FRAMEWORK FOR CITES NON-DETRIMENT FINDINGS FOR HUNTING TROPHIES, WITH A FOCUS ON ARGALI *OVIS AMMON*

BY
ROB PARRY-JONES

A TRAFFIC REPORT

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Framework for **CITES** non-detriment findings for hunting trophies with a focus on Argali *Ovis ammon*

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About the EU-CITES Capacity-building project

The project *Strengthening CITES implementation capacity of developing countries to ensure sustainable wildlife management and non-detrimental trade* was approved for funding by the European Union (EU) in 2009.

A major challenge for many countries is the difficulty in meeting the requirements for trade in CITES-listed species, ranging from legal sourcing and sustainability requirements, to the effective control of legal trade and deterrence of illegal trade. Mechanisms exist in CITES and in both exporting and importing countries that promote and facilitate compliance – although Parties are often hampered by a lack of capacity or a lack of current biological or trade information with respect to certain species. This can result in levels of trade which are unsustainable, which in turn can impact on economic growth and local livelihoods, and reduce options and incentives for conserving and managing wild resources effectively.

The overall aim of the EU's support is to strengthen capacities to implement the Convention and satisfy the CITES-related requirements of trading partners (such as the EU), to prevent overexploitation and to ensure legal international trade in wild fauna and flora does not exceed sustainable levels.

This publication is one of the reports and tools developed under this project, which provide information and guidance to Parties in a particular area of concern, based on needs identified by developing countries.

Front cover photograph: Argali *Ovis ammon*

Photograph credit: Alexander Kreik/WWF Russia

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ACKNOWLEDGEMENTS

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PREFACE

Argali *Ovis ammon* was chosen as a representative focus in the NDF framework presented here to support the ongoing efforts of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Migratory Species of Wild Animals (CMS) in increasing cooperation at the practical level and realising their conservation objectives.

Ovis ammon was listed in Appendix II of the Convention on Migratory Species (CMS) in 2011, based on a joint proposal submitted by Kazakhstan & Tajikistan, supported by Kyrgyzstan. *Ovis ammon* is listed in CITES Appendix II, except for those subspecies listed in CITES Appendix I (details of what this means for international trade are provided in the body of this paper). In March 2012, representative of range State representatives discussed the conservation and sustainable use of Argali at the Vilm Workshop "Sustainable Management of Central Asian Game Animals", and formulated the first ideas for an Argali Action Plan. A major concern expressed at the Vilm workshop, and subsequently a major aim of the *Action plan for the Trans-boundary conservation of Argali* (Ovis ammon) *in Asia* (currently under development) concerned how to ensure the conservation and sustainable use of the species for the benefit and with support of local people (GIZ, 2012).

Against this background, CITES and CMS had already concluded, on 18 September 2002, a Memorandum of Understanding (MoU) to strengthen cooperation. Furthermore, CITES *Resolution Conf. 13.3 - Cooperation and synergy with the Convention on the Conservation of Migratory Species of Wild Animals (CMS) – inter alia* directs the CITES Standing Committee to regularly review this MoU with a view to "actively fostering synergy" and "concluding strategic alliances" between the conventions (CITES, 2003). The CITES Secretariat has also confirmed the Convention's interest in being involved in the activities of a planned CMS instrument on Argali (Rosen, 2012). Furthermore, at the 15th meeting of the Conference of the Parties to CITES (CITES CoP15), the Parties adopted *Decision 15.25 – Non-detriment findings –* which directed the Secretariat, *inter alia*, to support activities for capacity building on non-detriment findings. In line with the aims of this Decision, the European Union provided funds to the CITES Secretariat to strengthen CITES implementation-capacity of developing countries to ensure sustainable wildlife management and non-detrimental trade. The present report was compiled in the framework of this funding.

The development of this NDF framework was closely aligned to assist in development and implementation of the Argali Action plan in order to improve the conservation and sustainable use of Argali in Central Asia. At the same time, it was also felt that a broader framework might provide guidance not only for the sustainable use and management of Argali but also for other species hunted as trophies.

INTRODUCTION

Background and aims

This document sets out to address the question: how does one determine whether trade will be detrimental to the survival of the species or target population, or to the ecosystem on which it depends? This is the so-called non-detriment finding (NDF) required under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The document focuses on trade in trophies of Argali *Ovis ammon* within a framework that is applicable to other animal species but particularly to species hunted for trophies.

Methods

A broad range of literature and internet resources relating to *Ovis ammon* and to trophy hunting (predominantly for ungulates and carnivores) were consulted for the introduction and the framework, as well as documents pertaining more generally to NDFs, such as CITES documents and IUCN reports. Contemplation of the enabling environment for successful trophy hunting programmes led to consultation of a wider range of literature including rights-based approaches to conservation and development.

The framework owes its broad structure to early drafts of Leaman and Oldfield (in prep). It draws upon a number of NDF-specific references including the IUCN Guidance for CITES Scientific Authorities (Rosser, and Haywood, 2002), outputs from the International Expert Workshop on Non-detriment Findings, Cancun, Mexico (CITES, 2009), and CITES *Resolution Conf. 16.7 - Non-detriment findings*. It also builds in examples and inferences from published literature concerning trophy hunting programmes in East and Central Asia and Africa to illustrate scenarios that might be encountered, and guides the reader in the type of response that might be considered. Information is presented in a logical step-by-step framework illustrating what questions to ask, what to do with information generated, and how to make the final NDF decision. The overall aim of the framework is to inform and develop understanding of the process, rather than to provide a definitive answer.

The non-detriment finding (NDF) process and purpose of the format chosen

NDFs are inextricably linked to sustainable exploitation, and yet the point at which over-exploitation starts has never been defined by the Parties. In keeping with the spirit of the preamble that "*peoples and States are and should be the best protectors of their own wild fauna and flora*", it rests with individual Parties to develop their methodology and approach to determine the level of off-take that is believed to be sustainable. The format proposed here for consideration is not exclusive, prescriptive or set in stone: put simply, it provides a framework which could serve as a platform for further development by in-country and regional scientists, managers and other decision makers.

This document aims to "demystify" the NDF process, to bridge the gap between managers and scientists, and in doing so, to illustrate that the NDF process is simply a risk analysis. In the face of uncertainty and paucity of information, decisions can still be made as a "best judgement call", adopting a precautionary approach which can be adapted over time as more information becomes available, i.e. an adaptive management strategy. This is dealt with in more detail in the present framework.

Recording information throughout the NDF process is an essential step, not only to make the final assessment, but also to support and communicate NDF decisions reached and conservation

management measures in place. This can make the difference between a successful trophy hunting programme (international trade is allowed thereby supporting the hunting programme) and an unsuccessful programme (international trade is suspended, so the programme cannot support itself and must close).

Compilation of information in a readily accessible format also provides a basis for, and a necessary component of, regional strategies and conservation management plans. This is particularly relevant in the context of Argali and the *Action plan for the Trans-boundary conservation of Argali* (Ovis ammon) *in Asia*, currently under development under the aegis of the Convention on Migratory Species (CMS). The necessity of this regional approach is addressed in the framework.

Source of specimens in trade

Noting the emphasis on NDFs in the context of *Ovis ammon* and trophy hunting, the document does not address source of specimens in trade, i.e. whether specimens are from the wild, bred in captivity or ranched. For applications to trade in CITES specimens, this is normally a crucial step in the process (for reasons why, see TRAFFIC 2012) but for this document it is assumed that specimens are from the wild and assumed that the CITES Management Authority has fulfilled its mandate and checked veracity and legality of provenance of the specimen (see text of CITES, Articles III & IV). However, there are records of captive breeding of Argali. A small programme for Severtzov's Argali (*Ovis ammon severtzovi*[1]) was established on the outskirts of Nuratinski Strictly Protected Area in the Nuratau Mountains, Uzbekistan to breed animals to supplement the wild population. Contrary to accepted practice and to the aims of the programme, however, breeding males were reportedly released for trophy hunters (Michel, 2008; Harris & Reading, 2008).

At this juncture, it would be pertinent to determine what is understood by "trade". The text of CITES, Article I (Definitions), defines "trade" as "*export, re-export, import and introduction from the sea*". It therefore does not include domestic trade. In the NDF context, however, domestic trade must be taken into account in order to determine sustainable levels of off-take for international trade. Unless indicated, "trade" in this document should therefore be understood to refer to both domestic and international trade.

What is an NDF and what is the legal framework for NDFs?

The preamble to CITES recognizes that regulation of international trade requires international cooperation to prevent over-exploitation of the species. Such cooperation includes the issuance of CITES permits or certificates for species listed in the CITES Appendices to ensure the sustainability of trade. CITES permits can only be issued when the Scientific Authority has advised that the export of Appendix I- and II-listed species:
- will not be detrimental to the survival of that species [Article III paragraphs 2.(a), 3.(a); and 5.(a); and Article IV paragraphs 2.(a) and 6.(a)]
- is within acceptable limits in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs [Article IV paragraph 3].

These terms are collectively known as "non-detriment findings". How one might determine whether trade is likely to be non-detrimental, and what issues one should be examining, are addressed in the framework following this introduction. Factors influencing sustainability are touched upon below, and also in the framework.

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[1] Listed as *Ovis vignei*, CITES Appendix II.

Although CITES has three Appendices, non-detriment findings are required only for trade in specimens of species listed in Appendix I or II. CITES-Appendix listings of *Ovis* spp*.* are provided in **Annex I** of this document. Commercial trade in Appendix I-listed species is generally prohibited therefore, a non-detriment finding would be required only for trade for non-commercial purposes, including for hunting trophies. For international trade in Appendix I-listed species, the Scientific Authority of both the exporter and the importer State have to be satisfied that the export/import will not be detrimental to the survival of that species. Commercial trade in Appendix II-listed species is permitted as long as the Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species and that trade will 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.

CITES and export quotas[2]

The establishment of an export quota may meet the NDF requirement by determining the number of specimens of a species that may be exported during the year without having a detrimental effect on survival of that species. Export quotas set voluntarily by a Party may be communicated to the CITES Secretariat which, in turn, will publish the quotas via the CITES website (www.cites.org).

Resolution Conf. 14.7 on *Management of nationally established quotas*, recognized the link between export quotas and NDFs and adopted guidelines to manage these quotas. With regard to species listed in Appendix I, the effect of *Resolution Conf. 9.21 (Rev. CoP13) - Interpretation and application of quotas for species included in Appendix I -* is that export quotas for Appendix-I species set by the Conference of the Parties to CITES (CoP) are interpreted as fulfilling NDF requirements unless new scientific or management data have emerged to indicate that the quota is no longer detrimental to the population. CITES enables trade in trophies from certain specimens of Appendix I-listed taxa for personal use (*Res. Conf. 2.11 (Rev. CoP 9)),* and has adopted a series of Resolutions for certain Appendix I-listed species subject to trophy hunting, which set out quotas and conditions for such trade:
- *Res. Conf 10.14 (Rev. CoP 16)* on Leopard *Panthera pardus*;
- *Res. Conf 10.15 (Rev. CoP 14)* on Markhor *Capra falconeri*; and
- *Res. Conf 13.5 (Rev. CoP 14)* on Black Rhinoceros *Diceros bicornis*

NDFs and Conservation Management Plans

An NDF framework does not take the place of a **Conservation Management Plan** (CMP); but it can be one component of such a plan[3]. A CMP could concern either the species in a country, a certain population or specific management units only. Issues such as transparency in financial management, and distribution of income generated by hunters' fees are critical components of a CMP, affecting the success / failure of natural resource extraction including trophy hunting programmes. Establishing targets also is important because only when there are measures of success built into CMPs can monitoring and evaluation be conducted (Shackleton 2001), and thereby provide a basis for adaptive management. Impacts on trophy hunting programmes from inadequate CMPs or implementation thereof can be direct and/or indirect. Direct impacts may include for instance, the lack of financial transparency, which causes disgruntlement leading to lack of support for the

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[2] Information adapted from the CITES website: http://www.cites.org/eng/prog/ndf/index.shtml and Knapp (2007)

[3] An NDF is a requirement under CITES; CMPs are not required under CITES.

programme, (Shackleton 2001; Michel, 2010; Baldus and Michel, 2011).An indirect impact may for example be when Parties that require demonstration of benefits to conservation and to rural communities in order to allow imports of trophies, such as into the European Union (see *NDFs and CITES implementation in the European Union*, p.9) may not allow trade if guidelines cannot be adhered to. Transparency is therefore of utmost importance.

Transparency and accountability, particularly in the context of community based trophy hunting, can be enhanced through establishment of a **governance committee** overseeing the decision making processes (Amgalanbaatar *et al*., 2002; Shackleton, 2001; IUCN, 2012). Although not a requirement in the NDF process or more broadly under CITES, a committee provides a consultative decision making body which is essential in adaptive management approaches. This is illustrated in Stage 7 of the proposed NDF framework (*Adaptive Management -Monitoring and Review*, see **Table 8** and **Figure 4**). Depending on membership (see below for Pakistan), the committee should also provide direct channels of communication to relevant stakeholders. Furthermore, committees can facilitate the work of government in adhering to international conventions by ensuring that conservation activities are supported and conducted in a manner that meets these agreements (Shackleton, 2001).

