METHODOLOGY FOR DRAWING UP NON-DETRIMENT FINDINGS REPORTS FOR CITES VERTEBRATE SPECIES of ANNEX B of REGULATION (EC) 338/1997

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Subdirección General de Medio Natural

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Cover pictures: *Malayothon reticulatus (alive specimen and shoes); Oophaga pumilio;
Ramphastos tucanus; Brookesia micra.*

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1. INTRODUCTION

International trade has been one of the main causes of population decline and even extinction for many wild species. For this reason, and aiming at regulating this trade, the CITES Convention was established. At the European Union level this Convention is applied through the Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by controlling their trade

One of the most effective tools of the aforementioned Regulation are their articles 4 and 5, which indicate that for the import or export of specimens of species contained in Annexes A and B (which correspond to Annexes I and II of the Convention) , it is a requirement, among others, that the Scientific Authority (of both the importing and the exporting Member State) consider that the introduction (or export, where appropriate) "will not be detrimental" to the conservation status of the species. The determination of whether the extraction of the natural environment or through captive breeding of the specimens of the species included in the annexes is harmful or not is the result of the analysis carried out through the non-detrimental findings (NDFs), which ultimately have to conclude if the extraction of the specimens that are intended to be carried out will affect the survival of their population of origin.

However, despite the time elapsed since the entry into force of the aforementioned Regulation, to date, there are still some challenges for the effective application of the articles 4 and 5, such as, for example, having a standardized and objective methodology for the elaboration of the necessary NDFs.

In this context, there are several documents prepared to comply with the CITES parties' request to establish guiding guidelines for the application by the different CITES Scientific Authorities of a standardized methodology for the preparation of the aforementioned NDFs, which also contributes to reduce the current disparity in the decisions adopted by the Scientific Authorities of different countries. In this sense, at least since the 2000s a series of variables have been proposed that, at least, should be evaluated in the NDFs, and that they have been included in the CITES Recommendations: for example, see, among others, the Guide for CITES Scientific Authorities (IUCN, 2002); CITES Resolution 16.7 (COP 2013); the document 'Non-detriment findings in CITES NDFs' (Rose, M., 2014); or the Guide for Scientific Authorities and the Scientific Review Group of the EC for the implementation of CITES[1] (SRG, 2017).

However, at present the methodology for the elaboration of the NDFs is generally based on the extraction quotas established by the exporting countries or in the trade statistics, aspects included in the previous recommendations and publications, and often not based on variables directly. measurable and verifiable that can be correlated with the state of conservation in which the populations subject to extraction are found,

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[1] Scientific advisory group established by Regulation (EC) 338/97, and in which all Member States are represented through their CITES Scientific Authority.http://ec.europa.eu/environment/cites/srg_en.htm

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which does not allow us to determine with certainty whether the extraction will be harmful or not. Therefore, this methodology is incomplete and causes numerous uncertainties and subjectivities, which often make it subject to criticism by the scientific and conservationist community[2].

In line with the above, there is a generalized interest on the part of the Scientific Authorities to have an integrative and objective methodology with a scientific basis for the elaboration of the aforementioned DENP, which resolves the previous problem. In the previous context and using all the variables that have been recommended in the aforementioned analyzes and guidelines (IUCN 2002, SRG 2017, Rose 2014, and Resolution Conf. 16.7), this document presents a standardized and objective methodology for the elaboration of the NDFs, which uses measurable and verifiable variables and clearly correlated with the state of conservation of the species or populations subject to extraction. This new methodology consists in the use of two alternative procedures: a quantitative one, based on demographic models, and a semi quantitative one, based on the evaluation of a reduced number of variables, which is applied in case of not having enough information for the quantitative procedure.

In this way, the methodology presented here largely eliminates the subjectivity that has existed up to now in NDFs elaboration, which in turn results in greater scientific rigor since they are based on a standardized and common methodology.

The development of this methodology has also been motivated by the recently approved European Action Plan against illegal trafficking (COM (2016) 87 final) [3], which establishes among its objectives to ensure a more uniform application of the EU rules on wildlife trade, through better application and monitoring of compliance by Member States. In this sense, the proposed methodology contributes to the implementation of the objectives of the aforementioned Plan by focusing a key issue (helping to determine whether extraction of specimens from the natural environment for commercial purposes would harm or not the survival of wild populations), Its purpose is to prevent international trade in species or their derivatives from endangering their conservation.

Finally, the methodology described below is the one used by the Spanish CITES Scientific Authority for the preparation of the corresponding NDFs, and was reviewed and favorably informed by the Scientific Committee (Opinion number CC 29/2017) that advises the Ministry of Agriculture and Fisheries, Food and Environment of Spain in matters related to the wild fauna and flora conservation, both nationally and internationally[4]. In this context, the aforementioned Committee can be used to resolve

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[2] Auliya, M., García-Moreno, J. & Martel, A. (2016). The global amphibian trade flows through Europe: the need for enforcing and improving legislation. *Biodiversity and Conservation*, *25*(13), 2581-2595. Auliya, M et al. (2016). Trade in live reptiles, its impact on wild populations, and the role of the European market. *Biological Conservation* 204, 103-119.
[3] http://ec.europa.eu/environment/cites/pdf/WAP_EN_WEB.PDF
[4] http://www.mapama.gob.es/es/biodiversidad/temas/conservacion-de-especies/especies-proteccion-especial/ce-comite.aspx

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disputes of a scientific nature (e.g., discrepancies between scientific publications) that manifest themselves in this procedure.

2. VARIABLES USED IN NDFs.

The main reference available to the Scientific Authorities for NDFs preparation is the document 'Guide for Scientific Authorities CITES' prepared by IUCN (Rosser and Haywood, 2002) [5], which has been subsequently expanded and revised, and also developed for specific taxa.

Además, del anterior documento existen al menos otros tres que también recogen recomendaciones sobre las variables que como mínimo deben ser contempladas en los DENP, estos son:

In addition, from the previous document there are at least three others that also include variables recommendations that, as a minimum, should be contemplated in the NDFs, these are:

1) CITES Resolution Conf.16.7 (Rev. CoP 17) [6], which recommends the following eight variables:

- species biology and life-history traits;
- species range (historical and current);
- population structure, status and trend (in the harvested area, nationally and internationally);
- threats;
- historical and current species-specific levels and patterns of harvest and mortality (e.g. age, sex) from all sources combined;
- management measures currently in place and proposed, including adaptive management strategies and consideration of levels of compliance;
- population monitoring; and
- conservation status.

