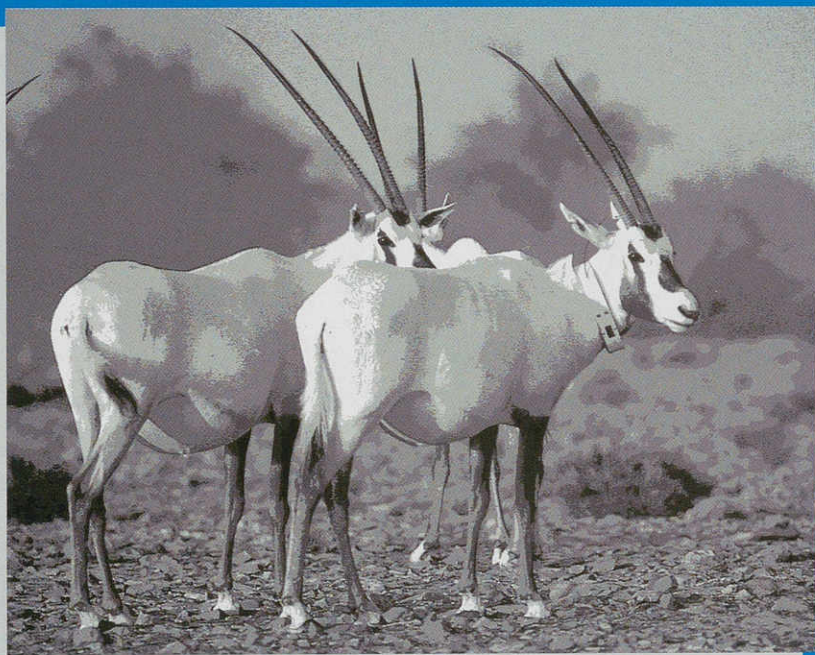


物种重引入指南

IUCN Guidelines for Re-introductions

Prepared by the IUCN/SSC Re-introduction Specialist Group



IUCN
The World Conservation Union

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SPECIES SURVIVAL COMMISSION


A F R I C A N
W I L D L I F E
F O U N D A T I O N



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AWF is an international non-governmental organisation working for conservation and development in Africa. AWF works in partnership with national governments, non-governmental organizations, research and training institutions, community groups, associations and donor agencies, in order to promote the sound protection and management of natural resources in Africa.

AWF's current programme focuses on four approaches to conservation namely Community Conservation; Training and Institutional Development; Conservation, Economics and Commerce; and Species and Ecosystems.

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These Guidelines are available in booklet form in the following language versions: Arabic/English, Chinese/English, French/English, Russian/English, Spanish/English, and English only, from the IUCN Publications Service Unit (see address on inside front cover).

They are also available on the Web in English, French and Spanish, at:
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IUCN - 世界自然保护联盟
物种保护委员会重引入专家组

物种重引入指南

(1995年5月第41届理事会通过)

引言

随着全球物种重引入项目的日益增加，世界自然保护联盟（IUCN）物种保护委员会（SSC）重引入专家组（RSG）起草了这份物种重引入指南¹，以满足当前自然保护过程中对政策性指导的需求，确保物种重引入行动能够达到预期的保护效益，并不致带来不良的影响。1987年，IUCN就生物活体移植发表了立场声明。但是，有必要提供更详细的行动指南，就物种重引入实践中涉及的各种因素进行更加细致的介绍。

这项指南目的在于介绍物种重引入项目的实施程序，并不是一个严格的法规。其中许多条款更多地涉及圈养繁殖个体的重引入，而不是野生物种的移植。部分条款特别适用于基础种群数量有限的全球性濒危物种。对每个物种重引入项目都应认真审核其具体的特点。必须指出，物种重引入是一种长期而复杂的、并且耗资很大的项目。

短期的属于体育性质的或以商业为目的的物种重引入或移植，不同于以建立可自身维持的种群为目的的重引入，不在这项指南的范围。这类活动包括垂钓和狩猎在内。

这项指南在编写过程中考虑到了植物和动物的所有分类单元，因此是通用的，还将进行定期修订。此外，将另外发行单个动物和植物类群的物种重引入手册。

背景

为适应物种重引入和移植项目的不断增加，世界自然保护联盟物种保护委员会成立了重引入专家组。该专家组的首要任务就是同该联盟的其他委员会商议修订了1987年世界自然保护联盟就生物活体移植发表的立场声明。