As noted above, CITES recognises that *peoples and States are and should be the best protectors of their own wild fauna and flora*, and thus it rests with each individual Party to determine what approach would be most appropriate. Differing socio-political realities may mean that the approach taken in **Namibia**, where quotas for sustainable off-take rates are determined jointly between the communal Conservancies, non-governmental organisations and the Ministry of Environment and Tourism (MET) (IUCN, 2012), may not be appropriate in the context of all Asian countries. In **Mongolia**, for example, it has been proposed that membership of a committee should exclude individuals with links to government and to trophy hunting organisations; it should be comprised solely of individuals knowledgeable about wildlife ecology, trophy hunting and/or accounting (Amgalanbaatar *et al*., 2002). **Pakistan**, on the other hand, established consultative governance committees in the form of District Conservation Committees (DCC), providing a forum for community representatives to participate in decision making with district level government representatives (Shackleton, 2001). The mandate and composition of the DCCs are pivotal to the success of the Torghar Conservation Project (TCP) in Balochistan Province, Pakistan (see below): composition includes, *inter alia*, the Deputy Commissioner (executive head of the district), elected community representatives from each valley, Divisional Forest Officer, Field Management Unit Manager and Deputy Superintendent of Police (Shackleton, 2001). The mandate of the DCC includes *inter alia* support to the community's conservation initiatives (Gloekler, 2000), and proposed evaluations of village conservation fund audits and approval of measurable milestones and targets (Shackleton (2001). Pakistan's approach and Committee membership appears the most comprehensive; its conservation and development results are testimony to the effectiveness of this approach (see**Table 1** – Population status of Markhor and Urial in Balochistan, below).

The Torghar Conservation Project, Pakistan: managing people's needs and aspirations

The TCP was initiated in 1985 to conserve the dwindling populations of Suleiman Markhor *Capra falconerii*[4] and Afghan Urial *Ovis vignei cycloceros*[5]. This was achieved through an innovative programme by which funds raised by trophy hunting of these species were used to fund their conservation by reducing poaching while simultaneously benefiting the local community (Frisina and Tareen, 2009).

> "Trophy hunting was not a goal of the programme, but a means to fund the conservation programme" (Rasheed, 2012).

From 1986 to 2012, the trophy harvest has brought in a total income of USD2 712 800; of this, USD486 400 has been paid to the government of Balochistan; remaining funds have been channelled back into the programme, and with support from United Nations Development Programme (UNDP) and the Sustainable Use Specialist Group – Central Asia, have funded the placement of water tanks, wells, channels, and storage dams (Rashid, 2012).

As illustrated above, therefore: an NDF framework can form part of a strategy for government, development- and aid-agencies to mainstream environmental considerations into local and national economic and social development interventions. This approach therefore concerns managing people's aspirations

> "*The success of biodiversity conservation in the TCP has more to do with effectively managing for unique social characteristics and needs of the tribal society than the application of modern wildlife science.*" (Frisina and Tareen, 2009)

and needs who, in turn, may demonstrate support where perceived and tangible benefits are derived. The challenge is to ensure that benefits generated by properly designed programmes reach the people most affected, and that they, in turn, respond by protecting the environment (Shackleton, 2001).Policies have been developed to support this process (see Grimm, 2002, noted below on p.9 under "*NDFs and CITES implementation in the European Union (EU)*").

In conservation terms, the population figures are testimony to the impact of this approach, see **Table 1**, below:

Table 1Population status of Markhor and Urial in Balochistan since inception of the trophy hunting programme

Year	Markhor	Urial
1985	<100	>200
2005	2541	3136

Source: Rashid, 2012

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[4]*Capra falconeri*: IUCN Red List: Endangered C1+2a(i) ver 3.1; CITES Appendix I
[5]*Ovis vignei cycloceros* (listed by IUCN as *Ovis orientalis cycloceros*). IUCN Red List: Vulnerable A2cde ver 3.1; CITES Appendix II

Species biology, ecosystems and people

Although the ultimate aim of "sustainability" in the CITES context must concern the conservation of the species and/or ecosystem, factors affecting the outcome of sustainability are not limited to biological factors:

> "Use of wild living resources, if sustainable, is an important conservation tool because the social and economic benefits derived from such use provide incentives for people to conserve them" (IUCN, 2000; IUCN SSC 2012).

The guiding principles on the use of "trophy hunting" developed by the IUCN Species Survival Commission (SSC)note that trophy hunting is likely to contribute to conservation and to the equitable sharing of benefits[6] when hunting programmes incorporate the following five components:
1) Biological Sustainability;
2) Net Conservation Benefit;
3) Socio-Economic-Cultural Benefit[7]
4) Adaptive Management: Planning, Monitoring, and Reporting; and
5) Accountable and Effective Governance.

Successful approaches in trophy hunting have demonstrated that incorporation of factors such as traditional social structure, land tenure and livelihoods of local communities determine the support of local communities and are inextricably linked to their success (Shackleton, 2001; Arshald *et al.*, 2002; Michel, 2008; Frisina & Tareen, 2009; Michel, 2010; Baldus and Michel, 2011; IUCN SSC 2012). In essence, therefore, successful community based trophy hunting programmes demonstrate the benefit of a rights-based approach. The integration of a rights-based approach to policies, legislation and activities brings together environmental, social, and economic development or, in short, contributes towards equitable and sustainable development (UN OHCHR, 2006; Grieber, 2009). Harmonising nature conservation activities with respect for people's rights also contributes towards sustainable development outcomes (Grieber, 2009). In essence, this also summarises the guidance provided in *Resolution Conf. 16.6 – CITES and Livelihoods* - to Parties in implementation of CITES listings.

Approaches in one country will not necessarily work in other regions / countries. Challenges encountered in establishing community based hunting programmes in Central Asia are noted in Mallon (in prep).In **Tajikistan**, there is a trophy hunting programme based on large private concessions and using Argali (Michel, *in litt*. to R. Parry Jones, 31 August 2013), and also a community-based trophy hunting programme, established in April 2008 by the (non-government organisation) Nature Protection, which demonstrates a similar rights-based approach. The central approach is direct collaboration with the immediate users - traditional hunters, local initiatives, private conservancies and hunting concessionaires, but also bringing together different interest groups through collaboration with, *inter alia,* scientific institutes and state nature protection and forestry agencies. Round table discussions have provided a policy dialogue platform for voices from all interest groups to be heard and long-term rights and responsibilities have been assigned to

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[6]Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (AAPG)

[7]Socio-Economic-Cultural Benefit: Trophy hunting can serve as a conservation tool when it:
  1. Respects local cultural values and practices (where "local" is defined as sharing living space with the focal wildlife species), and is accepted by (and preferably, co-managed and actively supported by) most members of the local community on whose land it occurs;
  2. Involves and benefits local residents in an equitable manner, and in ways that meet their priorities;
  3. Adopts business practices that promote long-term economic sustainability.

defined users for specific areas. Sustainable management of wildlife reportedly has been stimulated through conservation and rural development benefits from the consumptive and non-consumptive use of wildlife (e.g. hunting tourism, subsistence and sport hunting and nature tourism) going directly to the communities. The project supports capacity development of local partners by enabling them to manage their hunting grounds and wildlife stocks in a sustainable way (Michel, 2010). Mallon (in prep) provides further details, and also notes the challenges facing this programme due to current governance structures and policies in Tajikistan.

Livelihoods, adaptive management strategies and CITES

Recognition of the role of communities, local knowledge and sustainable use in conservation are also reflected in developments in CITES. *Resolution Conf. 13.2 (Rev. CoP14) - Sustainable use of biodiversity: Addis Ababa Principles and Guidelines* (AAPG) urges Parties to make use of the AAPG. Principle 4 specifically encourages adaptive management based on science and traditional and local knowledge, timely and iterative feedback including of socio-economic impacts, and adjusting management based on such feedback from the monitoring procedures. More recently at its 16th meeting in Bangkok, March 2013, the Parties to CITES adopted *Resolution Conf. 16.6 - CITES and livelihoods*, which *inter alia* recognises the economic, social, cultural and ceremonial importance attached to some CITES-listed species, and emphasises the need for the empowerment and participation of rural communities, as well as transparency in the development and implementation of national CITES-related policies.

While CITES provides the legal framework and common procedural mechanisms to facilitate sustainable trade, the undertaking of NDFs and issuance of CITES documents for trade remains the individual responsibility of the Party undertaking the export. However, some Parties, notably European Union Member States, acting in accordance with European Union wildlife trade regulations, have stricter domestic measures regarding imports.

NDFs and CITES implementation in the European Union (EU)

CITES is implemented in the EU through a set of Regulations known as the EU Wildlife Trade Regulations[8]. The Basic Regulation affords varying degrees of protection to species listed in its four Annexes (A, B, C and D) which broadly correspond, respectively, to CITES Appendices I, II and III (Annex D - an annex for monitoring purposes only - contains a few CITES Appendix III species for which the EU holds a reservation; the vast majority are species not listed in the CITES Appendices). Annex I of this document provides details on the CITES Appendix-listing of *Ovis* species and their corresponding listing in the Annexes of the EU Wildlife Trade Regulations. Further details on implementation of CITES in the EU are provided in Vaisman *et al.,* (in prep).

In some cases, import applications are decided upon not at the national level but at the EU-level, through discussions which take place in the Scientific Review Group (SRG), a body composed of the CITES Scientific Authorities of all EU Member States. The SRG bases its decisions on the relevant provisions in the EU Wildlife Trade Regulations but has also developed **Guidelines for Scientific Authorities**[9](henceforth *Guidelines*) which include specific conditions for authorizing imports of Annex A listed trophies. For the import of an Annex B-listed hunting trophy for non-commercial purposes into the EU, only an export permit is required (import of Annex A-listed trophies require export and import permits). However, at the time of writing, August 2013, the European Commission is conducting a consultation regarding a possible revision of the EU Wildlife Trade Regulations which would require import permits be issued for hunting trophies of Annex B specimens (all or selected species or populations) into the EU (European Commission, 2013).

The *Guidelines* provide factors for consideration for general imports including, *inter alia*, the biological status of the species (abundance, present distribution, population trends, etc.), the species's life history, harvest characteristics (volumes, trends, etc.), management regimes and monitoring programmes that are in place, or anticipated trade levels (trade history, use of export quotas, demand in the EU, etc.).

The *Guidelines* also devote a specific section regarding import of hunting trophies. Import permits should be granted for hunting trophies only when the specimen was derived from a population under a management plan which should, as appropriate:
- be based on sound biological data collected from the target population(s)
- clearly demonstrate that harvest levels are sustainable
- be monitored by professional biologists
- be promptly modified if necessary to maintain the conservation aims
- demonstrate that illegal activities are under control
- produce significant and tangible conservation benefits for the species
- provide benefits to, and be in co-operation with, the local people who share the area with or suffer by the species concerned

Although EU CITES-implementing legislation and the *Guidelines* already go beyond the requirements of CITES, Germany's Federal Agency for Nature Conservation (FANC) has developed criteria and a position statement which go yet further beyond these requirements. As Germany is bound by EU legislation, its sustainable development policy interventions, including those concerning trophy

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[8]Currently these are *Council Regulation (EC) No 338/97* (the **Basic Regulation**), *Commission Regulation (EC) No 865/2006* (the **Implementing Regulation**), and *Commission Implementing Regulation (EU) No 792/2012 of 23 August 2012* (the **Permit Regulation**).
[9]*Guidelines on Duties and Tasks of the Scientific Authorities and Scientific Review Group under Regulation (EC) No. 338/97 and Regulation (EC) 1808/2001* (hereafter referred to as the *Guidelines for Scientific Authorities*).
SRG Guidelines are available at: http://ec.europa.eu/environment/cites/srg_en.htm.

hunting programmes, must be realised through seeking to influence law making processes and development programmes in relevant countries (Grimm 2002). Germany's approach is included here as it exemplifies well the conservation approach for trophy hunting in the context of target species, ecosystems, livelihoods and development.

The 25 criteria for sustainable consumptive use (SCU) developed by FANC, in 2000, in collaboration with government authorities, non-governmental organisations and scientific institutions, have four categories[10] and include emphasis on and recognition of the importance of socio-cultural acceptance and economic effectiveness, in addition to the biological requirements. FANC's position statement on "Trophy Hunting for Endangered Species Abroad" identified the following minimum requirements:

- Animals are removed on the basis of an adaptive wildlife management plan that is changeable at any time,
- trophy hunting provides direct local conservation benefit, (e.g. preventing planned agricultural use or settlement in the hunting area),
- the local communities receive a financial benefit from the trophy hunt,
- there is no predator control in order to increase the population of target species,
- there is no introduction of non-native species (either entire populations or individuals) for the purpose of trophy hunting.

