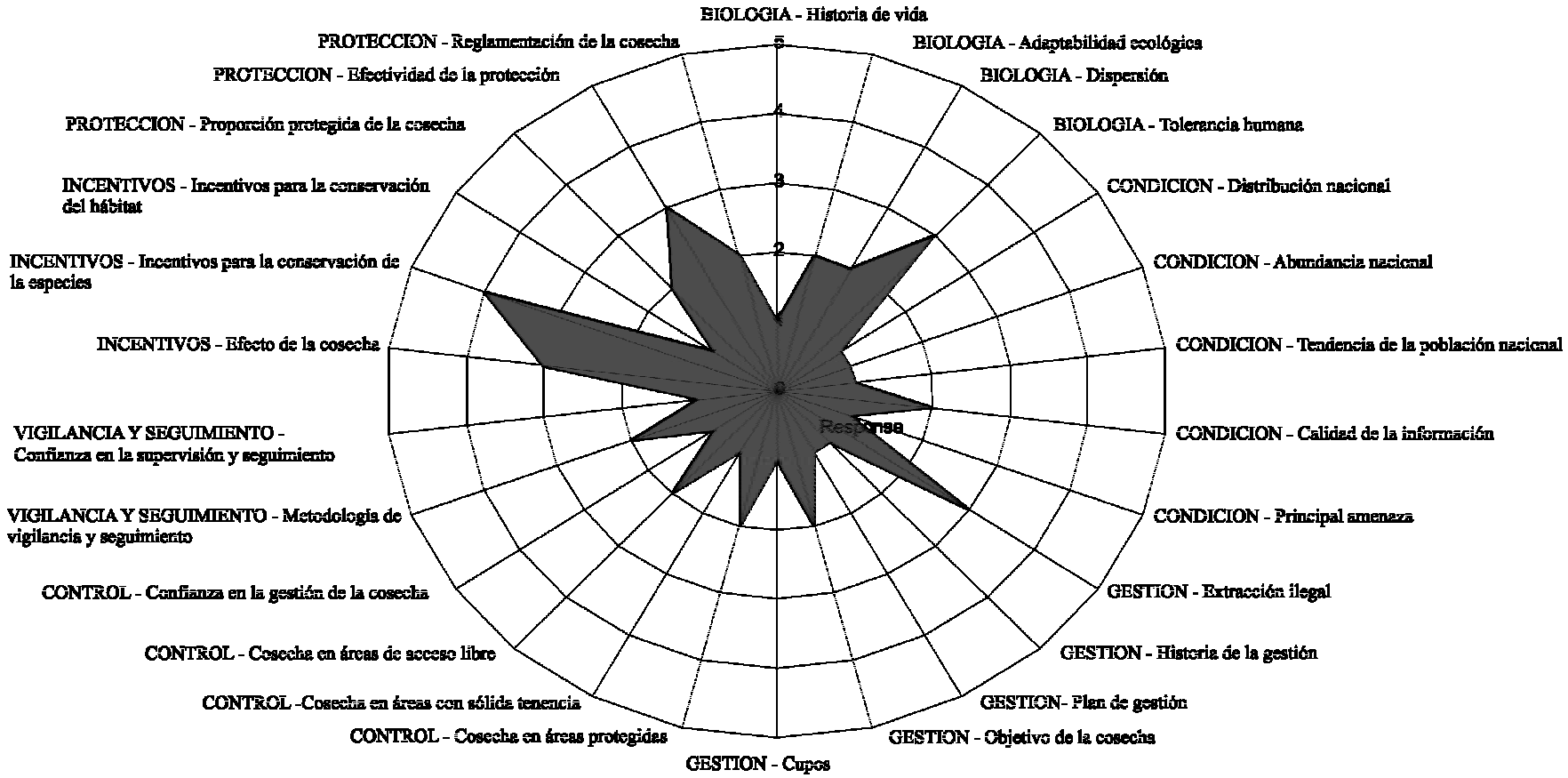
Se ha desarrollado una plantilla electrónica para producir un gráfico automáticamente, una vez que los valores correctos han sido ingresados en la planilla electrónica. Esta plantilla está disponible en la Secretaría de CITES.

El gráfico radial produce una área central coloreada. Si es probable que la cosecha sea no perjudicial, la mayoría de las respuestas se ubicarán en las áreas de cautela de Tabla 2, y quedarán representadas cerca del centro del círculo. Puntos mas alejados o periféricos pueden indicar una escasa credibilidad en la probabilidad que la cosecha sea sostenible, y deben estimular a la Autoridad Científica a analizar con más detalle las respuestas. Puede ser que sea necesaria una investigación más profunda o que la información existente no sea suficiente para basar en ella un dictamen de no-perjudicial. Por consiguiente, esta herramienta no sólo ayudará en el proceso de elaboración de un dictamen de no-perjudicial, sino que también permitirá identificar y rectificar los posibles problemas lo más pronto posible.

Figura 1a. Ejemplo de una evaluación de información para ayudar a las autoridades científicas a elaborar dictámenes de no-perjudicial – Presentación gráfica de respuestas a las preguntas en la Tabla 2.

Pregunta Número	Categoría de la Pregunta	Pregunta	Respuestas – 1 a 5
2.1	Biología	BIOLOGIA – Historia de vida	1
2.2		BIOLOGIA – Amplitud del nicho	2
2.3		BIOLOGIA – Dispersión	2
2.4		BIOLOGIA – Tolerancia al hombre	3
2.5	Condición	CONDICION – Distribución nacional	1
2.6		CONDICION – Abundancia nacional	1
2.7		CONDICION – Tendencia poblacional nacional	1
2.8		CONDICION – Calidad de información	2
2.9		CONDICION – Principal amenaza	1
2.10	Gestión	GESTIÓN – Extracciones ilegales	3
2.11		GESTIÓN – Historia de la gestión	1
2.12		GESTIÓN – Plan de gestión	1
2.13		GESTIÓN – Propósito de la cosecha	2
2.14		GESTIÓN – Cupos	1
2.15	Control	CONTROL – Cosecha en AP	2
2.16		CONTROL – Cosecha bajo tenencia firme	1
2.17		CONTROL – Cosecha de acceso abierto	2
2.18		CONTROL – Confianza en el manejo de la cosecha	1
2.19	Vigilancia	VIGILANCIA – Método de vigilancia	2
2.20		VIGILANCIA – Confianza en la vigilancia	1
2.21	Incentivos	INCENTIVOS – Efectos de la cosecha	3
2.22		INCENTIVOS – Incentivo de conservación de la especie	4
2.23		INCENTIVOS – Incentivo de conservación del hábitat	1
2.24	Protección	PROTECCIÓN – Proporción protegida de la cosecha	2
2.25		PROTECCIÓN – Efectividad de la protección	3
2.26		PROTECCIÓN – Reglamentación de la cosecha	2