2) Duties of the CITES Scientific Authorities and Scientific Review Group under Regulations (EC) No 338/97 and (EC) No 865/2006 (*SRG, 2017*)[7], which reiterates the previous eight variables and adds as a novelty the consideration of the 'Benefits for conservation derived from trade'.

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[5] https://cites.unia.es/cites/file.php/1/files/CITES-guidance-prelims.pdf
[6] https://cites.org/sites/default/files/document/S-Res-16-07-R17.pdf
[7] http://ec.europa.eu/environment/cites/pdf/srg/guidelines.pdf

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3) The document 'Non-detriment findings in CITES (NDFs)' (Rose, M., 2014)[8] proposes the following variables:

- Plausibility of the provided data (accuracy and correctness)
- National distribution and abundance
- Management plan and quotas (taking into account the conservation status)
- Monitoring (method, areas covered and confidence in monitoring)
- Trade statistics (allows drawing conclusions on the dynamics of trade)

Taking into account the previous documents, the methodology presented here reflects and integrates, in one way or another, all the minimum parameters recommended in them.

3. METHODOLOGY FOR THE ELABORATION OF NDF

3.1. General considerations.

The present methodology for preparing NDFs has the dual purpose of: (1) reducing subjectivity in decision-making regarding the condition that the extraction of specimens may have on the survival of the population of origin; and (2) have a tool that allows assessing in a rapid and standardized way the affection on the donor population.

Starting from the fact that a NDF is basically a risk assessment (risk that the extraction of specimens from the natural environment, mainly for commercial purposes, harms the survival of a population), a methodology similar to that usually applied in analyzes of environmental risk is used (for example, evaluation of the environmental impact of works and projects, introduction of invasive alien species, genetically modified organisms or organisms for biological control). In this sense, for the NDFs elaboration with the present methodology, the following three principles and general considerations have been taken into account:

1) **Principle of precaution**: always opt for the most beneficial option for the conservation of the population or species in the wild. Therefore, in case of doubt or uncertainty when assessing the qualitative or quantitative status of the population of origin, the most conservative option is chosen.

2) **Data use at affected population[9] level** (that is, from which the specimens are taken), and it is therefore recommended to know the *geographical origin* of the specimens at a lower level than country, as this makes it possible to discriminate between regions with different conservation status, management or knowledge of the species. Otherwise, information corresponding to the national population of the

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[8] https://cites.unia.es/cites/file.php/1/files/guide-CITES-NDFs-en.pdf
[9] REGULATION (EC) No 338/97 defines *population* as "a biologically or geographically distinct total number of individuals ".

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species in question in the exporting country is used. Also, taking into account the recommendations of CITES (see for example Conf. 9.24 Rev. Cop17), information on the existence and distribution of the different subspecies of the species in the exporting country will also be used. In this sense, in the case that the scientific community recognizes more than one subspecies in the exporting country, and there is evidence that at least one of them is threatened, it is a <u>mandatory requirement</u> to know the _subspecies_ to which the extracted specimens belong, to perform the evaluation on the population by referring the parameters to the subspecies in question. If this information is not available, it will be required to the CITES Authorities of the exporting country when the above circumstances occur, because without it the Scientific Authority of the importing country will not continue the evaluation process to issue the corresponding NDF.

3) **The evaluation must demonstrate the absence of risk with the best available information, published or not, provided by the user or importer**. In this sense and in accordance with the communication from the European Commission on the use of the precautionary principle (COM (2000) 1 final), it is up to the public authorities or the user to demonstrate the absence of risk of a product or process - in this case, it would be to demonstrate the absence of risk that the extraction of specimens could cause on the conservation status of the populations of origin-, being able to be entrusted with the burden of carrying out the test -in this case, obtaining the precise information to evaluate the risk of extraction for the wild population- to the user (producer, manufacturer or importer).

Taking into account all of the above, Annex I contains a form that includes the variables that the Scientific Authority uses to evaluate the effect of the extraction of specimens on the population of origin. Knowledge of some of these variables (specified in Annex I as "**key variables**"), is considered **indispensable** to complete the evaluation and issue the NDF. If these key variables are not available, the evaluation process will be temporarily paralyzed, opening a consultation period of at most 2 months* in which the Scientific Authority of the importing country will contact the CITES Authorities of the exporting country to obtain information on the same. Once this information is obtained, and if it is considered adequate, the evaluation will be resumed.

In order to speed up the preparation of the NDF and the processing, where appropriate, of the import application, the user or importer, simultaneously with the submission of the import permit application to the Management Authority, and on a voluntary basis, may provide the Scientific Authority of the importing country with the information contained in Annex I, with reference to the scientific or official sources from which the information originates.

The Scientific Authority of the importing country, on the one hand, can validate the information provided with scientific criteria and, on the other hand, can collect, if it does not have it, the information in Annex I that has not been provided by the importer at the time of the permit application; including for this purpose, where

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appropriate, consultations with the SRG and the Scientific Authority of the exporting country, as well as relevant experts and institutions in the matter.

3.2. Scope of application.

The methodology presented in this document is applied by the CITES Scientific Authority of Spain for the preparation of the NDFs related to trade (both import and export) of vertebrate fauna species of Annex B of Regulation (EC) 338/97.

The methodology will be applied, in the opinion of the Scientific Authority of the importing country, both on specimens that have an origin W (that is, trade of specimens taken from the wild), and on those that have an origin R (coming from fattening farms) [10]. In this last case, the evaluation is carried out for each species / farm combination for fattening (with the management plan of the facility for that species), in order to guarantee that the activity does not harm the survival of the wild population

This Scientific Authority will adopt negative opinions for specimens of any origin (W, R, C, F, etc.) for which there is verified scientific knowledge that they can be vectors or cause of epizootics that pose a threat to the native species of the country importer (e.g. *Oophaga pumilio* frequently infected by the fungus *Batrachochytrium dendrobatidis*, causing large amphibian mortality worldwide due to *chytridiomycosis*

In general, the preparation of the corresponding NDF is carried out for the first import application for the species of Annex B received for each species-population/exporting country combination, for which there is no SRG opinion, there is a non-opinion of the SRG or there is evidence that there have been changes in the conservation status of the species or in trade patterns since the SRG formed a positive opinion.