In addition, with ongoing projects, all following requirements in particular should be met over the medium and/or long term when introducing trophy hunting into new areas, or assessing whether to expand trophy hunting to previously un-hunted species or not:

- Poaching is effectively eliminated,
- the effects of trophy hunting on the gene pool, behavioural ecology and reproductive success of the target species are studied,
- a completely protected area without any hunting influence is available as a reference area for research,
- a completely protected area in the direct vicinity of the hunting areas is available serving as a refuge for species affected by hunting.

Why compilation of information is necessary in the NDF process

The NDF framework presented below has been developed to show the process and information requirements for formulation of an NDF under CITES. Bearing in mind the need for transparency both within country and with external trade and conservation partners, such as EU Member States and regional States involved in the conservation and management of Argali, compilation of information in an accessible format provides a useful document both for national and regional decision-making, and also for importing States, should this be required.

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[10]The four categories of the 25 criteria identified by FANC:
biological data on the population level (including *population size, reproductive system, mortality*, popula*tion structure, social structure, behaviour, health status, habitat, genetic variability, conservation of evolutionary potential*),
biological data on the ecosystem level (including *effects of the species on/within ecosystem, effects of ecosystem changes on the species*),
management and monitoring (*including organizational and institutional framework; management plan with regular internal monitoring of several aspects, feed-back mechanisms, and monitoring of external factors such as the effects of demand on the international market*),
socio-cultural acceptance and economic effectiveness (*including socio-cultural and ethical acceptance, economic aspects, involvement of local communities*).

Framework for CITES non-detriment findings for hunting trophies with a focus on Argali *Ovis ammon*

Introduction to the framework

The framework presented here is intended to guide CITES Scientific Authorities and other decision makers through the process of making a non-detriment finding (NDF) in order to determine whether positive advice (trade can be allowed) or negative advice (trade not allowed) should be given to the CITES Management Authority. The framework takes trade in trophies from Argali *Ovis ammon*, as its focus and is therefore more directly applicable to species that are hunted for trophies (for international trade). Mallon (in prep) provides further information on CITES Appendix-listed species hunted in the Central Asian region. Although the framework below is more directly applicable to such species, the approach of the framework presented below nonetheless remains applicable to other species of fauna in terms of its step-by-step approach, the type of questions to address and the rationale behind the questions.

Development of a framework which aims to cover hunted species but with a focus on one particular taxon inevitably leads to challenges: some may seek more detailed information to guide the NDF analysis regarding *Ovis ammon*; others may see too much information regarding *Ovis ammon* when what they want to address are some "simple" questions regarding the NDF process. There are simple questions, but there are never simple answers. Consequently, "yes ... but ..." becomes a familiar refrain throughout the document. A section summarising key concepts has therefore been included below to show the conceptual approach and the policy direction of the framework that follows.

Summary of key concepts

Trophy hunting can be a positive driving force for conservation and for sustainable development. But, these aims can only be achieved if trophy hunting is approached with the conservation of the species at the forefront of any trophy hunting programmes initiated.

While the potential exists for trophy hunting programmes to contribute towards sustainable use and development, often this potential is not realised because trophy hunting programmes fail to channel the enthusiasm, funds and technical support to where they are needed. One might ask whether these factors are requirements of the NDF process under CITES? The simple answer would be "No". But long-term impacts might dictate closure of a programme that failed to consider the wider elements and to engage positively all the necessary stakeholders. The considerations and enabling environment for a successful trophy hunting programme are touched upon in the framework through the provision of examples of best practice. What constitutes best practice and what constitutes requirements under CITES are also identified in the framework.

Continuing with the "yes ... but ..." theme, the framework concludes with examples of where a positive or a negative NDF decision might be taken, and where a positive but qualified NDF decision could be taken (the "yes, positive ... but only if ..." scenario; see **Table 10** of the framework). For

example, the legitimate question might well be: "if one doesn't have all the information at hand, can a positive NDF still be given?" The answer, depending on what information was known, might be "Yes, but you may need to consider ... (*see framework*)". How those "knowns" and "unknowns" are identified, approached and addressed is essentially what the framework is about.

Presentation of the approach taken in the framework is possible in a simpler conceptual format, illustrated below (**Figure 1**). What the framework adds to this simplified approach is a breakdown of each step along the continuum.

Figure 1 **Simplified conceptual approach of NDF process presented in the framework**
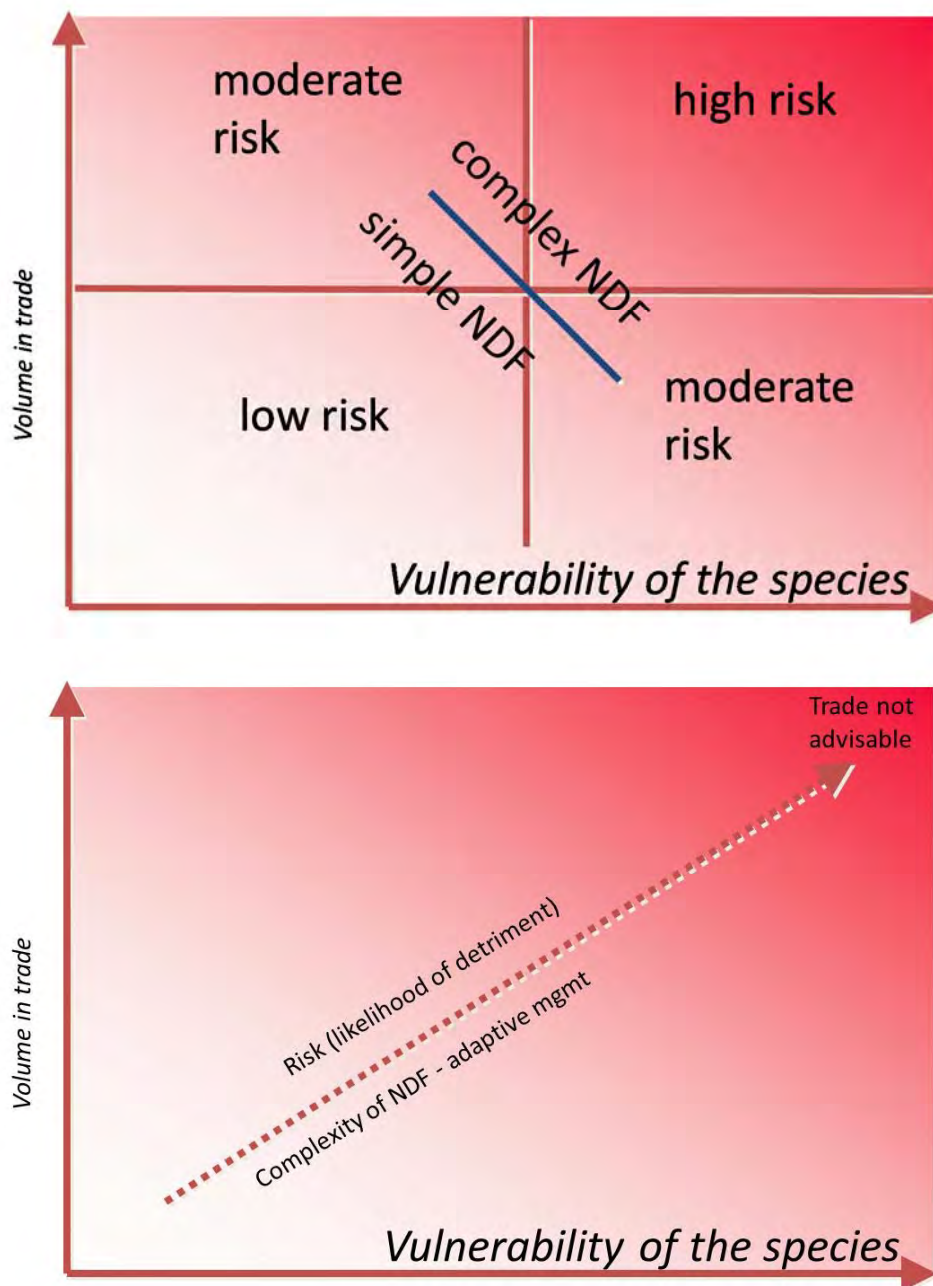
Source: adapted from CITES Secretariat (2012)

The greater the vulnerability of the species and the greater the volume of specimens of that species that are in trade, so the greater and more complex are the requirements of the NDF process. Adaptive management strategies can and should be put in place particularly where a conservative approach is required. For trophy hunting where only a very small percentage of trophy class specimens are taken, it is likely that a sustainable programme can be maintained, and possible that this could contribute positively to conservation and to local livelihoods. Nonetheless, there are risks that must be assessed. Essentially, the NDF assessment is a science-based risk assessment of the impact of harvest or off-take on a population. As summarised succinctly by the CITES Secretariat (2012), fundamental stages of this risk assessment include:

- Analyse risks
- Determine impact to the best extent possible
- Identify mitigation and management measures
- Take a decision
- Monitor results of that decision
- Adapt management accordingly

Principles of this risk assessment are:

- Data requirements should be proportionate to the potential risks
- Assessments should be based on the best information available
- If you need extra information and can get it, do so
- Use experience and guidance where available
- Use of "best practice" examples will help, such as
  - Local acceptance and enthusiasm for trophy hunting plans (benefit-sharing schemes).

The framework that follows takes the basic approach outlined above; it provides guidance on what questions to ask, what scenarios might arise and what management measures might be taken to mitigate risks identified.

Caveats

The framework does not set out to dictate: "this is how an NDF must be undertaken". Conservation management requirements differ from country to country and from population to population, as does the socio-political reality from one country to the next. Rather, the document aims to provide a framework for the types or blocks of information that need to be addressed, how one might set about approaching these information blocks, and what one does with the information gathered.

The framework aims to take the reader through a step-by-step process in undertaking an NDF, illustrating:

- the blocks of information to be considered;
- examples of what might constitute a high level threat versus a low level threat;
- scenarios where,
  - if threat levels are deemed to be low or if information has previously been compiled and remains relevant, one can make a decision based on existing information and avoid undertaking a more intensive NDF;
  - if threat levels are deemed to be high, further qualitative and/or quantitative information needs to be gathered;
- possible formats for recording information, noting also that there is no prescribed format.

Examples of scenarios and, in certain circumstances, what might be an appropriate management response are not intended to be prescriptive; they are provided to guide the reader and illustrate the type of issues that may need to be considered. At other times, there may appear to be little information provided: survey methodology is not discussed beyond "population surveys" or "monitoring of population" because it was felt that in-country biologists would have the best knowledge of what methodology works best where and in what conditions. Nonetheless, there are issues that warrant consideration in this context, notably standardisation of survey methodology at the country and regional level, times of year that surveys are conducted and whether populations aggregate or cross geopolitical boundaries. The familiar refrain "communication and cooperation" remains ever relevant.

The division of categories within this framework also may elicit a question mark at first sight, appearing as overlap or duplication; harvest and trade could be included within the same category because in the CITES context they are interconnected. However, this might have precluded more detailed analysis of the questions and responses to be considered under each category. Intrinsic and extrinsic threats, harvest impacts and trade threats could all be subsumed within "Conservation status and known threats" (stage 2), and it is reasonable to question why "Conservation status and known threats" features as a category unto itself when the aforementioned sub-categories then appear separately. The reason is simply that the initial preliminary analysis proposes consideration of available information on the species's (or population's) known conservation status and threats. Later examination requires that this be broken down into separate components.

When assessing information to reach an NDF decision, previously existing information on conservation status and threats can and still should be considered against recently gathered information under the various categories of conservation status and threats. *Ovis ammon* serves as an appropriate example: information compiled for the global IUCN Red List assessment (Harris and Reading, 2008) provides a useful overview and insight regarding taxonomy, assessment information[11], geographic range, population, habitat and ecology, threats and conservation actions. However, such information, although useful, is insufficient to determine whether trade in a trophy specimen would have a detrimental impact on the species / population; further information is required at the country and population level to reach an NDF decision, particularly given that there is taxonomic uncertainty, that populations are disjunctive and that there is insufficient information regarding management measures or their degree of rigour.

The final caveat concerns "the unknown" and its treatment in the framework presented here. Scientific Authorities are required to make decisions based on the best available information. In some cases, information simply will not be available and remain an unknown. Steps can be taken, however, to unravel the unknown. In instances where there are unknowns, the precautionary principle could be given a "deliberation-guiding" interpretation (Dickson, 1999), such that lack of scientific certainty that harm would or would not be caused should not prevent action from being taken. In the NDF context, strict interpretation and action in this instance might be a negative NDF. A more pragmatic application would be to treat each unknown on a case by case basis and to assess against the information that is known. Application of the precautionary approach would be to monitor impacts over time and to adapt the response accordingly; in other words, to take an adaptive management approach whilst factoring in steps to determine the unknown.