Figura 1b. Ejemplo de un sistema de puntajes para ayudar a las Autoridades Científicas a elaborar dictámenes de no-perjudicial para una dada especie de planta – Gráfica de las respuestas a las preguntas de la Tabla 2.



3. Conclusiones

Para determinar que una cosecha no es perjudicial para la supervivencia de una especie, la Autoridad Científica del Estado de exportación emprenderá idealmente una amplia revisión de todo el sistema de gestión de cosecha. Sin embargo, en muchos casos la información completa no está disponible y en otros, no está claro que es lo que constituye el sistema de manejo. Este listado de verificación apunta a llamar la atención a los aspectos más importantes de los sistemas de gestión de cosechas y a proveer los medios para compilar dicha información. El listado de verificación está diseñado para proporcionar un primer paso en un proceso que se espera que evolucione en respuesta a las recomendaciones de los que lo prueban en el terreno. Sobre todo, el listado de verificación debe ser atractivo a sus potenciales usuarios y debe ser realista en términos de la información necesaria para completar las tablas, y por consiguiente recurre a categorías de datos cualitativos. Con el tiempo, éstos pueden desarrollarse en categorías finales cuantitativas más útiles. Una de las principales fortalezas del sistema actual, es la capacidad para representar visualmente la importancia de los factores que afectan la probabilidad que una cosecha pudiera ser perjudicial o no. La representación visual permite hacer rápidas comparaciones entre especies, y quizás también entre años para identificar aquellos factores que a nivel nacional podrían modificarse para mejorar la probabilidad que el manejo del recurso resulte en extracciones sostenibles.

ANNEX II
Background Documents
Text of the Convention

Convention on International Trade in Endangered Species of Wild Fauna and Flora

Signed at Washington, D.C., on 3 March 1973

Amended at Bonn, on 22 June 1979

The Contracting States,

Recognizing that wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come;

Conscious of the ever-growing value of wild fauna and flora from aesthetic, scientific, cultural, recreational and economic points of view;

Recognizing that peoples and States are and should be the best protectors of their own wild fauna and flora;

Recognizing, in addition, that international co-operation is essential for the protection of certain species of wild fauna and flora against over-exploitation through international trade;

Convinced of the urgency of taking appropriate measures to this end;

Have agreed as follows:

Article I

Definitions

For the purpose of the present Convention, unless the context otherwise requires:

(a) "Species" means any species, subspecies, or geographically separate population thereof;

(b) "Specimen" means:

(i) any animal or plant, whether alive or dead;

(ii) in the case of an animal: for species included in Appendices I and II, any readily recognizable part or derivative thereof; and for species included in Appendix III, any readily recognizable part or derivative thereof specified in Appendix III in relation to the species; and

(iii) in the case of a plant: for species included in Appendix I, any readily recognizable part or derivative thereof; and for species included in Appendices II and III, any readily recognizable part or derivative thereof specified in Appendices II and III in relation to the species;

(c) "Trade" means export, re-export, import and introduction from the sea;

(d) "Re-export" means export of any specimen that has previously been imported;

(e) "Introduction from the sea" means transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State;

(f) "Scientific Authority" means a national scientific authority designated in accordance with Article IX;

(g) "Management Authority" means a national management authority designated in accordance with Article IX;

(h) "Party" means a State for which the present Convention has entered into force.

Article II

Fundamental Principles

1. Appendix I shall include all species threatened with extinction which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances.
2. Appendix II shall include:
   (a) all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival; and
   (b) other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control.
3. Appendix III shall include all species which any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other Parties in the control of trade.

4. The Parties shall not allow trade in specimens of species included in Appendices I, II and III except in accordance with the provisions of the present Convention.

Article III

Regulation of Trade in Specimens of Species Included in Appendix I

1. All trade in specimens of species included in Appendix I shall be in accordance with the provisions of this Article.
2. The export of any specimen of a species included in Appendix I shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:
   (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;
   (b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora;
   (c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment; and
   (d) a Management Authority of the State of export is satisfied that an import permit has been granted for the specimen.
3. The import of any specimen of a species included in Appendix I shall require the prior grant and presentation of an import permit and either an export permit or a re-export certificate. An import permit shall only be granted when the following conditions have been met:
   (a) a Scientific Authority of the State of import has advised that the import will be for purposes which are not detrimental to the survival of the species involved;
   (b) a Scientific Authority of the State of import is satisfied that the proposed recipient of a living specimen is suitably equipped to house and care for it; and
   (c) a Management Authority of the State of import is satisfied that the specimen is not to be used for primarily commercial purposes.
4. The re-export of any specimen of a species included in Appendix I shall require the prior grant and presentation of a re-export certificate. A re-export certificate shall only be granted when the following conditions have been met:
   (a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention;
   (b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment; and
   (c) a Management Authority of the State of re-export is satisfied that an import permit has been granted for any living specimen.
5. The introduction from the sea of any specimen of a species included in Appendix I shall require the prior grant of a certificate from a Management Authority of the State of introduction. A certificate shall only be granted when the following conditions have been met:
   (a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved;
   (b) a Management Authority of the State of introduction is satisfied that the proposed recipient of a living specimen is suitably equipped to house and care for it; and
   (c) a Management Authority of the State of introduction is satisfied that the specimen is not to be used for primarily commercial purposes.