As a general rule, the period of validity of a NDF for a given species-population/exporting country combination will be **one year** from its issuance, unless otherwise stated in the opinion itself or that, in the opinion of this Scientific Authority there have been changes in the conditions of trade or the state of the species during that period that advise to modify this period of initial validity. As long as the NDF has been positive and continues in force and there are no changes in the conditions, a new NDF is not made for the same species-population/exporting country combination, although this Scientific Authority periodically examines the volume of imports or exports of the species involved in case it is necessary to reassess the situation and re-make a NDF.

The validity of the negative opinions will be extended indefinitely until evidence is provided that changes have occurred in the conservation or management status of the population of origin or in the trade of the species.

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[10] https://cites.org/sites/default/files/document/S-Res-12-03-R17.pdf
*Variable period to be fixed by each country.

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In relation to the introduction of specimens of species of Annex A, Article 4.1 of Regulation (EC) 338/97 establishes that it must respond to scientific, educational or captive-breeding purposes, or other purposes that are not detrimental for the survival of the population or species in question. Since the fulfillment of these purposes for the importation of specimens from Annex A is already evaluated, it is not necessary to apply this methodology, although it can be used as a guide for the evaluation and the opinion. In any case, the import of specimens from Annex A is evaluated case by case, depending on the purpose that justifies its importation.

3.3. Methodology

The methodology contemplates two procedures that are applied alternatively: one quantitative and the other semi quantitative. The quantitative is based on a population viability analysis, an analysis that provides a widely accepted statistical criterion, thus facilitating decision-making, but which nevertheless requires important demographic information that limits its application to specific cases. For its part, and when the previous procedure cannot be used, the semi quantitative procedure is used, which is based on the valuation of a defined series of variables according to a semi quantitative scale, which can be seen in Annex II.

Finally, Annex III summarizes the decision-making process with the thresholds that this methodology establishes for each of the two procedures.

The characteristics of both procedures are described below:

3.3.1) Quantitative procedure:

In this procedure, a statistical model based on the Population Viability Analysis (PVA) is applied. A population viability model estimates the probability of survival of a population over the years, with its growth and extraction rates known. The model could use as source data either a time series of counts of population size or demographic parameters, both questions referring to the population of the locality under study. In the first case, it would not be properly a population viability analysis, but an extrapolation of the past demographic trend. Both approaches can be implemented in free software, in particular through an R[11] script (computer program and programming language with great statistical power) that simplifies various existing

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[11] The R Development Core Team. 2017. R: A language and environment for statistical computing. R Foundation for Statistical Computing. Vienna, Austria: R foundation for statistical computing. https://www.r-project.org/

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methodologies[12,13,14,] for time series of counts, and programs such as VORTEX[15] for AVP based on demographic parameters.

To use a temporary series of counts, it is necessary to count optimally with population estimates of at least the last 5 consecutive years, and at least, with population **estimates of the last 3 years**. In order to work with demographic parameters, at least the **current population size and the annual rates of extraction, birth and natural mortality** to which the exploited population is subject must be contributed to the model. Ideally, the birth and natural mortality rates should come from the population of origin, being possible to use rates from other populations of the same species or from closely related species (for example, of the same genus), in case the former are not known.

The extraction rate will correspond to the annual extraction quota adopted for the species-population by the exporting country. In this case, to be taken into account this quota, it must first be ensured that it meets the requirements indicated in the Guidelines for export quotas indicated in CITES Resolution Conf.14.7 (Rev. CoP15)[16]. In cases where no quota has been established for the *species-population/exporting country* combination, the average number of exports of the species made by the country in the last decade can be used. In any case, the population size and the extraction quota should be referred to the same geographic area, and preferably that of the extraction population (local scale) or, failing that, the population of the exporting country.

PVAs based on demographic parameters allow obtaining unbiased and precise estimates of the extinction probability depending on different scenarios of extraction rates. However, due to the difficulty of having the large amount of demographic information and its variation in the time required by the PVAs, the alternative use of series of counts is recommended to estimate near-extinction probabilities, which can be rigorously applied in many more cases. The design of these alternative models incorporates the basic calculation methodologies of Stubben & Milligan (2007)[12] McGowan et al. (2011)[13] and Martin (2016)[14].

As for the technical parameters of the model, the near-extinction threshold is set at **500 individuals**, and **100,000 simulations** are carried out (standardized conditions). When entering data from population counts, the model generates the population growth rate (λ, lambda), which will be positive if $\lambda > 1$ and negative if $\lambda < 1$. However, the model can only calculate the standard deviation (σ) of λ, which represents the demographic stochasticity for a set of years, if the time series available

[12] Stubben, C.J. and Milligan, B.G. 2007. Estimating and Analyzing Demographic Models Using the popbio Package in R. Journal of Statistical Software 22:11. http://www.jstatsoft.org/v22/i11
[13] McGowan, Conor P.; Runge, Michael C.; and Larson, Michael A., Incorporating parametric uncertainty into population viability analysis models. 2011. USGS Staff -- Published Research. Paper 554. http://digitalcommons.unl.edu/usgsstaffpub/554
[14] Martin C.A. 2016. msPVA: An R implementation of count-based multi-site population viability analysis. R package version 0.0.0.9005: https://github.com/cmartin/msPVA
[15] http://www.vortex10.org/Vortex10.aspx
[16] https://cites.org/sites/default/files/document/S-Res-14-07-R15.pdf

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is equal to or greater than 5 years. If, on the contrary, the model starts from the demographic parameters, the Scientific Authority calculates the growth rate (λ) from them and introduces it into the model. In this case a point calculation of lambda can be made, through a simplification and assuming that λ = Ro (that is, that the growth rate is equivalent to the net reproductive growth ratio, or in other words, the annual number of females that survives for each female of the population), and is calculated as:

$$R_0 = l_x b_x$$

Where:
b_x is the number of females born
l_x is the survival rate

The model indicates, if the parameters entered (including the extraction rate) remain constant over time, if the population enters the *extinction risk area*, which will be determined by the value of the upper limit of the confidence interval of the probability of extinction. In the absence of this value (for time series less than 5 years), the mean value of the probability of extinction is taken instead. The threshold established to consider whether the extraction to which a population is subject can be detrimental to its survival, is set at a 5% extinction probability value in 50 years. Values above this threshold indicate that one enters the risk area, which could lead to population extinction. Consequently, the result of the quantitative approximation will be negative (-), since for conceptual purposes, the extraction risk area is therefore equated with an **unsustainable - or detrimental - extraction rate** (given the rest of the demographic parameters). On the contrary, when the probability of extinction obtained by the model is below the fixed thresholds (i.e., stability or population increase), and therefore outside the extinction risk area, the result of the quantitative evaluation is positive (+).