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[11] IUCN Red List Assessment (Version 2013.1) of *Ovis ammon*: Near Threatened because this species is believed to be in significant decline (but probably at a rate of less than 30% over three generations, taken at 24 years) due to poaching and competition with livestock, making the species close to qualifying for Vulnerable under criterion A2de (Harris and Reading, 2008)

Stage 1   Preliminary assessment

Where does the process for an NDF start?

The NDF process starts when the CITES Management Authority of the exporting country requests the advice of their CITES Scientific Authority regarding whether trade in a specimen of a species listed in the CITES Appendices would be detrimental or not to the survival of the species or the target population, or to the ecosystem on which it depends, in other words the NDF process(for the purposes of this framework, it is understood that the Management Authority has confirmed that the permit application has been filled in correctly).

In order to save time and resources, a preliminary (desktop) assessment can be undertaken to determine whether a decision can be made based on existing information or whether a more intensive NDF will be required. NDF requirements may be less rigorous for species which are lower risk or which have been reviewed before and for which there exists an evidence-based national export quota[12], harvest limit, trade threshold, or other management system in place. **Figure 2**,*Preliminary Assessment*, provides an overview of this process.

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[12] A national export quota is established by the national competent authority. It is a voluntary system and therefore different to quotas agreed at the international level (e.g. by the Conference of the Parties). See also section "*NDFs and CITES implementation in the European Union*" on p.9 of the introduction to the framework.

FIGURE 2 - Preliminary Assessment

Stage 1: Preliminary Assessment
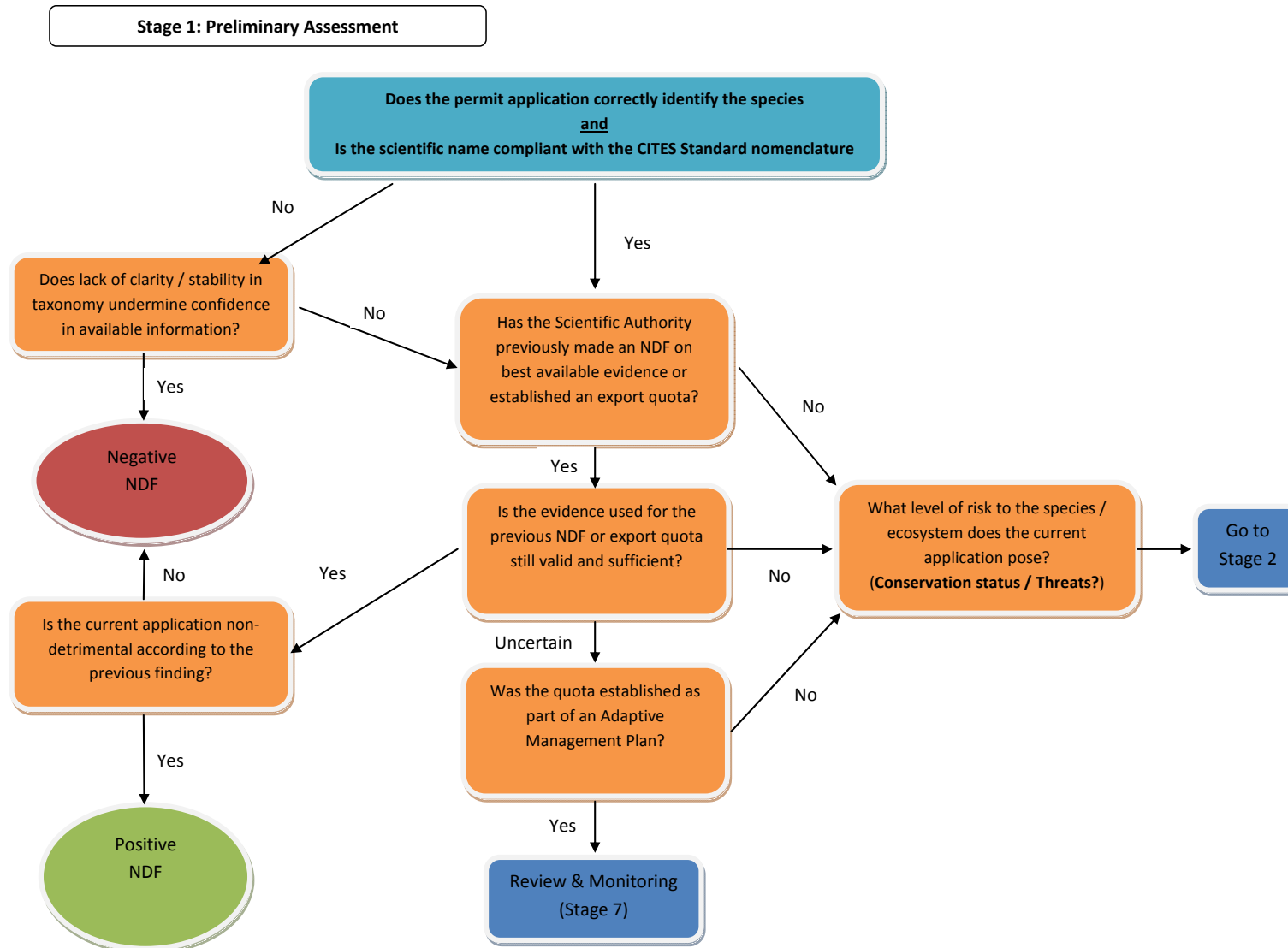
The first question in this process[13] concerns **specimen identification**: is the specimen of the same species that it purports to be in the application? This question needs to be considered with the following points in mind:

- **Deliberate mis-declaration** of the species:
    - this can occur when international trade in the species in question is more strictly regulated than a species that looks similar (referred to as a "look-alike" species). Intentional mis-declaration has been known to occur to avoid scrutiny and application of stricter controls.
- **Unintentional mis-declaration** of the species:
    - the species name of the specimen may have been confused with another species. This could be an innocent mistake, but may be noticed further along the trade chain causing unnecessary disruption and even confiscation of the specimen;
    - the species name may be under dispute because its taxonomic status is not clear or stable, and/or because nomenclature used in the application is from an out-dated source.
- **Taxonomy**
    - Taxonomy may be considered clear if the specimen for export is identified on the permit application to the level of species (or sub-species) and the name agrees with the nomenclature adopted by CITES (see CITES *Resolution Conf. 12.11 (Rev CoP16)*, *Standard nomenclature*).

Uncertainty regarding the taxonomic status of the specimen at the species level can undermine the validity of a non-detriment finding. Taxonomy may be considered stable if there are no concerns about the status of taxonomy and the species is not subject to review by the CITES Animals Committee (refer to *Useful Sources of Information* in **Annex II**).

However, this should not be taken to extremes: how and even whether various populations of *Ovis ammon* can be classified subspecifically remains contentious. IUCN treats *Ovis ammon* by country (and, where appropriate, by population) rather than by subspecies due to the unresolved discrepancies regarding subspecific taxonomy (Harris and Reading, 2008). Clearly, taxonomic identification is not clear and stable for sub-species of *Ovis ammon* but the threats posed by, and the effects on populations of trophy hunting, are not functions of subspecies (Harris, *in litt*. to R. Parry Jones 2 September 2013). Recognising that the taxonomy of this genus is in a state of flux, and noting that it concerns itself with CITES and non-detriment findings, this paper follows the taxonomy used by CITES.

At this juncture, the Scientific Authority could proceed to Stage 2. Or, if there is already a Trophy Hunting Management Plan in place, the Scientific Authority could go directly to "*Stage 7: Adaptive management – monitoring &review*".

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[13] Prior to requesting the advice of the SA, the MA should determine whether the application involves species listed in the CITES Appendices, that the Appendix-listing in the application is correct, and that the application takes into account relevant annotations.

Stage 2   Conservation status and known threats

By the end of this stage, *Conservation status and known threats* to the species, the Scientific Authority should be able to determine the level of threat to the wild population of the target species based on existing conservation status assessment(s) and documented threats. See **Figure 3** for overview of this step, and **Table 2** for guidance on assessing threat levels.

FIGURE 3: Overview of Conservation Status and Threats

Conservation status & known threats

Is the conservation status of the species known (IUCN RedList? Or National Assessment?).

No → Not assessed or insufficient data for the species

Yes → Is the species considered to be threatened in the part of its range affected by wild harvest of the species for export?

Yes (from Not assessed) → = Unknown Threat

No → = Low Threat

Yes (threatened) → Does national or relevant sub-national legislation ban wild harvest for export of this species?

Yes → Negative NDF

No → Are there regional agreements in place which prohibit wild harvest for export of this species?

Yes → Negative NDF

No → = Medium Threat / = High Threat

Continue process to next stage

This stage is important because the conservation status of an animal combines intrinsic (e.g. habitat specialization, reproductive rate) and extrinsic (e.g. climate, legal off-take, poaching) risk factors. In some cases, this can provide sufficient information to determine that an application is Low Risk (and therefore a rapid assessment can be undertaken). In other cases, the conservation status assessment may provide useful information to include in a science-based NDF but greater examination of intrinsic and extrinsic risk factors as well as the rigour of management responses will likely be necessary, as illustrated in stages three to six of this framework.

As this stage marks the beginning of a more intensive NDF, it is recommended that information is recorded for national management authorities and for importing countries should they request supporting information for decisions taken.
- **Table 2** provides guidance on how the level of threat could be assessed;
- The matrix at the end of this stage provides a simple idea of a format for recording the information.
- Information following the table is provided to guide the reader through the table.

Table 2   Guidance on assessing threat levels

Factor	Threat level	Indicator
Conservation Status	Low	Conservation status of the (target) population assessed as not threatened (equivalent to IUCN Red List Least Concern/LC)
	Medium	Conservation status of the (target) population assessed (and equivalent to): IUCN Red List Near Threatened/NT or Vulnerable/VU
	High	Conservation status of the (target) population assessed (and equivalent to): IUCN Red List Critically Endangered/CR or Endangered/EN
	Unknown	Conservation status of the (target) population has not been assessed or there is insufficient data (IUCN Red List equivalent Data Deficient/DD); populations not known to be declining
External Threat	Low	No threats to the species are known or likely to exist
	Medium	Threats identified are few and can be addressed through management measures
	High	Species faces multiple and complex threats and/or severe habitat loss
	Unknown	Information is not available for this factor
Population Trend	Low	Target population increasing or stable, not declining
	Medium	*Rarely sufficient information to define a "medium" indicator.*
	High	Target population declining
	Unknown	Information is not available for this factor
Role of species in ecosystem	Low	No known dependent species or key biological functions; cultural keystone species[14] as a non-hunted specimen maintained alive in the wild
	Medium	*A "medium" indicator is not meaningful in the context of a key biological ecosystem function – it either does, or does not, have a key function. Cultural keystone species which are still hunted in accordance with traditional knowledge guidelines*

_____

[14]Culturally defined keystone species (Cristancho, and Vining, 2004) are species, which form the link between biodiversity conservation, cultural identity and community development. Some species have spiritual, symbolic or social value. Some species may be viewed as critical elements in the relationship between people and the environment, defining their identities and development. Further information is provided on p.22.

Factor	Threat level	Indicator
	High	Keystone species in ecosystem and / or cultural keystone species for hunting
	Unknown	Information about this factor is not available.

Global, regional, national or sub-national conservation status

National species assessments can provide up-to-date information on the conservation status of the species. Where a national assessment is lacking or outdated, a global or regional assessment can provide a useful indication of threat, but caution should be taken when considering the national implications of global conservation status (e.g. as assessed by the IUCN Red List):

- a species may qualify as not threatened based on global criteria, but can have national populations too limited by size, distribution, and other factors for harvest to be possible on a sustainable basis.

And conversely:

- a species may qualify as threatened based on global criteria, but have national (or sub-national) populations that allow for sustainable use, particularly if that sustainable use is well-managed.

Populations and sub-populations: in practice, NDFs usually apply to the national population of the Party making the NDF. However, Scientific Authorities should take into account the population trends and the impact of harvest on other portions of the population (CITES, March 2009). This is particularly relevant for Argali as they inhabit a huge geographic range, but are separated into more-or-less disjunctive populations (CMS, 2011); there is no agreement on how much their disjunctive distribution is natural versus the result of anthropogenic influence (CMS, 2011). A practical and logical approach would be to assess trends at the sub-population level rather than at the national level. For trans-boundary populations (e.g. *O. a. ammon* inhabits the four countries knot between Kazakhstan, Mongolia, the People's Republic of China (hereafter "China") and the Russian Federation (Harris and Reading, 2008); and *O. a. polii* ranges across Tajikistan, Afghanistan, China and Pakistan (Mallon, *in litt*. to R. Parry Jones, 30 Aug 2013), national management plans should contribute to or be developed in tandem with regional transboundary management plans. *Ovis ammon* distribution may be viewed on the IUCN Red List website at: http://maps.iucnredlist.org/map.html?id=15733

External threats

This factor assesses whether known threats to the target species are single, multiple, straightforward or complex. Trade impacts are considered in greater detail later in the framework (Stage 5)**.**Examples of main threats to Argali and other ungulate species in Central Asia that could be considered include:

- habitat loss, degradation or land use changes, i.e.:
    - displacement from preferred habitats by domestic livestock
    - erection of fences (or other blockages) across migratory routes, causing e.g. genetic isolation and preventing migration to optimal grazing sites
    - human encroachment into habitat
    - construction: roads / mining
    - fuel wood collecting
- poaching (considered in greater detail in Stage 6)

Vulnerability to stochastic events, including extreme weather events, and predation by wild animals are not so much threats, more challenges that populations must live with. Invasive alien species, including introduction of livestock-introduced diseases such as pasteurellosis, rinderpest, malignant anthrax (Sapozhnikov 1976), can also be considered threats although generally to a lesser degree than habitat displacement and illegal hunting (Harris, *in litt to* R. Parry Jones., 31 August 2013).