Article IV

Regulation of Trade in Specimens of Species Included in Appendix II

1. All trade in specimens of species included in Appendix II shall be in accordance with the provisions of this Article.
2. The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:
   (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;
   (b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and

(c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

3. A Scientific Authority in each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.
4. The import of any specimen of a species included in Appendix II shall require the prior presentation of either an export permit or a re-export certificate.
5. The re-export of any specimen of a species included in Appendix II shall require the prior grant and presentation of a re-export certificate. A re-export certificate shall only be granted when the following conditions have been met:
   (a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention; and
   (b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.
6. The introduction from the sea of any specimen of a species included in Appendix II shall require the prior grant of a certificate from a Management Authority of the State of introduction. A certificate shall only be granted when the following conditions have been met:
   (a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved; and
   (b) a Management Authority of the State of introduction is satisfied that any living specimen will be so handled as to minimize the risk of injury, damage to health or cruel treatment.
7. Certificates referred to in paragraph 6 of this Article may be granted on the advice of a Scientific Authority, in consultation with other national scientific authorities or, when appropriate, international scientific authorities, in respect of periods not exceeding one year for total numbers of specimens to be introduced in such periods.

Article V

Regulation of Trade in Specimens of Species Included in Appendix III

1. All trade in specimens of species included in Appendix III shall be in accordance with the provisions of this Article.
2. The export of any specimen of a species included in Appendix III from any State which has included that species in Appendix III shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:
   (a) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and
   (b) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.
3. The import of any specimen of a species included in Appendix III shall require, except in circumstances to which paragraph 4 of this Article applies, the prior presentation of a certificate of origin and, where the import is from a State which has included that species in Appendix III, an export permit.
4. In the case of re-export, a certificate granted by the Management Authority of the State of re-export that the specimen was processed in that State or is being re-exported shall be accepted by the State of import as evidence that the provisions of the present Convention have been complied with in respect of the specimen concerned.

Article VI

Permits and Certificates

1. Permits and certificates granted under the provisions of Articles III, IV, and V shall be in accordance with the provisions of this Article.
2. An export permit shall contain the information specified in the model set forth in Appendix IV, and may only be used for export within a period of six months from the date on which it was granted.
3. Each permit or certificate shall contain the title of the present Convention, the name and any identifying stamp of the Management Authority granting it and a control number assigned by the Management Authority.

4. Any copies of a permit or certificate issued by a Management Authority shall be clearly marked as copies only and no such copy may be used in place of the original, except to the extent endorsed thereon.
5. A separate permit or certificate shall be required for each consignment of specimens.
6. A Management Authority of the State of import of any specimen shall cancel and retain the export permit or re-export certificate and any corresponding import permit presented in respect of the import of that specimen.
7. Where appropriate and feasible a Management Authority may affix a mark upon any specimen to assist in identifying the specimen. For these purposes "mark" means any indelible imprint, lead seal or other suitable means of identifying a specimen, designed in such a way as to render its imitation by unauthorized persons as difficult as possible.

Article VII

Exemptions and Other Special Provisions Relating to Trade

1. The provisions of Articles III, IV and V shall not apply to the transit or transhipment of specimens through or in the territory of a Party while the specimens remain in Customs control.
2. Where a Management Authority of the State of export or re-export is satisfied that a specimen was acquired before the provisions of the present Convention applied to that specimen, the provisions of Articles III, IV and V shall not apply to that specimen where the Management Authority issues a certificate to that effect.
3. The provisions of Articles III, IV and V shall not apply to specimens that are personal or household effects. This exemption shall not apply where:
   (a) in the case of specimens of a species included in Appendix I, they were acquired by the owner outside his State of usual residence, and are being imported into that State; or
   (b) in the case of specimens of species included in Appendix II:
      (i) they were acquired by the owner outside his State of usual residence and in a State where removal from the wild occurred;
      (ii) they are being imported into the owner's State of usual residence; and
      (iii) the State where removal from the wild occurred requires the prior grant of export permits before any export of such specimens; unless a Management Authority is satisfied that the specimens were acquired before the provisions of the present Convention applied to such specimens.
4. Specimens of an animal species included in Appendix I bred in captivity for commercial purposes, or of a plant species included in Appendix I artificially propagated for commercial purposes, shall be deemed to be specimens of species included in Appendix II.
5. Where a Management Authority of the State of export is satisfied that any specimen of an animal species was bred in captivity or any specimen of a plant species was artificially propagated, or is a part of such an animal or plant or was derived therefrom, a certificate by that Management Authority to that effect shall be accepted in lieu of any of the permits or certificates required under the provisions of Article III, IV or V.
6. The provisions of Articles III, IV and V shall not apply to the non-commercial loan, donation or exchange between scientists or scientific institutions registered by a Management Authority of their State, of herbarium specimens, other preserved, dried or embedded museum specimens, and live plant material which carry a label issued or approved by a Management Authority.
7. A Management Authority of any State may waive the requirements of Articles III, IV and V and allow the movement without permits or certificates of specimens which form part of a travelling zoo, circus, menagerie, plant exhibition or other travelling exhibition provided that:
   (a) the exporter or importer registers full details of such specimens with that Management Authority;
   (b) the specimens are in either of the categories specified in paragraph 2 or 5 of this Article; and
   (c) the Management Authority is satisfied that any living specimen will be so transported and cared for as to minimize the risk of injury, damage to health or cruel treatment.

Article VIII

Measures to Be Taken by the Parties

1. The Parties shall take appropriate measures to enforce the provisions of the present Convention and to prohibit trade in specimens in violation thereof. These shall include measures:
   (a) to penalize trade in, or possession of, such specimens, or both; and
   (b) to provide for the confiscation or return to the State of export of such specimens.