Any extinction probability value greater than 0 is not desirable, regardless of the time period we refer to, given that it is indicative that the current extraction level is unsustainable. However, and as a preventive measure against the eventual case that estimates of the probability of extinction are due to chance (for example, in the case of reduced time series), a possible error in the estimate of **± 5%** has been assumed. In this way the established threshold is justified (p> 5%), with a probability of extinction greater than 0 + 5% error. In short, estimates of the probability of extinction between 0 and 5%, could be due to chance, and are not considered as indicative of the existence of extinction risk.

This 5% value has been taken as threshold because it can be considered that an error of this magnitude, in a positive or negative sense, can be the maximum assumable in the accuracy of the estimate; this value is usually applied in the field of statistics and represents the widely accepted probability that an event (extinction of the population, in this case) is due solely to chance.

On the other hand, for practical purposes it is considered appropriate to limit the time period in which, if the established threshold is reached, the rate of commercial extraction would be considered unsustainable. For this, the criteria for the 'Vulnerable'

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category have been used, in accordance with the threat categories established by the IUCN (2001, v3.1) [17], since this category constitutes the first state in which a species is considered threatened (that is, at risk of extinction), so that when considering the criteria that determine it, the precautionary principle is extreme. To that end, the time range corresponding to a 5% extinction probability threshold has been adjusted proportionally. Thus, the model does not work with an extinction probability of 10% in 100 years, as established by the IUCN for the category 'Vulnerable', but with a **probability of extinction of 5% in 50 years.**

3.3.2. <u>Semi quantitative procedure</u>

The semi quantitative evaluation focuses on the analysis of 14 variables that are grouped under the following three groups:

- Biological characteristics
- Threats and conservation status
- Management and control for its conservation and use

The evaluation matrix (Annex II) includes these 14 variables together with a series of possible answers, among which only one will be chosen. The answers appear ordered according to an increasing degree of natural **vulnerability** of the population or species, or risk for it as a consequence of inadequate **management**, which is also reflected in the numerical value associated with it. It is very important to point out that each response must be justified by the corresponding source of information (for example, scientific publications, technical reports, unpublished reports, etc.).

It should be noted that the lack of knowledge or a high degree of uncertainty about the state and/or management of a population or species is penalized with the worst score (as shown in the 'P' column of the evaluation matrix). If, in addition, the lack of accessible information (scientific publications, public reports, etc.) concerns the variables considered key (indicated in Annex I), the evaluation process will be temporarily stopped, and for a maximum of **2 months***, until the Scientist Authority of the exporting country, once consulted by the importing country, provide the required information. Likewise and to proceed to the study of the variables contained in Annex II, it is necessary to know if in the exporting country the scientific community recognizes more than one subspecies and if there are indications that at least one of them is threatened. In this case, the CITES Authorities of the exporting country will be asked for information on the subspecies to which the extracted specimens belong, in order to evaluate the effect of the extraction on the population, referring the parameters to the subspecies to which it belongs. Identification of the subspecies will be required to proceed to the evaluation of the effect of the extraction when there are indications that at least one of the subspecies is threatened, stopping the evaluation process if the CITES Authorities of the country of origin do not provide this information.

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[17] https://portals.iucn.org/library/efiles/documents/RL-2001-001-2nd-Es.pdf

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Likewise, the knowledge of the geographical area of origin of the specimens extracted at a lower scale to the country (region, province, island ...), will speed up the elaboration of the NDF, also increasing its precision and quality when referring to the particular population on which the extraction is carried out, and will allow to discriminate between regions with different management, conservation status or knowledge of the species. Therefore, the information on the geographical scope, although desirable, is optional, and in these terms it will be requested when it is considered appropriate to the CITES Authorities of the country of origin.

The risk level to the survival of the population associated with the extraction is measured through the relationship between the values of species vulnerability (estimated by the biological and conservation variables) and those of its management (estimated through the management variables). For this, once the values in the table in Annex II are obtained we calculate, one the one hand the average of the values of the vulnerability variables (in case the species has not been evaluated by the IUCN, the average value will be calculated on a less variable), and on the other hand, the average of the values of the management variables. After that, both averages will be represented in Figure1, in which the abscissa represents the risk associated with the **vulnerability** of the species and that of the ordinates, the risk associated with its **management**. The relative position of the resulting coordinate point with respect to the bisector of this graph will determine the direction of the NDF, using similar NDF methodology developed by the SA of South Africa (https://www.sanbi.org/biodiversity-science/science-policyaction/scientific-authority/non-detriment-findings).

As shown in Figure1, the points of coordinates that are represented below the bisector of the plane correspond to situations in which the vulnerability of the species is medium-low and its management for its conservation is relatively adequate, which assumes acceptable risk levels that would lead, therefore, to the formulation of a positive NDF. On the contrary, the points of coordinates whose position is above the bisector of the plane represent situations in which the vulnerability of the species is high and also the management for its conservation is not adequate, which supposes unacceptable risk levels that would lead to the formulation of a negative NDF.

In the case that the position of the coordinate point is within a narrow band on both sides of the bisector, one would be in a situation in which the combination of the risk associated with the vulnerability and the risk associated with the management do not allow determine with certainty whether the extraction will have a detrimental effect on the species or not. This band, whose width corresponds to 10% of the range of variation of the variables values, is called the **band of uncertainty**. In this case, the Scientific Authority will temporarily postpone the adoption of the decision for a maximum period of **two months**, and will identify the variables in the table in Annex II on which, in its opinion, it could be acted with the aim of reducing the risk associated to the vulnerability and to improve the management of the species, putting all this in the knowledge of the CITES Authorities of the country of export, and to the extent possible, also informing the applicant. In this case, this Scientific Authority, in light of the new information submitted by the applicant or the CITES Authorities of the country of origin, would carry out a **second evaluation**, but in this case applying Figure 2, in

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which the same criteria are applied except that the uncertainty band is deleted, so that there will only be two possible outcomes: those coordinates located at the bottom of the bisector will obtain a positive NDF; while those above it will be granted a negative NDF. In both cases, this Scientific Authority will communicate the results of the evaluation to the SRG to propose the adoption of the corresponding positive or negative opinion.