应当在贯彻世界自然保护联盟的保护生物多样性和持续利用自然资源有关政策的前提下，来执行这项指南，这是非常重要的。

《关心地球》和《全球生物多样性策略》等重要著作已经论述了世界自然保护联盟及其他保护机构有关环境保护和管理的思想体系。这些著作涉及的论题广泛，论述了民众涉及和参与自然资源可持续利用和从总体上提高人类生活质量的必要性，以及保护并在必要时恢复生态系统的必要性。就生态系统的恢复而言，方法之一是在某物种已经消失的地方重新引入该物种。目前还很少有人尝试在某一区域完全恢复所有有关的动、植物种。

不过目前世界上单一植物和动物物种的恢复是常有之事。有些获得了成功，更有许多没有成功。随着这种生态管理形式越来越普遍，物种保护委员会重引入专家组的首要任务之一就是制定一份指南，使物种重引入计划具有合理性和可成功性，并且使自然保护界能够从每项成功或失败的物种重引入行动中获取经验和教训。尽管物种重引入涉及到各种不同的物种和各自不同的条件，希望这份基于总结历史经验和多学科专家共同商议制定的指南，能够使物种重引入的概念、设计、可行性和实施更加严谨周密。

因此首先就是要制定能够直接、切实地帮助规划、审批或实施物种重引入项目的指南。该指南的主要对象是实施人员，常常是管理人员或科学家，而非政府机构的决策人员。针对后者的指南无疑将更多地涉及法律和政策问题。

1. 术语定义

- a) “重引入”：在一个物种²的历史分布区内的一部分区域内（该区域内此物种已经消失或绝灭³）重新建立该物种种群的一种尝试。（“重建”是重引入的同义词，但它表明物种重引入已经取得了成功）。
- b) “移植”：人为的通过各种手段向现存种群移入同种野生个体的过程。
- c) “再加强/补充”：向现存的种群添加同种个体的过程。

- d) “保护性/良性引入”：以保护为目的，在物种的历史分布区以外的适宜生境和生态地理区域以内建立物种的过程。这只是在该物种历史分布区内已无残存区域存在的情况下的一种可行的保护措施。

2. 物种重引入的目的和目标

- a) 目的：所有物种重引入的主要目的都是为一个在全球范围内野生种群已经绝灭，或在某个地区内野生种群已经消失了的种、亚种或品种，建立野外的可维持的、自由散养的种群。物种重引入应在该物种的原自然栖息地进行，并要求最低限度的长期管理。
- b) 目标：一项物种重引入计划的目标应该包括：提高物种的长期生存能力；于某生态系统中重建关键种（生态的或文化的意义）；维持和/或恢复自然生物多样性；为当地和/或国家提供长期经济效益；提高公众保护意识，或以上几方面的综合。

3. 多学科参与

物种重引入要求一支专业知识广泛的人员队伍进行多学科的参与。同时还需要政府成员，可包括来自政府自然资源管理机构、非政府组织、资助机构、大学、兽医研究所、动物园（和私有动物繁育机构）和/或植物园，组成包括所有有关专业知识的专家队伍。该队伍的领导者应该负责这些机构之间的协调，并应当就该项目加强宣传和公众教育工作。

4. 立项前的准备

a) 生物学

(1) 可行性分析和背景研究

- 应研究物种重引入个体的分类学地位。物种重引入个体应当是已灭绝物种的同一亚种或地理宗，除非这些亚种或地理宗的数量不足。应调查准备重引入地区该物种的消失原因和命运等相关资料。如果个体的分类地位不确定，还应进行分子遗传研究。该类群内和相关类群之间的遗传变异的研究也有助于物种重引入计划的实施。如果该种群绝灭已经很长久，尤其应更加小心。
- 如果存在野生种群，应当对它的现状和生物学进行细致的研

究，以确定该物种要求的最主要的条件。对于动物，这种研究要包括生境选择、种内变异、对当地生态条件的适应性、社会行为、群体组成、巢区的大小、隐蔽所和食物的需求、食物组成和进食行为、天敌和疾病等。对于迁徙物种，还要研究潜在的迁徙地点。对于植物，当研究生物和非生物的生境需求、扩散机制、繁殖生物学、共生关系（如根瘤菌、传粉者）、有害昆虫和疾病等。总之，深入了解被重引入物种的生活史对整个重引入计划是至关重要的。