2. In addition to the measures taken under paragraph 1 of this Article, a Party may, when it deems it necessary, provide for any method of internal reimbursement for expenses incurred as a result of the confiscation of a specimen traded in violation of the measures taken in the application of the provisions of the present Convention.
3. As far as possible, the Parties shall ensure that specimens shall pass through any formalities required for trade with a minimum of delay. To facilitate such passage, a Party may designate ports of exit and ports of entry at which specimens must be presented for clearance. The Parties shall ensure further that all living specimens, during any period of transit, holding or shipment, are properly cared for so as to minimize the risk of injury, damage to health or cruel treatment.
4. Where a living specimen is confiscated as a result of measures referred to in paragraph 1 of this Article:
   (a) the specimen shall be entrusted to a Management Authority of the State of confiscation;
   (b) the Management Authority shall, after consultation with the State of export, return the specimen to that State at the expense of that State, or to a rescue centre or such other place as the Management Authority deems appropriate and consistent with the purposes of the present Convention; and
   (c) the Management Authority may obtain the advice of a Scientific Authority, or may, whenever it considers it desirable, consult the Secretariat in order to facilitate the decision under sub-paragraph (b) of this paragraph, including the choice of a rescue centre or other place.
5. A rescue centre as referred to in paragraph 4 of this Article means an institution designated by a Management Authority to look after the welfare of living specimens, particularly those that have been confiscated.
6. Each Party shall maintain records of trade in specimens of species included in Appendices I, II and III which shall cover:
   (a) the names and addresses of exporters and importers; and
   (b) the number and type of permits and certificates granted; the States with which such trade occurred; the numbers or quantities and types of specimens, names of species as included in Appendices I, II and III and, where applicable, the size and sex of the specimens in question.
7. Each Party shall prepare periodic reports on its implementation of the present Convention and shall transmit to the Secretariat:
   (a) an annual report containing a summary of the information specified in sub-paragraph (b) of paragraph 6 of this Article; and
   (b) a biennial report on legislative, regulatory and administrative measures taken to enforce the provisions of the present Convention.
8. The information referred to in paragraph 7 of this Article shall be available to the public where this is not inconsistent with the law of the Party concerned.

Article IX

Management and Scientific Authorities

1. Each Party shall designate for the purposes of the present Convention:
   (a) one or more Management Authorities competent to grant permits or certificates on behalf of that Party; and
   (b) one or more Scientific Authorities.
2. A State depositing an instrument of ratification, acceptance, approval or accession shall at that time inform the Depositary Government of the name and address of the Management Authority authorized to communicate with other Parties and with the Secretariat.
3. Any changes in the designations or authorizations under the provisions of this Article shall be communicated by the Party concerned to the Secretariat for transmission to all other Parties.
4. Any Management Authority referred to in paragraph 2 of this Article shall, if so requested by the Secretariat or the Management Authority of another Party, communicate to it impression of stamps, seals or other devices used to authenticate permits or certificates.

Article X

Trade with States not Party to the Convention

Where export or re-export is to, or import is from, a State not a Party to the present Convention, comparable documentation issued by the competent authorities in that State which substantially conforms with the requirements of the present Convention for permits and certificates may be accepted in lieu thereof by any Party.

Article XI

Conference of the Parties

1. The Secretariat shall call a meeting of the Conference of the Parties not later than two years after the entry into force of the present Convention.
2. Thereafter the Secretariat shall convene regular meetings at least once every two years, unless the Conference decides otherwise, and extraordinary meetings at any time on the written request of at least one-third of the Parties.
3. At meetings, whether regular or extraordinary, the Parties shall review the implementation of the present Convention and may:
   (a) make such provision as may be necessary to enable the Secretariat to carry out its duties, and adopt financial provisions;
   (b) consider and adopt amendments to Appendices I and II in accordance with Article XV;
   (c) review the progress made towards the restoration and conservation of the species included in Appendices I, II and III;
   (d) receive and consider any reports presented by the Secretariat or by any Party; and
   (e) where appropriate, make recommendations for improving the effectiveness of the present Convention.
4. At each regular meeting, the Parties may determine the time and venue of the next regular meeting to be held in accordance with the provisions of paragraph 2 of this Article.
5. At any meeting, the Parties may determine and adopt rules of procedure for the meeting.
6. The United Nations, its Specialized Agencies and the International Atomic Energy Agency, as well as any State not a Party to the present Convention, may be represented at meetings of the Conference by observers, who shall have the right to participate but not to vote.
7. Any body or agency technically qualified in protection, conservation or management of wild fauna and flora, in the following categories, which has informed the Secretariat of its desire to be represented at meetings of the Conference by observers, shall be admitted unless at least one-third of the Parties present object:
   (a) international agencies or bodies, either governmental or non-governmental, and national governmental agencies and bodies; and
   (b) national non-governmental agencies or bodies which have been approved for this purpose by the State in which they are located. Once admitted, these observers shall have the right to participate but not to vote.

Article XII

The Secretariat

1. Upon entry into force of the present Convention, a Secretariat shall be provided by the Executive Director of the United Nations Environment Programme. To the extent and in the manner he considers appropriate, he may be assisted by suitable inter-governmental or non-governmental international or national agencies and bodies technically qualified in protection, conservation and management of wild fauna and flora.
2. The functions of the Secretariat shall be:
   (a) to arrange for and service meetings of the Parties;
   (b) to perform the functions entrusted to it under the provisions of Articles XV and XVI of the present Convention;
   (c) to undertake scientific and technical studies in accordance with programmes authorized by the Conference of the Parties as will contribute to the implementation of the present Convention, including studies concerning standards for appropriate preparation and shipment of living specimens and the means of identifying specimens;
   (d) to study the reports of Parties and to request from Parties such further information with respect thereto as it deems necessary to ensure implementation of the present Convention;
   (e) to invite the attention of the Parties to any matter pertaining to the aims of the present Convention;
   (f) to publish periodically and distribute to the Parties current editions of Appendices I, II and III together with any information which will facilitate identification of specimens of species included in those Appendices;
   (g) to prepare annual reports to the Parties on its work and on the implementation of the present Convention and such other reports as meetings of the Parties may request;
   (h) to make recommendations for the implementation of the aims and provisions of the present Convention, including the exchange of information of a scientific or technical nature;
   (i) to perform any other function as may be entrusted to it by the Parties.