Annex IV includes a diagram with the steps and deadlines to follow for the application of the semi quantitative procedure.
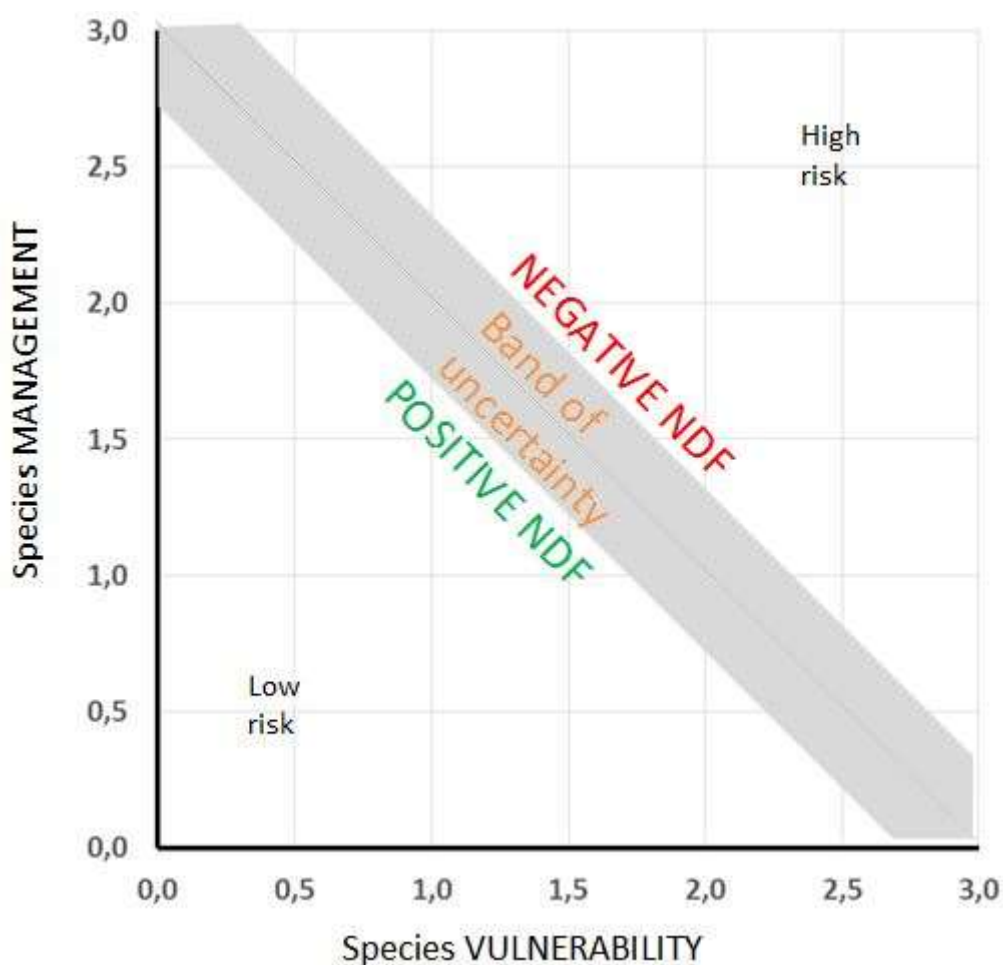
Figure 1: Coordinate graph for risk level determination. The abscissa represents the average value of the vulnerability variables, where values ≥ 1.5 indicate high vulnerability of the species; and that of the ordinates, the average value of the management variables of the species, where the values ≥ 1.5 indicate an inadequate management and use of the species.
The graph is interpreted as follows:
     Positive NDF = below the lower limit of the uncertainty band;
     Negative NDF = above the upper limit of the uncertainty band;
     Band of uncertainty = within the bandwidth of the bisector.

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Figure 2. Reassessment coordinate graph (or second evaluation) of risk level.
Positive NDF = below the bisector;
Negative NDF = above the bisector.

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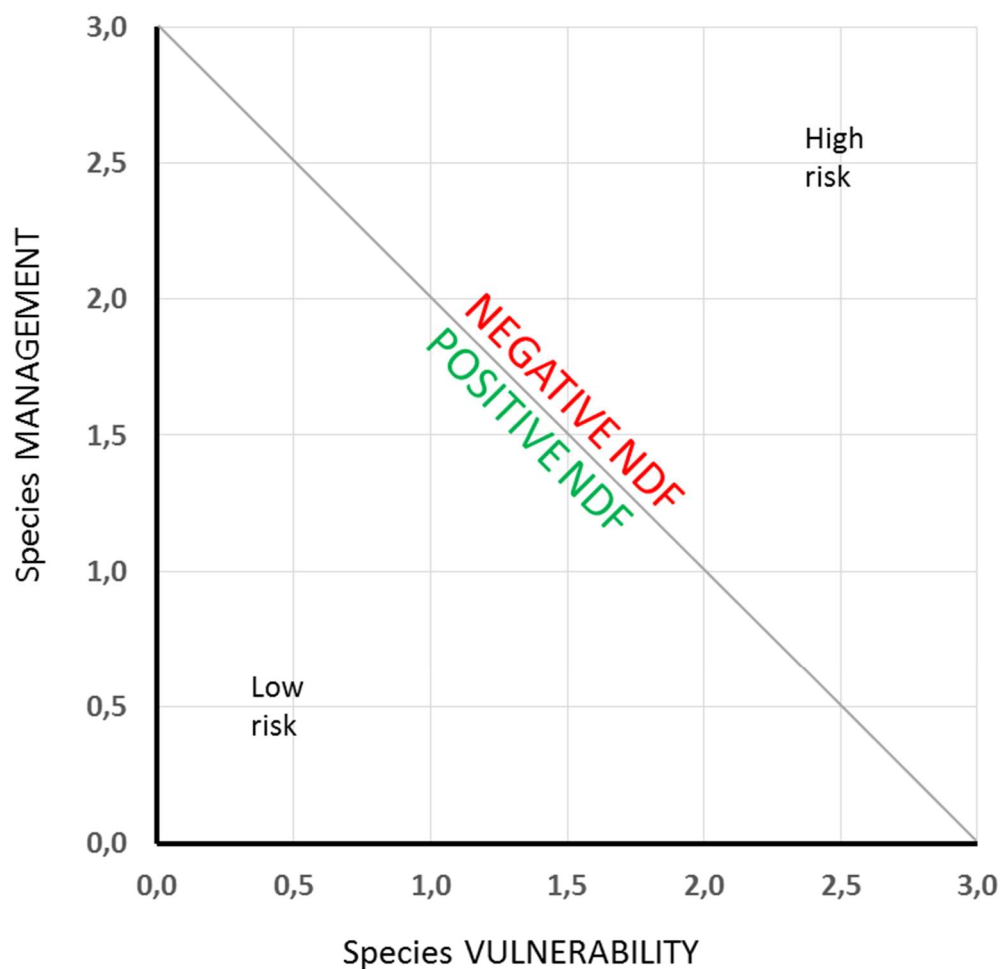ALIMENTACIÓN Y MEDIO AMBIENTE