Cross-cutting factors should also be considered here: socio-economic impacts and perceptions of local communities towards the species. For carnivores which represent a mortal threat to humans and to livestock, it is immediately understandable why specimens may be targeted by rural communities; for ungulates, although they do not present a mortal threat, lack of tangible benefits derived from the species can represent a serious threat to conservation management programmes. In both instances, revenues derived from fees can provide strong incentives for species conservation and habitat protection. See the introduction for further details.

Population Trends

This section considers biological aspects of populations; at its most basic level, whether the population is increasing or decreasing. Further details such as population distribution and age structure, are addressed in Stages 3 (intrinsic risks), 4 (Harvest Impacts) and 6 (Management).See also above "*Populations and sub-populations*" regarding national population versus sub-populations.

Role of the species in the ecosystem

This factor considers the role of the species in, and impact of its harvest on the ecosystem. Is the species a keystone species[15], do other species depend on it for survival? Keystone species, in biological and ecological circles, are widely understood. Culturally defined keystone species (Cristancho, and Vining, 2004) also warrant consideration, where a species forms the link between biodiversity conservation, cultural identity and community development. Some species have spiritual, symbolic or social value, for example the use of the coca plant amongst the Letuama indigenous peoples in South America (Cristancho, and Vining, 2004) and hunting of Marco Polo sheep in Kyrgyz folklore and art (Jackson and Nain, 2006). Some species may be viewed as critical elements in the relationship between people and the environment, defining their identities and development. CITES *Resolution Conf 16.6 – CITES and Livelihoods* specifically recognises this concept, as discussed in the introduction to this framework. The concept has relevance for trophy hunting given the strong connection between ecological and cultural preservation, and the strong interconnections and implications for environmental and developmental policy within a rights-based approach (see introduction).

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[15]Keystone species: A species whose effect is large, and disproportionately large relative to its abundance (Power et al., 1996)

There is no prescribed format for capturing information. A simple matrix is sufficient.

Factors to consider	Information & Source	Evaluation			
		Low	Medium	High	Unknown
Conservation status		☐	☐	☐	☐
External threat		☐	☐	☐	☐
Population trend		☐	☐	☐	☐
Role in ecosystem		☐	☐	☐	☐

Stage 3   Intrinsic risks

This stage considers the **intrinsic risks** to the species in the context of wild harvest.

Some species are naturally more vulnerable to the impacts of wild harvest and commercial trade than other species. By the end of this stage, through evaluation against a common set of intrinsic biological factors, Scientific Authorities should be able to determine whether the risk of unsustainable wild harvest is likely to be "high", "medium", low", or "unknown". It should also be possible to identify which particular biological characteristics contribute to higher levels of risk.

For species with conservation status identified earlier as "low threat", a desktop assessment may be adequate, for example: information derived from the permit application, recent conservation status assessments and scientific publications.

For species identified in stage 2 as "medium" or "unknown" threat, additional consultation of more detailed qualitative information is advised, for example field survey reports, information from local communities, resource managers and hunters; and national / regional management and conservation action plans.

For "high threat" species, additional detailed quantitative information is advised, for example, comprehensive mapping of available habitat combined with field verification; adaptability of species (specialist versus generalist); field surveys and monitoring (population range and distribution; age structure including recruitment and juvenile sex ratios (Milner *et al.*, 2007)); modelled population parameters and demographics (e.g. abundance, trends and regeneration rates).

The higher the level of risk, the greater the requirements for information quality, management rigour and precaution that should be applied.

Table 3 – Guidance for assessment of intrinsic risk factors

Intrinsic biological factors related to risk	Risk level	Indicator
1. Geographic distribution	Low	Distribution of the species is widespread and contiguous throughout the country and region within its range.
	Medium	(Sub)population(s) is/are widespread but restricted to relatively small parts of its range (in country and region).
	High	Distribution is restricted and fragmented, and possibly endemic.
	Unknown	Note: Information about this factor is unavailable.
	Explanation: assesses the known national, regional and global range and distribution of the species.	
2. National & regional population size and abundance	Low	(Sub)population(s) are large and spread homogeneously throughout range.
	Medium	(Sub)population(s) are medium-sized, sometimes large.
	High	(Sub)population(s) are small and/or fragmented across their range.
	Unknown	Information unavailable.
	Explanation: assesses the spatial distribution across the range of the species. For Argali, because there are usually substantial differences in the status of identifiable sub-populations, an emphasis on the sub-population rather than the national level population would be more appropriate. Furthermore, as many Argali populations cross international borders, biological boundaries (if they can be indentified) would be more beneficial for assessing population abundance than national boundaries (Harris, *in litt*. to R. Parry Jones, 31 August 2013).	
3. Ecological adaptability	Low	Species is an extreme generalist, highly adaptable to various habitat types and habitat is stable.
	Medium	Species can adapt to several specialized habitat types or to many but threatened habitat types.
	High	Species is an extreme specialist, narrowly specific to one habitat type or to a few threatened habitat types.
	Unknown	Information about this factor is unavailable.
	Explanation: assesses the target species's habitat preference, adaptability, and the number of possible habitats occupied. For example, Servertov's Argali, the smallest Argali subspecies occurs in the hottest part of the Argali range area and requires shelter from the sun. They are therefore already vulnerable to deforestation and competition with livestock. Conversely, Saiga Antelope *Saiga tatarica* are highly adaptable to varying forage availability and avoid pasture degradation often caused by less mobile domestic livestock (Michel, 2008).	
4. Life history	**Low**	High reproductive rate, long-lived.
	Medium	High reproductive rate, short-lived. OR Low reproductive rate, long-lived.
	High	Low reproductive rate, short-lived.
	Unknown	Information about this factor is unavailable.
	Explanation: addresses recovery capacity of the harvested population. Evaluation should consider reproductive rate *vis-à-vis* the status of the target population and whether recruitment is affected by external impacts.	

There is no prescribed format for capturing information. A simple matrix is sufficient.

Intrinsic biological factors	Information & Source	Evaluation of Risk level			
		Low	Medium	High	Unknown
Geographic distribution		☐	☐	☐	☐
Population and abundance		☐	☐	☐	☐
Ecological adaptability		☐	☐	☐	☐
Life history		☐	☐	☐	☐

Stage 4   Impact of wild harvest

Trophy hunting, by definition, is a selective harvesting regime: hunters have preferences associated with specific traits of the species, such as body size, horn / tusk size, and trophy value.

Selective hunting can have unintended demographic side effects on populations. Short- and long-term changes in populations and other parameters of the hunted species have been observed (Milner-Gulland and Rowcliffe, 2007), and are noted below. However, it must be emphasised that whether or not off-take is going to have a detrimental impact will depend very much on the level of off-take. Off-take of a small proportion (e.g. <5%) of the adult male component of an Argali population is extremely unlikely to have any demographic impact on the population (Harris, *in litt.* to R. Parry Jones, 31 August 2013).

Some of the impacts ascribed to selective sport hunting for ungulates and carnivores are noted below[16]. These serve as important caveats and reminders about the need for caution, setting limits, and monitoring for changes, but should not be interpreted as default impacts of selective hunting.
-   Selective removal of relatively few specific individuals, often large trophy males, can destabilize social structures and dominance hierarchies resulting in loss of social knowledge, sexually selected infanticide, habitat changes among reproductive females, and changes in offspring sex ratio (Milner *et al.*, 2007);
-   Removal of a large proportion of a specific age or sex class can result in a bias in the population sex ratio toward females (Greene *et al.*, 1998; Milner-Gulland *et al.*, 2003**;** Milner *et al.*, 2007), depressed recruitment, delayed birth dates and reduced birth synchrony (Milner *et al.*, 2007);
-   Behavioural impacts from hunting disturbance include changes in patterns of feeding or movement and in habitat use (Harris, 2002);
-   Altered rates of gene flow among neighbouring populations due to a reduction in population abundance (Harris *et al.*, 2002);
-   Observed longer-term demographic impacts on population genetics include an increased incidence of tuskless elephants (Harris 2002) and a decrease in size and altered shape of horns in [Rocky Mountain Bighorn, *Ovis canadensis*] wild sheep due to trophy hunting (Coltman *et al.*, 2003; Garel *et al.*, 2007 in Mysterud and Bischof, 2010)).

The extent of impact on populations and their resilience to selective hunting programmes will depend on the management plans and the rigour with which they are implemented. The suggestion put forward in the position statement developed by FANC (see introduction) for comparative studies of populations undisturbed by hunting (Grimm, 2002) might shed further light on longer term impacts of selective hunting programmes. Noting the paucity of information regarding impacts of trophy hunting on Argali populations, an emphasis on monitoring should be given with a view to adaptive management, if and where necessary**.**

Feed-back mechanisms also provide a useful process for ongoing qualitative monitoring (see Stage 7), enabling information regarding external factors such as impacts of international demand and trade to be fed back into decision-making processes.

In the shorter term, evaluation of other factors, for example harvest practice and intensity, including monitoring the sex, age and phenotype harvested, and the proportion of individuals affected, can provide useful indicators of harvest impacts on population dynamics.

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[16]Acceptance of these impacts is not universal: Damm (2008) refers to "the myth" of trophy hunting contributing towards degeneration of species's characteristics, and cites Loehr *et al.*, (2006) in support of this argument.

Scientific Authorities may not have all the information they desire, but should have sufficient information available to make a "best judgement" call based on the precautionary principle to determine whether risk levels for the target species are "high", medium", low", or "unknown".

- For species with conservation status (Stage 2) as "low threat" and/or low intrinsic risk of unsustainable wild harvest (Stage3): desktop information may be sufficient, for example information from the permit application (e.g. species and number of specimens requested in application), status assessments and reports / scientific publications regarding population trends.
- For "medium" or "unknown" threat, and/or "medium" or "unknown" risk species, additional qualitative information is appropriate, such as instructions issued to hunters and resource managers, local, national and regional management / conservation plans, interviews with scientists, hunters, local communities and resource managers for qualitative indices (e.g. perceptions of change in resource abundance and distribution; population dynamics).
- For "high threat" and/or "high risk" species, additional quantitative information is advised, for example: analysis of records of animal off-take (e.g. number of specimens/from where/when/age and sex of specimen; phenotype qualities, e.g. horn size); quantitative population data from field surveys (e.g. abundance, distribution, age structure) and modelled population parameters (e.g. population trends).

Table 4   Guidance examples for assessment of harvest impacts

Factor	Impact level	Indicator
1. **Impact of harvest on target populations**	Low	- Harvest of a low proportion of available (trophy class) animals; - Harvest is regulated under an evidence-based conservative quota set within adaptive national/regional management plan; - Illegal harvest is minimal / zero; - Population and distribution are stable or increasing.
	Medium	- Moderate proportion of individuals of particular age / size harvested, relative to availability and population size; - Harvest is regulated under quotas set within adaptive national/regional management plan; - Population numbers and distribution are stable; - Harvest is delayed until after the rut when older males have had the opportunity to breed; - Some illegal harvest.
	High	- Harvest of a high proportion of available (trophy class) animals; - Large number of individuals harvested, relative to population size; - Quotas, if established, are without scientific or conservative basis; - Population and distribution are declining / fragmenting; - Illegal harvest not controlled.
	Explanation: characteristics of wild harvest that affect the long-term viability of breeding populations (i.e.: recruitment), and longer-term evolutionary consequences of targeting specific phenotypic qualities.	
2. **Impact on other species**	Low impact	- Target species easy to identify, unlikely to be confused with other (sub)species; - Harvest practices avoid damage to environment; - Harvest of target species has minimal impact on other wild (sub)species (e.g. predator populations are not controlled; insignificant impact for predators on target species as prey; removal of an alien/invasive species).
	Medium impact	- Target species can be confused with other species; - Harvest practices occasionally disruptive to other species or the

Factor	Impact level	Indicator
		environment.
	High impact	• Target species is easily confused with other species; • Harvest of other (sub)species is not regulated; • Harvest practices are damaging other species (e.g. significant reduction in target species as prey for predators; control killing of predators such as wolves and snow leopards[17]).
	Explanation: characteristics of wild harvest that may affect other species (i.e. look-alike species) or species that depend on the target species (e.g. seed dispersal or predators).	