Article XIII

International Measures

1. When the Secretariat in the light of information received is satisfied that any species included in Appendix I or II is being affected adversely by trade in specimens of that species or that the provisions of the present Convention are not being effectively implemented, it shall communicate such information to the authorized Management Authority of the Party or Parties concerned.
2. When any Party receives a communication as indicated in paragraph 1 of this Article, it shall, as soon as possible, inform the Secretariat of any relevant facts insofar as its laws permit and, where appropriate, propose remedial action. Where the Party considers that an inquiry is desirable, such inquiry may be carried out by one or more persons expressly authorized by the Party.
3. The information provided by the Party or resulting from any inquiry as specified in paragraph 2 of this Article shall be reviewed by the next Conference of the Parties which may make whatever recommendations it deems appropriate.

Article XIV

Effect on Domestic Legislation and International Conventions

1. The provisions of the present Convention shall in no way affect the right of Parties to adopt:
   (a) stricter domestic measures regarding the conditions for trade, taking, possession or transport of specimens of species included in Appendices I, II and III, or the complete prohibition thereof; or
   (b) domestic measures restricting or prohibiting trade, taking, possession or transport of species not included in Appendix I, II or III.
2. The provisions of the present Convention shall in no way affect the provisions of any domestic measures or the obligations of Parties deriving from any treaty, convention, or international agreement relating to other aspects of trade, taking, possession or transport of specimens which is in force or subsequently may enter into force for any Party including any measure pertaining to the Customs, public health, veterinary or plant quarantine fields.
3. The provisions of the present Convention shall in no way affect the provisions of, or the obligations deriving from, any treaty, convention or international agreement concluded or which may be concluded between States creating a union or regional trade agreement establishing or maintaining a common external Customs control and removing Customs control between the parties thereto insofar as they relate to trade among the States members of that union or agreement.
4. A State party to the present Convention, which is also a party to any other treaty, convention or international agreement which is in force at the time of the coming into force of the present Convention and under the provisions of which protection is afforded to marine species included in Appendix II, shall be relieved of the obligations imposed on it under the provisions of the present Convention with respect to trade in specimens of species included in Appendix II that are taken by ships registered in that State and in accordance with the provisions of such other treaty, convention or international agreement.
5. Notwithstanding the provisions of Articles III, IV and V, any export of a specimen taken in accordance with paragraph 4 of this Article shall only require a certificate from a Management Authority of the State of introduction to the effect that the specimen was taken in accordance with the provisions of the other treaty, convention or international agreement in question.
6. Nothing in the present Convention shall prejudice the codification and development of the law of the sea by the United Nations Conference on the Law of the Sea convened pursuant to Resolution 2750 C (XXV) of the General Assembly of the United Nations nor the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

Article XV

Amendments to Appendices I and II

1. The following provisions shall apply in relation to amendments to Appendices I and II at meetings of the Conference of the Parties:
   (a) Any Party may propose an amendment to Appendix I or II for consideration at the next meeting. The text of the proposed amendment shall be communicated to the Secretariat at least 150 days before the meeting. The Secretariat shall consult the other Parties and interested bodies on the amendment in accordance with the provisions of sub-paragraphs (b) and (c) of paragraph 2 of this Article and shall communicate the response to all Parties not later than 30 days before the meeting.
   (b) Amendments shall be adopted by a two-thirds majority of Parties present and voting. For these purposes "Parties present and voting" means Parties present and casting an affirmative or negative vote. Parties abstaining from

voting shall not be counted among the two-thirds required for adopting an amendment.

(c) Amendments adopted at a meeting shall enter into force 90 days after that meeting for all Parties except those which make a reservation in accordance with paragraph 3 of this Article.

2. The following provisions shall apply in relation to amendments to Appendices I and II between meetings of the Conference of the Parties:

(a) Any Party may propose an amendment to Appendix I or II for consideration between meetings by the postal procedures set forth in this paragraph.

(b) For marine species, the Secretariat shall, upon receiving the text of the proposed amendment, immediately communicate it to the Parties. It shall also consult inter-governmental bodies having a function in relation to those species especially with a view to obtaining scientific data these bodies may be able to provide and to ensuring co-ordination with any conservation measures enforced by such bodies. The Secretariat shall communicate the views expressed and data provided by these bodies and its own findings and recommendations to the Parties as soon as possible.

(c) For species other than marine species, the Secretariat shall, upon receiving the text of the proposed amendment, immediately communicate it to the Parties, and, as soon as possible thereafter, its own recommendations.

(d) Any Party may, within 60 days of the date on which the Secretariat communicated its recommendations to the Parties under sub-paragraph (b) or (c) of this paragraph, transmit to the Secretariat any comments on the proposed amendment together with any relevant scientific data and information.

(e) The Secretariat shall communicate the replies received together with its own recommendations to the Parties as soon as possible.

(f) If no objection to the proposed amendment is received by the Secretariat within 30 days of the date the replies and recommendations were communicated under the provisions of sub-paragraph (e) of this paragraph, the amendment shall enter into force 90 days later for all Parties except those which make a reservation in accordance with paragraph 3 of this Article.

(g) If an objection by any Party is received by the Secretariat, the proposed amendment shall be submitted to a postal vote in accordance with the provisions of sub-paragraphs (h), (i) and (j) of this paragraph.

(h) The Secretariat shall notify the Parties that notification of objection has been received.

(i) Unless the Secretariat receives the votes for, against or in abstention from at least one-half of the Parties within 60 days of the date of notification under sub-paragraph (h) of this paragraph, the proposed amendment shall be referred to the next meeting of the Conference for further consideration.

(j) Provided that votes are received from one-half of the Parties, the amendment shall be adopted by a two-thirds majority of Parties casting an affirmative or negative vote.

(k) The Secretariat shall notify all Parties of the result of the vote.

(l) If the proposed amendment is adopted it shall enter into force 90 days after the date of the notification by the Secretariat of its acceptance for all Parties except those which make a reservation in accordance with paragraph 3 of this Article.

3. During the period of 90 days provided for by sub-paragraph (c) of paragraph 1 or sub-paragraph (l) of paragraph 2 of this Article any Party may by notification in writing to the Depositary Government make a reservation with respect to the amendment.