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ANNEX I

Parameters and variables required for the development of an NDF

Quantitative procedure (PVA)		Semi quantitative procedure [2]
Based on a temporal series of counts[1]	Based on demographic parameters[1]	Based in 14 variables showed in annex III
1. Population counts or estimates of at least three years	1. Current population count or estimate 2. Birth rate 3. Natural mortality rate 4. Extraction rate (annual quota, or, failing this, average of the last decade's extractions)	**VULNERABILITY VARIABLES** Biological characteristics 1. Abundance 2. Life history 3. Proportion representing the range of species in the country, in relation with global range 4. National distribution pattern Threats and conservation status 5. Last years population trend 6. UICN conservation status 7. Number of threats to the population of origin **MANAGEMENT VARIABLES** Management and control for the conservation and use of the resource 8. International trade impact 9. Illegal trade level 10. Percentage of distribution or population size included in protected or regulated areas 11. Existence of management plan or equivalent for the conservation and sustainability of the resource 12. Existence of mechanisms to control the extraction and monitoring the state of the resource (administrative and surveillance) 13. Existence of extraction quota based on demographic studies en the natural environment scientifically validated and monitoring of the resources state. 14. Existence of social or species benefits derived from trade

[1] Only information contained in one of these two columns is used.
[2] Here we present only a summary of the variables included in the semi quantitative evaluation carried out by the Scientific Authority to complete Annex II.

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Of the 14 variables that intervene in the semi quantitative evaluation, several of them are considered **key** for the process, because they have a greater relevance. Therefore, having information about them is essential to be able to evaluate the effect that the extraction of specimens may have on the population of origin. That is, if in the evaluation process there is no accessible information (scientific publications, reports, etc.) that the Scientific Authority of the importing country may have in relation to these *key variables*, and therefore it is obliged to value them as "Unknown", the evaluation will be interrupted and a period of consultations will be opened with the CITES Authorities of the country of origin. If, within a maximum period of **two months** (see Annex IV)*, the CITES Authorities of the exporting country do not provide the requested information, at the request of the CITES Scientific Authorities of the importing country, a negative NDF will be granted due to the impossibility of evaluating the effect of the extraction of specimens on the population of origin due to the lack of information.

The variables that are considered key variables are the following:

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VULNERABILITY VARIABLES

Biological characteristics

1. Abundance

4. National distribution pattern

 Threats and conservation status

7. Number of threats to the population of origin

MANAGEMENT VARIABLES

Management and control for the conservation and use of the resource

11. Existence of management plan or equivalent for the conservation and sustainability of the resource

12. Existence of mechanisms to control the extraction and monitoring the state of the resource (administrative and surveillance)

13. Existence of extraction quota based on demographic studies en the natural environment scientifically validated and monitoring of the resources state.

</div>

(The variables in this table are numbered according to the list in Annex I)

It is also necessary to take into consideration that to proceed to the evaluation of the extraction, the CITES Authorities of the country of export will be required to:

- *indication of the subspecies* from which the extracted specimens belong, in case there is more than one subspecies recognized by the scientific community in the country of origin and there are indications that at least one of them is threatened (mandatory requirement)

- *place of origin* where the extraction is carried out (at a lower scale than the country) (optional information to facilitate the quality of the NDF and speed up its preparation)

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ANNEX II

Evaluation table for the semi quantitative procedure

Matrix of semi quantitative evaluation. The values in column S correspond to the score of each one of the answers that is offered for each of the variables that will need to be evaluated. A single response per variable, next to the corresponding value in column V, is marked. The sum of the valuations will be entered in the lower row of the table. Each answer should be justified in the "Source" column.

	VULNERABILITY VARIABLES				
	Biological characteristics		S	V	Source
1	Abundance	Very abundant	0		
		Common	1		
		Uncommon	2		
		Rare or unknown	3		
	Observations of publications and reports:				
2	Life history	High reproductive rate, long-lived	0		
		High reproductive rate, short-lived	1		
		Low reproductive rate, long-lived	2		
		Low reproduction rate, low life expectancy or unknown	3		
	Observations of publications and reports:				
3	Proportion representing the range of the species in the country, in relation to the global range	< 10 %	0		
		10-40 %	1		
		40-80%	2		
		>80%; or unknown	3		
	Observations of publications and reports:				
4	National distribution pattern[a]	Widespread and continuous; or ≥ 75% of national territory	0		
		Widespread and fragmented distribution; or between 75% and 40% of national territory	1		
		Restricted and fragmented distribution; or between 40% - 15% of the national territory	2		
		Localized distribution; or ≤ 15% of the national territory; or unknown	3		
	Observations of publications and reports:				

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	Threats and conservation status		S	V	Source
5	Population trend in recent years, preferably at the scale of the population from which the specimens will be extracted[b]	Increasing	0		
		Stability	1		
		Fluctuating but not positive or negative	2		
		Negative or unknown	3		
	Observations of publications and reports:				
6	Conservation status according to IUCN, preferably at the scale of the population from which the specimens will be extracted, if not in the country or global[c]	N/A (not VU, EN, CR, nor DD)	0		
		VU (vulnerable)	1		
		EN (endangered)	2		
		CR (critically endangered) o DD (data deficient)	3		
	Observations of publications and reports:				
7	Threats to the population from which specimens are to be extracted: - Loss and fragmentation of habitat (e.g. change of land use, infrastructure, fire, water catchment, etc.) - Pollution (including chemistry and acoustics, including vibration) - Exploitation of the resource as well as for its international trade (e.g. hunting, fishing, gathering, poaching, illegal trade, domestic consumption) - Antagonisms with other species (eg. invasive alien species, genetically modified organisms, diseases, predation, herbivorism ...) - Reduction of fecundity and genetic variability due to the low population size or density	No threats	0		
		1 of the 5 types of threats identified	1		
		2 of the 5 types of threats identified	2		
		≥ 3 of the 5 types of threats identified (or without information about threats)	3		
	Observations of publications and reports:				