- 由于所研究物种的丧失而留出了一定的生活空间，应确定填补这些空间的物种（如果存在的话）；评估重引入的物种将对生态系统产生的影响对是否能够成功地建立物种重引入种群具有重要作用。
- 应当模拟在各种系列条件下建立释放种群，以便确定每年的最佳释放数量和个体组成，以及建立可维持种群所需的年限。
- 种群和生境生存力分析的目标应该是确定重要的环境和种群变量，评估它们之间的相互作用，以便指导长期的种群管理。

(2) 以往的重引入项目

- 在执行和制定物种重引入行动方案之前和过程中，需要对以前的相同或相似物种的物种重引入项目进行深入研究，并要广泛地与具有相关专业知识的人员进行探讨。

(3) 释放地点和类型的选择

- 地点应当选在该物种的历史分布区内。如果是再加强，则该地区还应残存少数野生个体。如果是物种重引入，则不应有残存个体存在，以防止疾病蔓延、社会结构被破坏以及外来基因的侵入。某些情况下，物种重引入或再加强可以只在围栏或其他方式围起来的区域内进行，但必须在该物种原来的自然生境和范围内。
- 保护性和良性的引入必须是在原产地或现存范围内无法进行物种重引入的情况下采取的最后行动，而且只能在对该物种的保护将具有重要意义的情况下才能进行。
- 应当确保物种重引入地区长期受到保护（无论是正式的或其他形式的保护）。

(4) 物种重引入地点的评估

- 具有适宜的生境：物种重引入只能在该物种的生境和景观条件得以满足，并在可预见的未来能够持续利用的区域内进行。必须考虑到该物种消失后自然生境已产生变化的可能性。同样，自该物种消失后法律、政治或文化环境的变化也是一种可能的制约因素，应当进行评估和确定。该地区应足以承载物种重引

入种群的持续增长，并能够长期供养一个可维持的（自我维持的）种群。

- 找出以前导致种群衰退的原因，并消除这些因素，或使其影响降低到适当的水平。这些因素包括疾病、过度捕猎、过度采集、污染、毒害、与引入种的竞争或被引入种捕食、生境丧失、以前的研究或管理项目的副作用、与家畜的竞争（可能是季节性的）等等。
- 如果释放地点由于人类活动产生明显退化，在实施物种重引入计划之前应当进行生境的恢复和重建。

(5) 具有适当的释放种群

- 释放的动物最好来自野生种群。如果可以选择为移植提供基础种源的野生种群，则最理想的种群源应是在遗传上与当地原有的种关系最近缘的，与原有的小种群具有相似的生态、形态、生理、行为、生境选择等特性的种群。
- 以物种重引入为目的的个体转移必须不致威胁到圈养种群或原有原种种群。必须保证常规和预定的原种来源能够满足该物种重引入项目的需要。
- 只有在评估移植对提供种源的种群产生的影响，确保这些影响对原种种群没有副作用的情况下，才能从该野生种群中转移个体。
- 如果利用圈养或人工繁殖的种源，则依照现代保护生物学原理的要求，提供这些种源的种群必须是从种群统计学和遗传学两个方面都已得到良好的管理。
- 不能因为存在圈养的种源就开展物种重引入计划，更不能把物种重引入作为处理过剩种源的手段。
- 选择好了的释放种源，包括政府间作为礼物相赠的种源，在从原有种源运出以前必须进行彻底的兽医检测。一旦发现某些个体感染或经测试为阳性的非本地特有的或接触感染的病原体，在种群水平上有潜在的威胁者，则一律不能运出。对于没有感染的和表现阴性的动物，在重新测试之前必须经过适当时间的严格检疫期。期满后通过重新测试合格后才能运输。
- 在运输过程中，特别是跨洲的运输过程中，可能会感染严重的疾病。因此必须特别小心，使这种危险降低到最小程度。
- 种源必须要满足接收国家检疫机构的所有健康规定，如果需要的话，还应就检疫作出相应的规定。