Until such reservation is withdrawn the Party shall be treated as a State not a Party to the present Convention with respect to trade in the species concerned.

Article XVI

Appendix III and Amendments thereto

1. Any Party may at any time submit to the Secretariat a list of species which it identifies as being subject to regulation within its jurisdiction for the purpose mentioned in paragraph 3 of Article II. Appendix III shall include the names of the Parties submitting the species for inclusion therein, the scientific names of the species so submitted, and any parts or derivatives of the animals or plants concerned that are specified in relation to the species for the purposes of sub-paragraph (b) of Article I.

2. Each list submitted under the provisions of paragraph 1 of this Article shall be communicated to the Parties by the Secretariat as soon as possible after receiving it. The list shall take effect as part of Appendix III 90 days after the date of such communication. At any time after the communication of such list, any Party may by notification in writing to the Depositary Government enter a reservation with respect to any species or any parts or derivatives, and

until such reservation is withdrawn, the State shall be treated as a State not a Party to the present Convention with respect to trade in the species or part or derivative concerned.

3. A Party which has submitted a species for inclusion in Appendix III may withdraw it at any time by notification to the Secretariat which shall communicate the withdrawal to all Parties. The withdrawal shall take effect 30 days after the date of such communication.
4. Any Party submitting a list under the provisions of paragraph 1 of this Article shall submit to the Secretariat a copy of all domestic laws and regulations applicable to the protection of such species, together with any interpretations which the Party may deem appropriate or the Secretariat may request. The Party shall, for as long as the species in question is included in Appendix III, submit any amendments of such laws and regulations or any interpretations as they are adopted.

Article XVII

Amendment of the Convention

1. An extraordinary meeting of the Conference of the Parties shall be convened by the Secretariat on the written request of at least one-third of the Parties to consider and adopt amendments to the present Convention. Such amendments shall be adopted by a two-thirds majority of Parties present and voting. For these purposes "Parties present and voting" means Parties present and casting an affirmative or negative vote. Parties abstaining from voting shall not be counted among the two-thirds required for adopting an amendment.
2. The text of any proposed amendment shall be communicated by the Secretariat to all Parties at least 90 days before the meeting.
3. An amendment shall enter into force for the Parties which have accepted it 60 days after two-thirds of the Parties have deposited an instrument of acceptance of the amendment with the Depositary Government. Thereafter, the amendment shall enter into force for any other Party 60 days after that Party deposits its instrument of acceptance of the amendment.

Article XVIII

Resolution of Disputes

1. Any dispute which may arise between two or more Parties with respect to the interpretation or application of the provisions of the present Convention shall be subject to negotiation between the Parties involved in the dispute.
2. If the dispute can not be resolved in accordance with paragraph 1 of this Article, the Parties may, by mutual consent, submit the dispute to arbitration, in particular that of the Permanent Court of Arbitration at The Hague, and the Parties submitting the dispute shall be bound by the arbitral decision.

Article XIX

Signature

The present Convention shall be open for signature at Washington until 30th April 1973 and thereafter at Berne until 31st December 1974.

Article XX

Ratification, Acceptance, Approval

The present Convention shall be subject to ratification, acceptance or approval. Instruments of ratification, acceptance or approval shall be deposited with the Government of the Swiss Confederation which shall be the Depositary Government.

Article XXI

Accession

The present Convention shall be open indefinitely for accession. Instruments of accession shall be deposited with the Depositary Government.

Article XXII

Entry into Force

1. The present Convention shall enter into force 90 days after the date of deposit of the tenth instrument of ratification, acceptance, approval or accession, with the Depositary Government.
2. For each State which ratifies, accepts or approves the present Convention or accedes thereto after the deposit of the tenth instrument of ratification, acceptance, approval or accession, the present Convention shall enter into force 90 days after the deposit by such State of its instrument of ratification, acceptance, approval or accession.

Article XXIII

Reservations

1. The provisions of the present Convention shall not be subject to general reservations. Specific reservations may be entered in accordance with the provisions of this Article and Articles XV and XVI.
2. Any State may, on depositing its instrument of ratification, acceptance, approval or accession, enter a specific reservation with regard to:

(a) any species included in Appendix I, II or III; or

(b) any parts or derivatives specified in relation to a species included in Appendix III.

3. Until a Party withdraws its reservation entered under the provisions of this Article, it shall be treated as a State not a Party to the present Convention with respect to trade in the particular species or parts or derivatives specified in such reservation.

Article XXIV

Denunciation

Any Party may denounce the present Convention by written notification to the Depositary Government at any time. The denunciation shall take effect twelve months after the Depositary Government has received the notification.

Article XXV

Depositary

1. The original of the present Convention, in the Chinese, English, French, Russian and Spanish languages, each version being equally authentic, shall be deposited with the Depositary Government, which shall transmit certified copies thereof to all States that have signed it or deposited instruments of accession to it.

2. The Depositary Government shall inform all signatory and acceding States and the Secretariat of signatures, deposit of instruments of ratification, acceptance, approval or accession, entry into force of the present Convention, amendments thereto, entry and withdrawal of reservations and notifications of denunciation

.3. As soon as the present Convention enters into force, a certified copy thereof shall be transmitted by the Depositary Government to the Secretariat of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

In witness whereof the undersigned Plenipotentiaries, being duly authorized to that effect, have signed the present Convention

Done at Washington this third day of March, One Thousand Nine Hundred and Seventy-three.