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	MANAGEMENT VARIABLES				S	V	Source
	Management and control for the conservation and use of the resource				S	V	Source
8	Impact of international trade on the conservation of the species in the country of origin (measured as a proportion of the annual export quota in relation to the national population)	Proportion that supposes the annual export quota in relation to the national population of the species					
		If variable 2 (Life history) valued with 0 or 1	If variable 2 (Life history) valued with 2 or 3				
		≤ 2 %	≤ 1 %		0		
		2 a ≤ 5 %	1 a ≤ 2 %		1		
		5 a ≤ 10 %	2 a ≤ 3 %		2		
		> 10 % or unknown	> 3 % or unknown		3		
	Observations of publications and reports:						
9	Level of illegal trade on the species (with the records of confiscated specimens of the CITES trade database, originating in the exporting country for the current application or other evidences such as reports, news, scientific articles, documentaries ... referring to the same species / country combination) d	There is no evidence of illegal trade occurring in the CITES database or other evidence			0		
		Low level: there are no records with code I (confiscated) in the field 'Source', and with 'Origin' exporting country, according to the CITES database, or they are older than 6 years; or other evidences are also prior to 6 years.			1		
		Medium level: the registers with code I (confiscated) in the 'Source' field in the CITES database are from the last 3 - 6 years; or other evidence with the same age.			2		
		High level: the records with code I (confiscated) in the 'Source' field in the CITES database are for the last 3 years; or other evidence with the same age.			3		
	Observations of publications and reports:						
10	Percentage of distribution or population size (locally exploited or nationally failing) included in protected natural spaces or regulated spaces (including those regulated for extractive purposes)e	> 15%			0		
		15-5%			1		
		< 5%			2		
		0%; or unknown			3		
	Observations of publications and reports:						

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11	Existence of management plan or equivalent for the conservation and sustainable use of the resource and its application[f]	There is a plan and it is fully applied at present	0		
		It exists and is partially applied at present	1		
		There is a plan but there is no verifiable evidence that it is being applied at present	2		
		There is no plan or there is a broad scientific-technical opinion that the existing planning is not appropriate from an environmental point of view	3		
	Observations of publications and reports:				
12	Existence of extraction control mechanisms (whether for international or domestic trade) and the monitoring of the state of the resource in the area where the extraction takes place	There are and apply <u>administrative</u> mechanisms (licensing system for hunters / trappers / collectors of the species and individual quotas assigned to each) and <u>in situ</u> (surveillance in the field to control the application, prosecution and deterrence of poachers ...)	0		
		There are only administrative mechanisms (licenses and quotas)	1		
		There is only a licensing system for hunters	2		
		There are no control mechanisms administrative or in situ	3		
	Observations of publications and reports:				
13	Existence of export quota	There is an export quota based on demographic studies according to a scientifically validated methodology and periodic monitoring of the state of the species in the natural environment is carried out in the area where the extraction takes place (last monitoring carried out less than 6 years ago)	0		
		There is an export quota based on demographic studies according to a scientifically validated methodology, but there is no periodic monitoring of the state of the species in the natural environment (or last monitoring dates back more than 6 years).	1		

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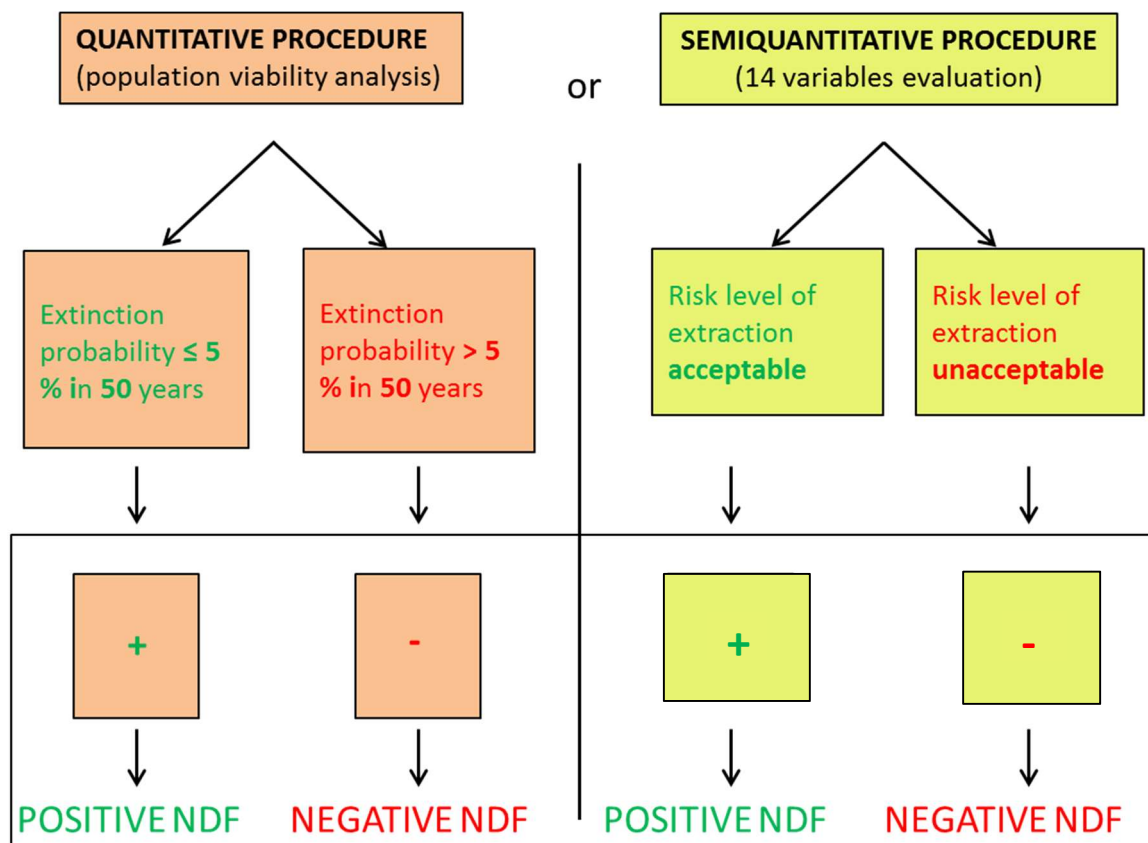|		There is an export quota but it is not based on demographic studies	2		
		No extraction quota has been set or published	3		
	Observations of publications and reports:				
14	Is it contemplated in any instrument (action plan of the species, normative provision) or other mechanism (local actions, projects, fees) that a percentage of the economic benefits obtained by the extraction reverts in favor of the conservation of the exploited species and/or the local community?	Yes, it exists and it applies	0		
		It exists but it is partially applied	1		
		It exists but it cannot be verified that it is being applied	2		
		Not or unknown.	3		
	Observations of publications and reports:				

a) Preference for a response based on the percentage ranges offered; otherwise, it will be assessed at a qualitative level, according to the response options included in the table.