There is no prescribed format for capturing information. A simple matrix is sufficient.

		Evaluation of Impact level			
Impact of Wild Harvest	**Information & Source**	**Low**	**Medium**	**High**	**Unknown**
Impact of harvest on target populations		☐	☐	☐	☐
Impact on other species		☐	☐	☐	☐

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[17] Management measures to mitigate threats to Argali would suggest predator control should be undertaken. But, as far as possible, a holistic ecosystem-based approach should be adopted, therefore precluding killing predators. However, killing of wolves is a problematic and very real issue in Central Asia where they are seen to be a direct threat to Argali (Mallon, *in litt*., to R. Parry-Jones, 30 August 2013). While this paper does not advocate culling of wolves, if they are killed as predator control, their populations should be monitored to ensure that they are not brought to a level which would threaten their survival.

Stage 5   Impacts of legal and illegal trade, and drivers of harvest and trade

By the end of this stage, Scientific Authorities should be able to determine whether the impact of trade on the target species is "high", "medium", "low", or "unknown" based on an assessment of diversity of use, scale and trends for the target species as well as evaluation of drivers of use and trade, including illegal trade. Guidance is provided below in **Table 5**.

The greater the diversity of uses, so the greater the number of markets there are for products from that species, and the more complex the trade chain becomes. The less transparent a trade chain is, the harder it is to monitor and regulate. Changes in trade trends can indicate changes in supply or demand; price changes might help to explain whether a decreasing trade volume is due to the resource becoming rarer and so costing more. Drivers of harvest and trade, including socio-economic drivers, help to explain why pressure is being exerted on the resource.

The greater the (potential) threat of trade impacts on the target species, the greater are the requirements of information quality and precaution that Scientific Authorities should apply to making an NDF.

- For species which have so far been ranked as "low threat", "low risk" and "low harvest impact", it may be sufficient to consult basic desktop information sources, such as trade databases to look at trade trends (export permits, the CITES Trade Database[18] run by UNEP-WCMC, and national trade databases.

- For species of "medium" or "unknown" threat or risk of unsustainable wild harvest, additional qualitative information may be warranted, for example market / trade survey reports, enforcement reports (for illegal trade), information on legal and illegal trade from local communities, traders, harvesters and wildlife managers.

- For "high threat", "high risk", and/or "high harvest impact" species, all available information should be consulted. In addition to information noted above, this might include quantitative information on numbers of specimens exported legally and illegally, as well as analysis of trends in national exports and, where available and relevant, in domestic trade.

Perceptions of local communities towards trophy hunting programmes warrant evaluation for species of medium or high risk: exclusion of local communities from economic or other development benefits derived from trophy hunting programmes can act as a driver for poaching / illegal trade as illustrated in Tajikistan (Michel, 2008; Michel, 2010; Baldus and Michel, 2011) and Mongolia (Amgalanbaatar *et al.*, 2002). Just as local poaching may be encouraged by insufficient inclusion of local communities in a sanctioned trophy hunting programme, cessation of trophy hunting for Blue Sheep (*Pseudois nayaur*) in China is also believed to have been the driver for a resumption of poaching of the species (Harris, *in litt.* to R. Parry Jones 31 August 2013).

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[18] CITES trade database: http://www.unep-wcmc.org/cites-trade-database_495.html

Table 5　　　　**Guidance examples for assessment of trade impacts**

Factor	Trade Impact	Indicator
1. Diversity, scale and trend of trade	Low impact	• Used for one purpose • Trade volume low relative to availability, and stable or decreasing over time • No shortage of material in trade recorded or reported • Demand stable
	Medium impact	• Several non-conflicting uses (e.g. trophy heads for international market, meat for local consumption) • Trade volume stable or showing marginal / fluctuating increase
	High impact	• Multiple and conflicting uses (eg. trophy hunting by foreigners; hunting by locals for subsistence, and hunting for sale of specimens / parts or derivatives) • Trade volume high relative to population size • Demand high relative to supply
	Explanation: considers trade dynamics in relation to population size	
2. Drivers of harvest / trade	Low impact	• Local communities have incentives to protect the population (receive benefits from resource harvest and are actively engaged in protecting target population) • Enforcement officials and wildlife / resource managers understand relevant regulatory frameworks for wildlife harvest and trade and therefore able to enforce • National and/or international demand stable or decreasing
	Medium impact	• Local communities receive some / minimal benefits from resource harvest but remain sceptical of the programme • Enforcement officials and wildlife / resource managers have limited understanding of relevant regulatory frameworks • National and/or international demand stable
	High impact	• Local communities receive no benefits from resource harvest and are resentful of controls in place • Enforcement officials and wildlife / resource managers unaware of relevant regulatory frameworks • National and/or international demand increasing
	Explanation: considers the drivers of threats such as illegal trade; considers also the incentives and drivers to mitigate threats	
3. Illegal harvest / trade	Low impact	• No discrepancies between population dynamics and estimated volume in reported exports plus domestic trade • Good documentation of domestic & international trade • Trade chains transparent
	Medium impact	• Some concerns about population dynamics and number of specimens in reported exports plus domestic trade • Poor documentation of domestic & international trade • Trade chain complex or difficult to follow • Known or suspected illegal trade
	High impact	• Population dynamics cannot be explained by volume reported in trade and/or by natural phenomena (e.g. climatic conditions; natural population flux) • Little documentation of legal domestic & international trade • Trade chain not transparent • Illegal trade known to be on-going
	Explanation: considers whether illegal or unmanaged harvest or trade exists and whether it poses a significant risk in proportion to population size.	

Note: trade refers to domestic and international trade

There is no prescribed format for capturing information. A simple matrix is sufficient.

Impact of legal and illegal trade	Information & Source	Evaluation of Impact level			
		Low	Medium	High	Unknown
Diversity, scale and trade trends		☐	☐	☐	☐
Drivers of trade		☐	☐	☐	☐
Illegal harvest / trade		☐	☐	☐	☐

Stage 6   Evaluation of management measures

This stage considers the **threats and risks identified** in stages 2-5, and enables the Scientific Authority to suggest appropriate management options to the Management Authority in order to mitigate threats and risks.

This stage also sees the beginning of the process to compile information gathered in earlier stages. Again, there is no prescribed format for compiling information. A simple matrix is presented (see below) although the aim of the matrix presented is to illustrate the process.

Overarching considerations in this stage concern:
- enactment and implementation of the management plan;
- the level of precaution built into management plans and (hunting) quotas;
- the adaptability of approach, i.e.: can the management framework be adapted at any time[19]?

Of equal importance is the engagement of local communities:
- are they factored into design and implementation of the management plans;
- are they benefitting from the programme;
- are they supportive of the programme?

And ultimately: is the conservation status of the target species / population benefiting as a result?

Table 6 below, provides examples of threats that may arise and management measures to mitigate such threats using *Ovis ammon* as an example; guidance is also provided in determining the level of management rigour. **Annex III** provides greater detail on the types of management measures and levels of rigour that could be considered. Both the table below, and **Annex III**, provide examples and are neither prescriptive nor exclusive.

Following these tables is a possible format (**Table 7**) for recording information. As with earlier stages, information can be recorded in any chosen format; the matrix presented below is to illustrate a possible approach.

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[19]A management plan is a useful tool, but lack of a formally approved management plan should not deter conservation and management efforts.

Table 6   Possible management measures and guidance on levels of rigour with regard to trophy hunting
Further details are provided in Annex III

Level of management rigour	Management of intrinsic biological risk and conservation threats	Management of wild harvest	Management of trade
None / uncertain	No information available about management system or control measures relating to identified threats or intrinsic risks for the target species or populations	No information available about management system or control measures relating to harvest impacts on the target species or populations	No regulatory measures in place (domestic and international) for the species / specimens
Low	Percentage of species natural range or population legally excluded from harvest <5%	Guidelines for off-take not clearly defined (i.e.: which individuals / number of individuals from which (sub)populations (Amgalanbaatar *et al.*, 2002)	Legislation in place to regulate trade but poorly understood / enforced
Medium	Proportion of species natural range or population that is in a protected area: 5-15%	Hunting quotas take into account illegal off-take as well as all legal off-take	Trade chain understood but some knowledge gaps
	Monitoring and qualitative documentation of harvest in place	Maximum / minimum age or size restrictions on animals harvested	Legislation in place with broad awareness and understanding
High	Adaptive / flexible harvest quota in place to account for changes in population dynamics as a result of natural or anthropogenic factors	Quotas for threatened species are set at highly precautionary levels, taking into account illegal harvest	Export quota monitored against actual exports with feedback mechanisms in place to CITES Management and Scientific Authorities
	Local communities are incorporated into management plans and actively participate in population monitoring and threat mitigation	No predator control[20] to increase population of target species (Grimm, 2002)	CITES Category I legislation[21] in place with high awareness and understanding

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[20] Management measures to mitigate threats to Argali would suggest predator control should be undertaken. But, as far as possible, a holistic ecosystem-based approach should be adopted, therefore precluding killing predators. However, killing of wolves is a problematic and very real issue in Central Asia where they are seen to be a direct threat to Argali (Mallon, *in litt.,* to R. Parry-Jones, 30 August 2013). While this paper does not advocate culling of wolves, if they are killed as predator control, their populations should be monitored to ensure that they are not brought to a level which would threaten their survival.

[21] Category 1: legislation that is believed generally to meet the requirements for implementation of CITES [see *Resolution Conf. 8.4 (Rev. CoP15) - National laws for implementation of the Convention*]

Table 7   **Potential matrix for documenting and evaluating management measures**

Factors	Summary of Stages 2-5				Stage 6				
	Threat / risk / impact Summary of Stages 2-5	Overall Assessment of Risk / Impact			Management measure taken to address threat / risk / impact and information source	Assessment of Management Rigour			Overall assessment of management rigour and confidence
		High	Medium	Low		High	Medium	Low	High / Medium / Low
Conservation threat:	1				1				
	2				2				
	3				3				
Intrinsic biological risk:	1				1				
	2				2				
	3				3				
Harvest impact:	1				1				
	2				2				
	3				3				
Trade impact:	1				1				
	2				2				
	3				3				

Stage 7 Adaptive management: monitoring and review

The first stage, Preliminary Assessment, identified four potential routes that could be taken by the Scientific Authority:

1) Positive NDF
2) Positive but qualified NDF
3) Negative NDF

A fourth route is available for adaptive management strategies where the NDF process has previously been undertaken and the current assessment is part of the on-going review of new information.

4) Adaptive Management - monitoring and review, including quotas established as part of an adaptive management plan.

This stage concerns itself with this fourth option: reviewing the results of monitoring, research and review programmes initiated under the Adaptive Management Plan (see **Figure 4**).Review might be undertaken, *inter alia*, of results from population monitoring programmes (quantitative analysis), evaluating opinions from communities (qualitative or *ad hoc*), and review of revenue streams, etc. Because the process of monitoring and review can only be undertaken if there is already an adaptive management plan in place to review, much of the work undertaken in stages 3-6 will have been undertaken previously in establishing the management plan.