Resolution Conf. 10.3 – Designation and Role of the Scientific Authorities

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

RESOLUTION OF THE CONFERENCE OF THE PARTIES

RECALLING Resolution Conf. 8.6 (Rev.), adopted at the eighth meeting of the Conference of the Parties (Kyoto, 1992) and amended at the ninth meeting (Fort Lauderdale, 1994);

ACKNOWLEDGING that each Party is required, in accordance with Article IX of the Convention, to designate one or more Scientific Authorities;

RECOGNIZING that the responsibilities of the Scientific Authority are described in Article III, paragraphs 2(a), 3(a) and (b) and 5(a), and Article IV, paragraphs 2(a), 3 and 6(a), of the Convention and that responsibilities described in other Articles are not assigned to a specific office but require scientific considerations;

RECOGNIZING further that these responsibilities are elaborated upon in Resolutions Conf. 1.4, Conf. 2.14, Conf. 8.15, Conf. 8.21, Conf. 9.19, Conf. 9.21, Conf. 10.7 and Conf. 10.22, adopted at the first, second, eighth, ninth and 10th meetings of the Conference of the Parties (Berne, 1976; San José, 1979; Kyoto, 1992; Fort Lauderdale, 1994; Harare, 1997), and in Resolutions Conf. 2.11 (Rev.), adopted at the second meeting (San José, 1979) and amended at the ninth meeting (Fort Lauderdale, 1994) and Conf. 9.10 (Rev.) and Conf. 9.18 (Rev.), adopted at the ninth meeting and amended at the 10th meeting (Harare, 1997);

NOTING the concerns of the Parties indicated in the responses to the Secretariat's questionnaire on the functioning of Scientific Authorities, as reported to the Animals Committee at its 13th meeting (Pruhonice, 1996);

RECALLING that Resolution Conf. 8.4, adopted at the eighth meeting of the Conference of the Parties (Kyoto, 1992), directs the Secretariat to identify those Parties whose domestic measures do not provide them with the authority to designate at least one Scientific Authority;

NOTING that the Secretariat's reports on alleged infractions have identified several Parties that have not designated Scientific Authorities;

NOTING that issuance of permits by a Management Authority without appropriate Scientific Authority findings constitutes a lack of compliance with the provisions of the Convention and seriously undermines species conservation;

RECALLING that Resolution Conf. 9.5, adopted at the ninth meeting of the Conference of the Parties (Fort Lauderdale, 1994), recommends that Parties accept documentation from States not party to the Convention only if details of the competent authorities and scientific institutions of such States are included in the most recent updated list of the Secretariat or after consultation with the Secretariat;

ACKNOWLEDGING the necessity for the Secretariat, members of the Animals and Plants Committees, and Scientific Authorities to be in contact with the appropriate Scientific Authorities of each Party;

WHEREAS Article XIV, paragraph 1, permits any Party to adopt stricter domestic measures;

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

DIRECTS the Secretariat:

a) to continue its efforts to identify the Scientific Authorities in each country;

b) to continue to identify in its reports on alleged infractions those countries that have not informed the Secretariat of their Scientific Authorities; and

c) to continue to provide to all Parties information on the Scientific Authorities or comparable entities of States not party;

RECOMMENDS that:

a) all Parties designate Scientific Authorities independent from Management Authorities;

b) Parties not accept export permits from countries that have not informed the Secretariat of their Scientific Authorities for more than one interval between regular meetings of the Conference of the Parties;

c) Management Authorities not issue any export or import permit, or certificate of introduction from the sea, for species listed in the appendices without first obtaining the appropriate Scientific Authority findings or advice;

d) Parties enlist the assistance of Scientific Authorities of other Parties, as appropriate;

e) neighbouring Parties consider sharing their resources by supporting common scientific institutions to provide the scientific findings required under the Convention;

f) the Parties consult with the Secretariat when there is reason for concern as to whether the proper Scientific Authority findings are being made;

g) the appropriate Scientific Authority advise on the issuance of export permits or of certificates for introduction from the sea for Appendix-I or -II species, stating whether or not the proposed trade would be detrimental to the survival of the species in question, and that every export permit or certificate of introduction from the sea be covered by Scientific Authority advice;

h) the findings and advice of the Scientific Authority of the country of export be based on the scientific review of available information on the population status, distribution, population trend, harvest and other biological and ecological factors, as appropriate, and trade information relating to the species concerned;

i) the appropriate Scientific Authority of the importing country advise on the issuance of permits for the import of specimens of Appendix-I species, stating whether the import will be for purposes not detrimental to the survival of the species;

j) the appropriate Scientific Authority monitor the status of native Appendix-II species and export data, and recommend, if necessary, suitable remedial measures to limit the export of specimens in order to maintain each species throughout its range at a level consistent with its role in the ecosystem and well above the level at which the species might become eligible for inclusion in Appendix I;

k) the appropriate Scientific Authority either make the findings required on the suitability of the recipient to house and care for live specimens of Appendix-I species being imported or introduced from the sea, or make its recommendations to the Management Authority prior to the latter making such findings and the issuance of permits or certificates;

l) the appropriate Scientific Authority provide advice to its Management Authority as to whether or not scientific institutions seeking registration for the purpose of being issued labels for scientific exchange meet the criteria established in Resolution Conf. 2.14, and other standards or any stricter national requirements;

m) the appropriate Scientific Authority review all applications submitted for consideration under Article VII, paragraph 4 or 5, and advise its Management Authority as to whether the facility concerned meets the criteria for producing specimens considered to be bred in captivity or artificially propagated in accordance with the Convention and relevant Resolutions;

n) the appropriate Scientific Authority gather and analyse information on the biological status of species affected by trade to assist in the preparation of proposals necessary to amend the appendices; and

o) the appropriate Scientific Authority review proposals to amend the appendices submitted by other Parties and make recommendations as to how the delegation of its own country should address each proposal;

ENCOURAGES the Parties, the Secretariat and interested non-governmental organizations to develop and support workshops/seminars designed specifically to improve the implementation of CITES by Scientific Authorities; and

REPEALS Resolution Conf. 8.6 (Rev.) (Kyoto, 1992, as amended in Fort Lauderdale, 1994) – Role of the Scientific Authority.