b). Capture rates or export levels cannot be considered as indicators of the population trend if they are not associated with capture effort data

c) In case there is no assessment of the conservation status in the IUCN Red List, this variable will be omitted in the calculation of the corresponding average.

d) It is proposed to use the records of confiscated material as evidence that there is illegal trade, knowing that, given the low rate of detection of illegal trade, what is recorded as confiscated underestimates the magnitude of that[18].
Given the case when consulting the CITES trade database (filtering by Source (I: confiscated) and Origin (the country of export of NDF in progress) and other sources (such as reports, news, scientific articles, documentaries, 'On the trail' newsletter http://www.robindesbois.org/en/a-la-trace-bulletin-dinformation-et-danalyses-sur-le-braconnage-et-la-contrebande-2-2-2/, etc.) do not coincide in the level of illegal trade, the most conservative option will be selected.

e) The percentage and the layer (shape) of the distribution of the protected terrestrial areas for each country can be obtained from https://www.protectedplanet.net/c/unep-regions. If the distribution of the species is known, with the aforementioned shape a cartographic crossing can be made to determine the percentage of the distribution of the species contained in protected areas.

f) In the case of the elaboration of an NDF for specimens fattened in farm (Ranching = code of origin R) the "breeding plan" of the facility (which includes number, frequency, sex ratio and age of the specimens taken from natural environment, etc.) is assimilated to the "management plan".

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[18] UNODC, World Wildlife Crime Report: Trafficking in protected species, 2016.
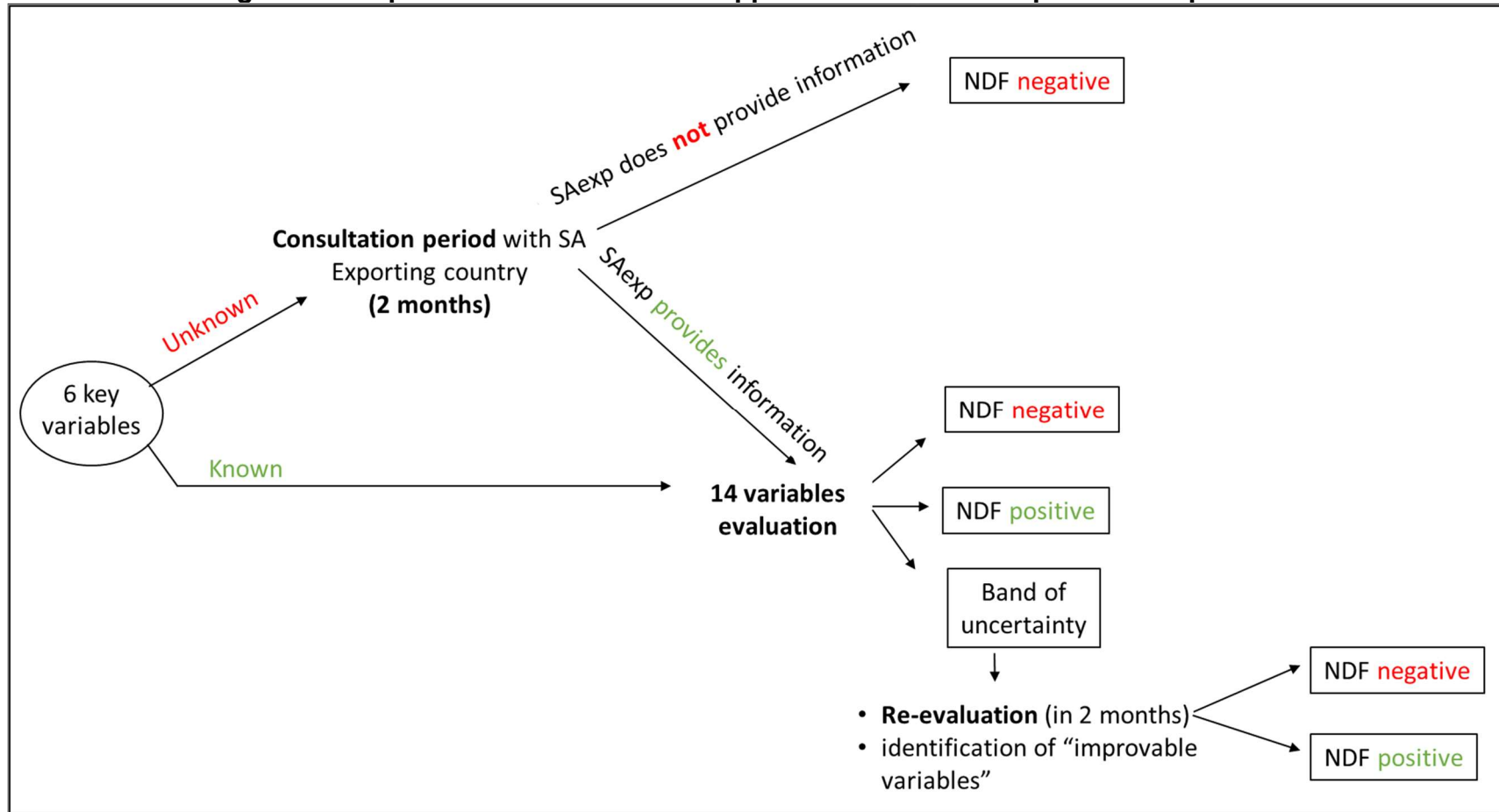https://www.unodc.org/documents/data-and-analysis/wildlife/World_Wildlife_Crime_Report_2016_final.pdf

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ANNEX III

Scheme for decision making based on thresholds

QUANTITATIVE PROCEDURE
(population viability analysis)

or

SEMIQUANTITATIVE PROCEDURE
(14 variables evaluation)

Extinction probability ≤ 5 % in 50 years

Extinction probability > 5 % in 50 years

Risk level of extraction **acceptable**

Risk level of extraction **unacceptable**

+ − + −

POSITIVE NDF   NEGATIVE NDF   POSITIVE NDF   NEGATIVE NDF

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ANNEX IV

Diagram of steps and deadlines for the application of the semiquantitative procedure

* The period of two months for the consultation period and the re-evaluation is the one applied by the CITES SA of Spain.