FIGURE 4 Overview of Monitoring and Adaptive Management

Stage 7: Adaptive management: monitoring and review

Research & Monitoring

Feedback mechanism

Governance Committee

Adaptive Management Plan &Quota

Governance Committee

Knowledge transfer

Lessons learned

Committees from other programmes / countries for knowledge transfer, eg: Conservancies from Namibia's Communal Conservancy programme

Feedback mechanism

Feedback mechanism

Implement Mitigation measures And **Identify** new areas of research **Prioritise** areas of research

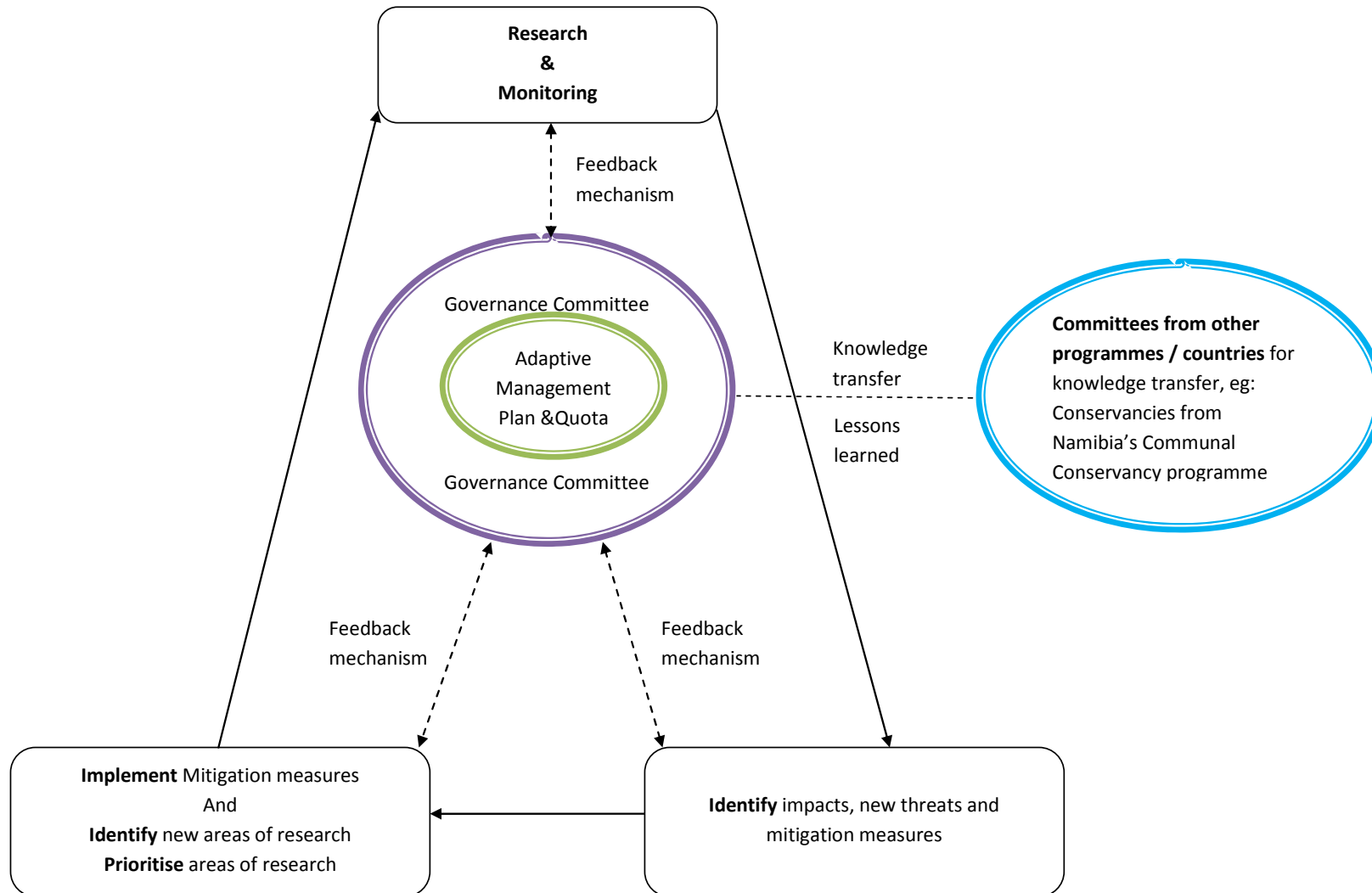**Identify** impacts, new threats and mitigation measures

Figure 4 illustrates the critical role that a Governance Committee, or equivalent (*see the introduction*), can play, providing an important link between government, external programmes, rural communities, scientists and managers. The composition of the Committee is therefore of utmost importance. A (Governance) Committee also ensures that there is transparency and accountability in the undertakings of a hunting programme. This is particularly relevant given the large sums of money that can be generated and the potential for corruption. Transparency and accountability must not just be in place, they must be seen to be in place (*see introduction for further details*).

Table 8, below, provides examples of possible observations that may be encountered, the cause, effect, and possible mitigation measures. This table does not seek to be exhaustive, merely to provide an example of a possible observation and possible reasons behind the situation (i.e.: there could equally be other explanations). Review of the examples given in the table demonstrate the link and the fine line between the overarching Conservation Management Plan, discussed in the introduction under "*NDFs and Conservation Management Plans*", and the NDF process. Adaptive management strategies, where decisions are made on the best available information and adapted as further information becomes available, are an accepted NDF approach (see CITES *Resolution Conf. 16.7*). Review of newly available information may identify issues of concern in the NDF process; review of underlying causes may significantly influence the steps required to address the situation.

Taking *Ovis ammon* as an example, distribution of a target population may be found to have shifted to habitat with less favourable forage conditions. In turn, this could contribute to a negative impact on population size through increased mortality and reduced recruitment, thereby affecting the NDF outcome. Analysis of the driving forces may reveal this shift in distribution to be a result of hunter disturbance or, equally, it may be found that competition for forage with domestic livestock has caused this shift. Measures required to address these driving forces would differ significantly. What started out as a question regarding a shift in distribution and potential impact on population dynamics may conclude as an issue to be addressed through adaptation of the CMP, socio-economics and engagement of local communities. While this may not be regarded as a "traditional NDF" assessment, it highlights the challenges that may arise if the scope of an NDF assessment is restricted and, consequently, it emphasizes the holistic approach and broad considerations that are required.

Threats and impacts identified through research and monitoring should be recorded, as well as the cause, in order to identify the most appropriate mitigation measure. A suggested format for collating information is provided below in **Table 9**.

Table 8   Adaptive Management Strategy: Examples of potential observations and management responses with regard to trophy hunting

Source of information: Monitoring / Research / Feedback mechanisms	Observations EXAMPLES	Cause EXAMPLES	Assessment of New Threat / Risk / Impact				Mitigation measure EXAMPLES
			High	Medium	Low	Unknown	
Feedback mechanism: hunting outfits to Governance Committee	Permit issuance delays	**Governance:** hunting programme not part of legally recognised governance structure	X				Governance Committee to address with legislature
Annual Review of Management Plan	Financial accounts do not balance; revenue streams not reaching communities	**Governance:** financial management is good, but high land tax cannot be offset by hunter fees		X			Tax exemptions on land tax are needed for private and community based programmes to become / remain economically viable
Annual Review of Management Plan	Hunting outfits expressing interest but not coming to hunt	**Governance: p**ermit cost too high for domestic and foreign hunters	X				Governance Committee to explore whether permits can be provided free of charge to community (in exchange for completed management plan) until programme well established
Feedback mechanism (hunting outfits to Governance Committee) and Annual Review	Hunters not able to return home with trophy	**Governance:** suspension of imports from exporting country due to remaining questions on NDF methods	X				Governance Committee / CITES MA to provide a copy of the Adaptive Management Plan with supporting information
Qualitative review of local community support	Residual resentment against foreign hunters	**Socio-economic:** lack of awareness; revenue streams not reaching communities		X			Increase awareness/understanding Undertake review of revenue streams to local communities
Population monitoring	Conflicting data on target population size and distribution	**Capacity:** survey methods used are not standardised		X	X		Review of methodology to ensure most appropriate method in use; workshop to ensure understanding and standardize use; governance committee to seek external assistance (technical expertise and/or finance)
Monitoring of target population(s) - scientific	Population stable and poaching decrease	**Socio-economic:** communities receive benefits; self-regulate hunting to non-trophy animals			X		No change

| Source of information: Monitoring / Research / Feedback mechanisms | Observations EXAMPLES | Results of Monitoring Programme under Adaptive Management Strategy | | | | | | Stage 7 |
| | | Cause EXAMPLES | Assessment of New Threat / Risk / Impact | | | | Mitigation measure EXAMPLES |
			High	Medium	Low	Unknown	
Monitoring of target population(s) - participatory monitoring	Change in distribution / habitat of target population	**Socio-economic:** revenue streams not reaching communities resulting in competition for forage **Human disturbance**: disturbance caused by hunters	X				Review revenue streams to local communities to improve benefit sharing systems and encourage acceptance of species Review management plan and guidelines for hunting operations
Monitoring of target population(s) - community participatory monitoring	Number of trophy class males stable / increasing	**Harvest:** precautionary quota in place					Quota to be reviewed: - May already be at upper limit; - Small increase for next season may be possible
Feedback (opportunistic)	Ornamental horns seen in markets across the border	**Illegal hunting and trade:** presumed. No supporting information, other than anecdotal reporting.				X	Monitor trade; liaise with counterparts in country of import; start awareness programme; Inform other wildlife / resource managers to monitor / be aware of trade threat; strengthen anti-poaching efforts.
Trade monitoring	Ornamental horns openly transported across national border for sale in foreign markets	**Trade** monitoring programme effective: recommendations require implementation (see mitigation measures)		X			Implement recommendations of trade monitoring programme: start border awareness programme; build capacity and understanding of wildlife / trade laws amongst of enforcement officials; liaise with counterparts in country of import; Inform other wildlife / resource managers to monitor / be aware of trade threat.

Table 9   **Possible matrix for review of management plan and documenting new impacts / threats and mitigation measures**

Stage 7 review		Results of Monitoring Programme under Adaptive Management Strategy						Stage 7 Mitigation measure
Source of information: Monitoring / Research / Feedback mechanisms	Observations	Cause	Assessment of New Threat / Risk / Impact					
			High	Medium	Low	Unknown		

Stage 8 Making the non-detriment finding

This stage reviews information compiled in stages 3-6 to determine the NDF outcome. The process is illustrated in **Figure 5**.

Figure 5 - Process for determining the NDF outcome
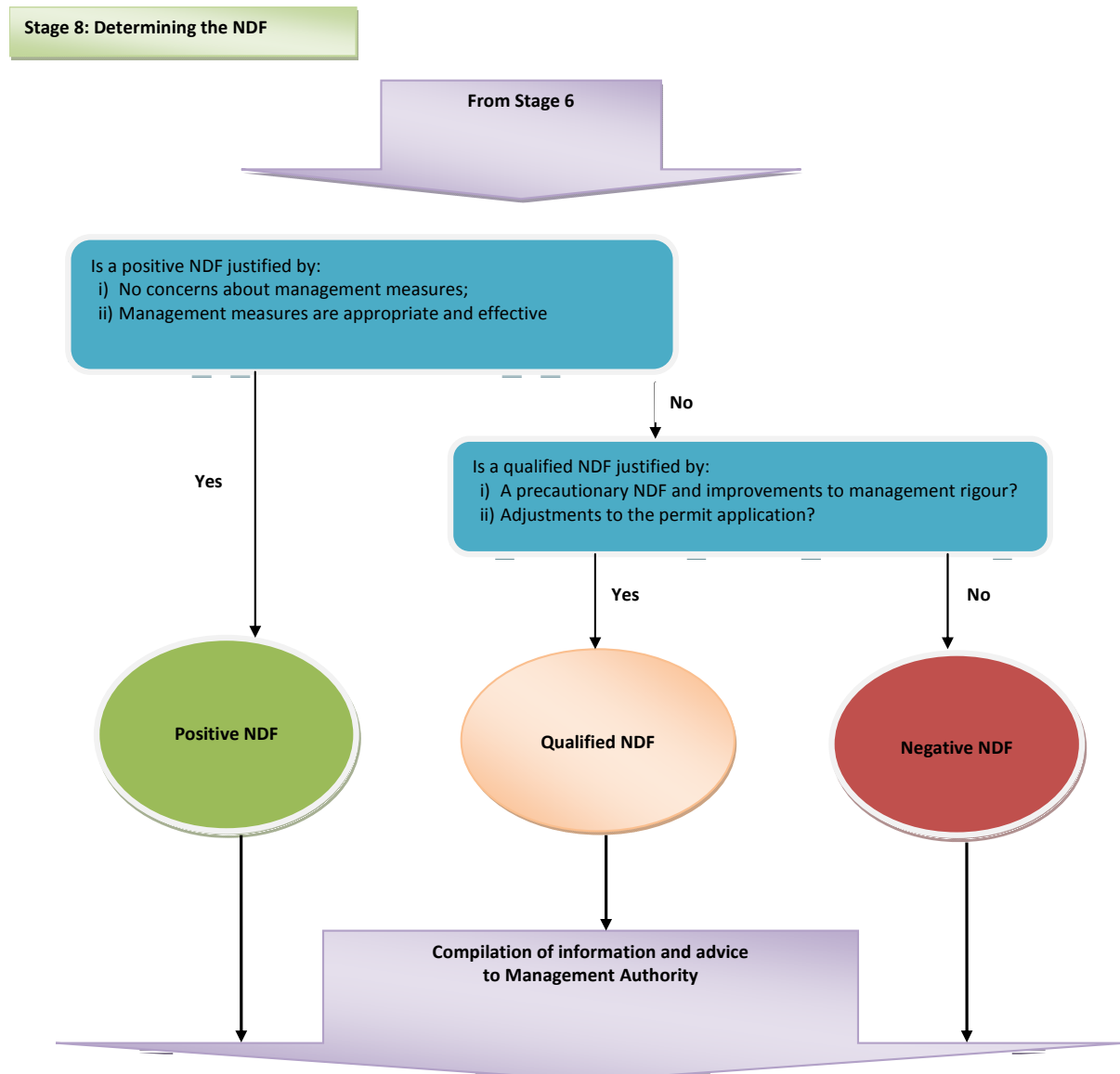
Essentially there are three possible outcomes:
  1)   Negative NDF;
  2)   Positive NDF where no amendments required;
  3)   Positive NDF on the condition that certain measures are undertaken / implemented (i.e. a qualified NDF).