Occasional Papers of the IUCN Species Survival Commission

1. *Species Conservation Priorities in the Tropical Forests of Southeast Asia*. Edited by R.A. Mittermeier and W.R. Constant, 1985, 58pp. (Out of print)
2. *Priorités en matière de conservation des espèces à Madagascar*. Edited by R.A. Mittermeier, L.H. Rakotovao, V. Randrianasolo, E.J. Sterling and D. Devitre, 1987, 167pp. (Out of print)
3. *Biology and Conservation of River Dolphins*. Edited by W.F. Perrin, R.K. Brownell, Zhou Kaiya and Liu Jiankang, 1989, 173pp. (Out of print)
4. *Rodents. A World Survey of Species of Conservation Concern*. Edited by W.Z. Lidicker, Jr., 1989, 60pp.
5. *The Conservation Biology of Tortoises*. Edited by I.R. Swingland and M.W. Klemens, 1989, 202pp. (Out of print)
6. *Biodiversity in Sub-Saharan Africa and its Islands: Conservation, Management, and Sustainable Use.* Compiled by Simon N. Stuart and Richard J. Adams, with a contribution from Martin D. Jenkins, 1991, 242pp.
7. *Polar Bears: Proceedings of the Tenth Working Meeting of the IUCN/SSC Polar Bear Specialist Group.* 1991, 107pp.
8. *Conservation Biology of Lycaenidae (Butterflies)*. Edited by T.R. New, 1993, 173pp. (Out of print)
9. *The Conservation Biology of Molluscs: Proceedings of a Symposium held at the 9th International Malacological Congress, Edinburgh, Scotland, 1986*. Edited by Alison Kay. Including a Status Report on Molluscan Diversity, written by Alison Kay, 1995, 81pp.
10. *Polar Bears: Proceedings of the Eleventh Working Meeting of the IUCN/SSC Polar Bear Specialist Group, January 25–28 1993, Copenhagen, Denmark*. Compiled and edited by Øystein Wiig, Erik W. Born and Gerald W. Garner, 1995, 192pp.
11. *African Elephant Database 1995*. M.Y. Said, R.N. Chunge, G.C. Craig, C.R. Thouless, R.F.W. Barnes and H.T. Dublin, 1995, 225pp.
12. *Assessing the Sustainability of Uses of Wild Species: Case Studies and Initial Assessment Procedure*. Edited by Robert and Christine Prescott-Allen, 1996, 135pp.
13. *Tecnicas para el Manejo del Guanaco [Techniques for the Management of the Guanaco]*. Edited by Sylvia Puig, Chair of the South American Camelid Specialist Group, 1995, 231pp.
14. *Tourist Hunting in Tanzania*. Edited by N. Leader-Williams, J. A. Kayera and G. L. Overton, 1996, 138pp.
15. *Community-based Conservation in Tanzania*. Edited by N. Leader-Williams, J. A. Kayera and G.L. Overton, 1996, 226pp.
16. *The Live Bird Trade in Tanzania*. Edited by N. Leader-Williams and R.K. Tibanyenda, 1996, 129pp.
17. *Sturgeon Stocks and Caviar Trade Workshop. Proceedings of a workshop held on 9–10 October 1995 Bonn, Germany by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Federal Agency for Nature Conservation*. Edited by Vadin J. Birstein, Andreas Bauer and Astrid Kaiser-Pohlmann. 1997, viii + 88pp.
18. *Manejo y Uso Sustentable de Pecaries en la Amazonia Peruana*. Authors: Richard Bodmer, Rolando Aquino, Pablo Puertas, Cesar Reyes, Tula Fang and Nicole Gottdenker, 1997, iv + 102pp.
19. *Proceedings of the Twelfth Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 3-7 February 1997, Oslo, Norway*. Compiled and edited by Andrew E. Derocher, Gerald W. Garner, Nicholas J. Lunn and Øystein Wiig, 1998, v + 159pp.
20. *Sharks and their Relatives – Ecology and Conservation*. Written and compiled by Merry Camhi, Sarah Fowler, John Musick, Amie Bräutigam and Sonja Fordham, 1998, iv + 39pp.
21. *African Antelope Database 1998*. Compiled by Rod East and the IUCN/SSC Antelope Specialist Group, 1999, x + 434pp.
22. *African Elephant Database 1998*. R.F.W. Barnes, G.C. Craig, H.T. Dublin, G. Overton, W. Simons and C.R. Thouless, 1999, vi + 249pp.
23. *Biology and Conservation of Freshwater Cetaceans in Asia*. Edited by Randall R. Reeves, Brian D. Smith and Toshio Kasuya, 2000, viii + 152pp.
24. *Links between Biodiversity Conservation, Livelihoods and Food Security: The sustainable use of wild species for meat.* Edited by S.A. Mainka and M.Trivedi, 2002, vi + 135pp.
24. *Liens entre la conservation de la diversité biologique, les moyens d'existence et la sécurité alimentaire: l'utilisation durable des animaux sauvages pour l'alimentation*. Edité par S.A. Mainka and M.Trivedi, 2002, vi + 145pp.
25. *Elasmobranch Biodiversity, Conservation and Management. Proceedings of the International Seminar and Workshop, Sabah, Malaysia, July, 1997*. Edited by Sarah L. Fowler, Tim M. Reed and Frances A. Dipper. 2002, xv + 258pp.

IUCN Species Survival Commission

The Species Survival Commission (SSC) is one of six volunteer commissions of IUCN – The World Conservation Union, a union of sovereign states, government agencies and non-governmental organizations. IUCN has three basic conservation objectives: to secure the conservation of nature, and especially of biological diversity, as an essential foundation for the future; to ensure that where the Earth's natural resources are used this is done in a wise, equitable and sustainable way; and to guide the development of human communities towards ways of life that are both of good quality and in enduring harmony with other components of the biosphere.

A volunteer network comprised of some 7,000 scientists, field researchers, government officials and conservation leaders from nearly every country of the world, the SSC membership is an unmatched source of information about biological diversity and its conservation. As such, SSC members provide technical and scientific counsel for conservation projects throughout the world and serve as resources to governments, international conventions and conservation organizations.

SSC Occasional Papers cover a broad range of subjects including conservation of groups of species in a particular geographical region, wildlife trade issues, and proceedings of workshops.

IUCN/SSC also publishes an Action Plan series that assesses the conservation status of species and their habitats, and specifies conservation priorities. The series is one of the world's most authoritative sources of species conservation information available to natural resource managers, conservationists and government officials around the world.

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