However, there are many different scenarios which could lead to one of the three outcomes. **Table 10** presents theoretical examples illustrating different types of scenarios which could arise from information gathered, and possible NDF outcomes.

TABLE 10 - Examples of potential outcomes arising from information gathered

Scenario Example #	Conservation Threat	Intrinsic Risk	Harvest Impact	Trade and drivers		Management Rigour and Confidence	POSITIVE NDF	POSITIVE BUT QUALIFIED NDF	NEGATIVE	Justification and conditions for NDF decision
				Trade Impact	Socio-economic Drivers' Impact					
1	UNKNOWN	LOW	LOW	LOW	UNKNOWN	UNKNOWN	X			**Positive NDF**: conservation status has not been assessed (or is IUCN Data Deficient/DD), but other indicators represent a low level of threat to the species /population: low intrinsic biological risk; low harvest/trade impacts. Management rigour therefore can be justified as Unknown or at low levels, and a Positive NDF given.
2	HIGH	HIGH	HIGH	LOW	MEDIUM	MEDIUM		X		**Qualified +NDF**: the conservation status of the species - Near Threatened (IUCN Red List version 3.1), with a declining global population and close to qualifying for Threatened status presupposes a negative NDF. However, socio-economic drivers ("medium") identify community support for trophy hunting programme. If hunting programme closes, harvest and trade impacts will increase through return to unregulated hunting, presenting a greater threat to the population. Quota should be kept at minimum levels with ongoing monitoring.
3	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	UNKNOWN	UNKNOWN			X	**Negative NDF**: threats, risks, harvest and trade impacts are unknown but not Low. Greater management rigour and confidence is required before a qualified NDF can be given.

Scenario Example #	Conservation Threat	Intrinsic Risk	Harvest Impact	Trade and drivers		Management Rigour and Confidence	POSITIVE NDF	POSITIVE BUT QUALIFIED NDF	NEGATIVE	Justification and conditions for NDF decision
				Trade Impact	Socio-economic Drivers' Impact					
4	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	MEDIUM / HIGH / UNKNOWN	UNKNOWN	MEDIUM		X		**Qualified +NDF**: as above, the threats, risks, harvest and trade impacts are not Low, but there is confidence that management measures have sufficient rigour to mitigate identified threats and risks. Management contributes to conservation objectives, but should proceed on a precautionary basis with a low quota and on-going management.

Broad considerations

Although each case must be reviewed on a case by case basis, certain generalisations can be drawn:

1. Species / populations identified as having **<u>Low</u>** conservation threats, intrinsic risks, harvest impacts and trade impacts, may justify a **<u>positive NDF</u>** if management regimes are appropriate and effective, and no further concerns are identified (*see Scenario 1in Table 10*)

2. Species / populations identified as having one or more High, Medium, or Unknown conservation threats, intrinsic risks, harvest impacts, and trade impacts, may justify a **<u>positive but qualified NDF</u>** whereby trade may take place providing there is confidence that **adaptive management procedures** are in place, that they have **sufficient rigor and effectiveness**, and that they can be revised at any time based on **on-going monitoring** (*see Scenario 2 in Table 10*).

3. For target species / populations which have a **<u>negative NDF</u>**, identify specific management procedures or actions (e.g. information gathering, field research) to ensure their long-term survival (*see Scenario 3 in Table 10*).

As noted earlier and illustrated in **Table 10**, an evidence-based NDF is, in essence, a risk analysis. A decision is made based on an evaluation of whether the management measures in place mitigate conservation threats, biological risks, as well as harvest and trade impacts that have been identified through analysis of available information. Socio-economic factors are a key cross-cutting component determining the success or failure of a programme, and thus serious consideration must be given to the impacts on and development opportunities for rural communities in deciding whether to proceed with a "qualified NDF" or not.

When a decision has been made, the Scientific Authority should inform the Management Authority, in accordance with *Res. Conf. 10.3*, along with qualifying information such as permit adjustments, precautions, or information gaps that should first be addressed.

It is worthwhile remembering that some importing countries, for example EU Member States, may require documentation in support of a CITES permit authorising trade in a trophy. Information compiled in the making of an NDF following the process presented in this framework could be provided in response to such requests, thereby precluding the need for further use of limited resources.

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Annex I   Listing of *Ovis* species in the CITES Appendices and in European Union Council Regulation (EC) No. 338/97

CITES Appendix I and EU Annex A	CITES Appendix II and EU Annex B
Ovis ammon hodgsoni Bhutan (ex), China, India, Nepal	*Ovis ammon* (Except subspecies in Appendix I / Annex A) Afghanistan, China, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russian Federation, Tajikistan
Ovis ammon nigrimontana Kazakhstan	*Ovis canadensis* (Population of Mexico; no other population is included in the Appendices / Annexes)
Ovis orientalis ophion Cyprus	*Ovis vignei* (Except subspecies in Appendix I / Annex A) Afghanistan, Iran, Kazakhstan, Pakistan, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan
Ovis vignei vignei India, Pakistan	

Annex II   Useful sources of information

Useful Sources of Information	
Stage 1 Preliminary Assessment	**CITES Species Database and the Checklist of CITES Species** (2008*) http://www.cites.org/eng/resources/species.html http://www.unep-wcmc-apps.org/isdb/Taxonomy/
	Res Conf 12.11 (Rev CoP16) – Standard nomenclature. http://www.cites.org/eng/res/index.php
	Nomenclature specialist of the CITES Animals Committee Contact David Morgan, Head, CITES Scientific Support Unit, **CITES Secretariat** david.morgan@cites.org OR info@cites.org
	Resolution Conf. 9.24 (Rev. CoP16) *Criteria for amendment of Appendices I and II* http://www.cites.org/eng/res/09/09-24R16.php
	CITES Appendices http://www.cites.org/eng/app/appendices.php Refer also to relevant **annotations** (found at the end of the CITES Appendices)
	Resolution Conf. 9.21 (Rev. CoP13) - *Interpretation and application of quotas for species included in Appendix I* *http://www.cites.org/eng/res/09/09-21R13C15.php*
	Resolution Conf. 14.7 (Rev. CoP15) - *Management of nationally established export quotas*. http://www.cites.org/eng/res/14/14-07R15.php This Resolution provides guidance on: - Establishment of national export quotas - Communication of nationally established export quotas - Quotas not fully utilized in a particular year - Monitoring and trade reporting
	Export permit application • Scientific name • Description of specimens (entire animal, trophy head with horns, horns, etc) • Quantity / number of specimens • Purpose of export • CITES Appendix and Source (wild / bred in captivity) See also **Resolution Conf. 12.3** (Rev. CoP16) – *Permits and Certificates* http://www.cites.org/eng/res/12/E-Res-12-03R16.pdf
	Records of trade in specimens and species included in the CITES Appendices (in accordance with Article VIII.6 of the Convention)
	Periodic reports of the national CITES Authority to the CITES Secretariat, including updates on national export quotas http://www.cites.org/eng/resources/quotas/index.shtml
	Periodic reports of the national CITES Authority to the CITES Secretariat, including updates on national export quotas http://www.cites.org/eng/resources/quotas/index.shtml

* The Checklist of CITES species, compiled by the UNEP World Conservation Monitoring Centre, is recognised as the official digest of scientific names contained in the standard references, that fully reflects the taxonomy and nomenclature contained in the original species proposals, the recommendations of the Animals or Plants Committee and all accepted names included in the standard references that have been adopted by the Conference of the Parties for species included in the Appendices

Stage 2 Conservation assessment & threats	National and sub-national conservation status assessments, published and on-line, including national Red Lists / Red Books
	Global and regional conservation status assessments, published and on-line (e.g. http://www.iucnredlist.org/
	Conservation Data Centres (in some jurisdictions)
	Proposal for the inclusion of *Ovis ammon* (Linnaeus, 1758) with all subspecies in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals

Annex III   Guidance on levels of management rigour with regard to trophy hunting

Table A

Level of management rigour	Management of intrinsic biological risk and conservation threats
None / uncertain	No information available about management system or control measures relating to identified threats or intrinsic risks for the target species or populations.
Low rigour	Percentage of species natural range or population legally excluded from harvest <5%. No or little knowledge of conservation concerns or awareness regarding target species or national populations.
Medium rigour	National conservation status assessment exists. Proportion of species natural range or population that is in a protected area: 5-15%. Monitoring and qualitative documentation of harvest in place.
High rigour	National and global conservation status is recent and up-to-date. Proportion of species natural range or population that is in a protected area > 15%. Management plans consider the intrinsic biological risks and conservation threats. Local communities are incorporated into management plans and actively participate in population monitoring and threat mitigation. Ultimate aim of management plan is conservation benefit for the species (Grimm adapted) through holistic consideration of all relevant factors, e.g. biological, social, economic and cultural. Incentives for habitat conservation provided by trophy hunting programme (e.g. reduced competition with domestic livestock). Quantitative monitoring of off-take and population dynamics (*see also Monitoring* under *Management of Wild Harvest, below*). Adaptive / flexible harvest quota in place to account for changes in population dynamics as a result of natural or anthropogenic factors.

Table B

Level of management rigour	Management of wild harvest
None / uncertain	No information available about management system or control measures relating to harvest impacts on the target species or populations.
Low rigour	Guidelines for off-take not clearly defined (i.e.: which individuals / number of individuals from which (sub)populations (Amgalanbaatar, et al., 2002). Harvest quotas have no scientific basis (i.e.: a guess, or based on short-term economic gains). Lack of coordination between collectors / harvesters (e.g. hunting companies not submitting kill records to centralised database; competition for limited number of specimens; speculative purchase & resale of permits) (Amgalanbaatar, et al., 2002). Local communities not engaged in off-take programme (e.g. no control over access to / use of harvest area; resentment against foreign hunters; no discernible incentives) (Amgalanbaatar, et al., 2002).
Medium rigour	**Management plan includes:** Flexible / adaptive quota; Maximum / minimum age or size restrictions on animals harvested; No predator control to increase population of target species (Grimm, 2002); Hunting quotas take into account both legal and illegal off-take; Local communities informed about and support development & implementation of the management plan.

	Management plan:
High rigour	Quotas for threatened species are set at highly precautionary levels, taking into account illegal harvest;
	Quotas based on research and monitoring results, e.g. maximum sustainable harvest quantity and minimum viable population;
	Age of trophy target rams defined based on demographic assessments using practical and reliable data (e.g. horn size in relation to age, local knowledge) (UDWR, 2013);
	Flexible / adaptive quota that is changeable at any time;
	Maximum / minimum age or size restrictions on animals harvested;
	No predator control to increase population of target species (Grimm, 2002);
	Participatory monitoring by local communities (information on group size, distribution, structure (Singh, 2012)).
	Local communities (and socio-economic drivers):
	are engaged in implementation of management plan;
	share responsibility for access to harvest area, monitoring and enforcement of management plan;
	regard hunting programmes as beneficial to their livelihoods and support their existence (Amgalanbaatar, et al., 2002; Baldus and Michel, 2011 and *see introduction*);
	receive benefits (financial or otherwise, i.e.: construction of schools; healthcare) (*see introduction*).
	Long-term biological impacts
	Medium- and/or long-term studies initiated / planned to assess long-term impacts of trophy hunting (e.g. impacts on gene pool and reproductive success (Grimm, 2002);
	A completely protected area without any hunting influence has been set aside as a reference area for research (Grimm, 2002).
	Financial management
	A significant percentage (>75%) of funds from trophy hunting programmes are channelled into conservation and research activities linked to the hunting programme (e.g. funding research; preventing planned agricultural use; funding socio-economic development interventions (schools, etc.) (*see introduction*);
	Financial management of funds is transparent with open access to scrutiny;
	Local communities receive direct benefits from trophy hunting programmes either in cash or in-kind (construction of schools/health centre, etc. or through employment (anti-poaching patrols; guides, etc.).
	A committee (see introduction) is established overseeing implementation of the plan and financial management.

Table C

Level of management rigour	Management of trade (Domestic and International)
None / uncertain	No information available about trade of the target species / specimens
	No trade measures in place for the species / specimens
Low rigour	Some qualitative information available on trade trends (e.g. believed to be increasing, stable, decreasing)
	Legislation in place to regulate trade but poorly understood / enforced
Medium rigour	Trade chain understood
	Qualitative indictors of regulated and unregulated trade
	Qualitative indicators of trade trends
	Qualitative indicators of changes in supply and demand
	Precautionary export quota in place but with no scientific basis

Level of management rigour	Management of trade (Domestic and International)
	Legislation in place with broad awareness and understanding
High rigour	Trade chain documented and understood
	Export quota monitored against actual exports with feedback mechanisms in place to CITES Management and Scientific Authorities
	Quantitative indicators of changes in supply and demand
	Quantitative estimates of legal trade and indicators of trade trends
	Qualitative estimates of unregulated trade
	CITES Category I legislation in place with high awareness & understanding

TRAFFIC, the wildlife trade monitoring network, is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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