(6) 圈养种源的释放

- 大多数哺乳类和鸟类的生存严重依赖于其积累的经验 and 幼年所学的知识；在圈养环境下，必须通过训练给它们机会获得野外

生存所必须的知识；圈养繁殖个体的存活率应当接近其野生状况下的存活率。

- 应注意那些存在潜在危险的圈养繁殖动物如大型食肉类或灵长类，在有人类存在的环境中可能会对当地居民或家畜带来危险。

- b) **社会经济和法律保障**
- 物种重引入通常是长时期项目，要求长期的资金和政策的支持和保障。
- 应进行社会经济研究，评估物种重引入项目对当地居民带来的影响、代价和效益。
- 应彻底调查当地人民对物种重引入计划的态度，确保物种重引入的种群能够得到长期的保护，特别是如果该地区原生种群衰退是由于人类的因素引起的，如过度捕猎、过度采集、生境的丧失或改变等。该项目必须得到当地民众的完全理解、接受和支持。
- 对于人类活动威胁到物种重引入种群的安全的地区，必须采取措施最大限度地减少这些威胁。如果采取的措施不力，则应当放弃物种重引入计划或寻找其他的释放地点。
- 应调查该国家有关物种重引入和该物种的政策，包括现有省级、国家级和国际的法律和法规，以及必要时规定新的措施和所需的许可程序。
- 物种重引入必须获得接收或提供国家的所有有关政府机构的准许和参与才能进行。这一点对边境地区，或涉及多个省或者物种重引入的种群可能扩展到其他州、省或领土的物种重引入项目特别重要。
- 如果该物种对生命或财产存在潜在的威胁，应将这些威胁降低到最小程度。必要时应提供足够的补偿；在所有的其他解决方法都失败的情况下，应考虑将释放的个体转移或消灭。对于迁徙和流动性的物种，还应采取措施利于它们跨越国界或省界。

5. 计划、准备和释放阶段

- 取得相关政府机构和土地拥有者的同意，并与国内和国际保护机构进行协调。
- 建立多学科的专家队伍，就该项目的各个阶段提供专业技术方面的指导。
- 根据既定的目的和目标，确定短期和长期的成功指标，并预测

项目的持续时间。

- 保证项目的每一个阶段都有足够的资金。
- 保证每个物种重引入计划的释放前和释放后监测项目的设计严密，科学地收集数据资料，能够科学地进行分析。个体的健康以及存活状况的监测都很重要；如果情况表明前景不容乐观，则有必要进行人为干预。
- 对释放种源包括作为政府馈赠的种源进行适当的健康和遗传监测。还应对物种重引入区域的近缘种进行健康监测。
- 如果释放的种源为野外捕获，则应注意确保以下几点：a) 在运出之前必须确保该种源没有传染性或接触感染性的病原体和寄生虫；b) 确保该种源不会接触释放地点可能存在（而种源地点不存在）的而该种源可能没有获得性免疫力的病原。
- 在释放之前应进行释放地点特有的或流行性野生种源或家畜疾病的免疫接种，该项工作必须在“准备阶段”进行，使种源有足够的时间产生所需的免疫力。
- 整个项目进行过程中需要适当的兽医或园艺措施来确保释放种群的健康，包括严格的检疫过程，特别对于那些经远程运输或跨国界到达释放地点的基础种群。
- 制定周密的将种源运送到重引入国家和地区的运输计划，特别应想办法最大限度地降低运输对动物造成的心理伤害。
- 确定释放策略，如使释放种群适应释放地点的水土；行为训练，包括捕猎和采食行为；群体结构、数量、释放方式和技术；释放时间安排等）。
- 建立人为干预措施（见下）。
- 为获得长期支持，应开展自然保护的公众教育；对参与该长期项目的人员应进行职业培训；通过大众媒介和在当地民众中开展公众宣传；在可能的情况下发动当地居民参与该项目。
- 实施的整个过程中，释放动物的健康福利始终是要高度关注的问题。

6. 释放后的工作

- 要求对所有个体或采样进行释放后的监测。最重要的是根据实际情况选择直接（如标记、遥测技术）或间接（如足迹、其他信息）方法进行监测。
- 必须进行释放群体的种群数量统计、生态学和行为学研究。
- 个体和种群的长期适应进程的研究。
- 收集死亡个体，进行死亡原因调查。

- 必要时进行人工干预，如补充喂养；兽医方面的协助；园艺方面的协助。
- 必要时决定修订、重新安排或中止项目的进行。
- 必要时继续生境的保护或恢复。
- 持续开展公共关系活动，包括教育和大众媒介宣传。
- 对物种重引入技术的成效和成功性进行评估。
- 定期发行出版科学和普及性的著作和文章。

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- 1) 世界自然保护联盟另外正在单独起草有关处理没收的贸易物种的指南。
 - 2) 本文件中的分类学单元概指物种；有时在不明确指明的情况下，也可以作较低一级的分类单元（如亚种或地理宗）。
 - 3) 如果没有理由怀疑一分类单元的最后一个个体已经死亡，则该分类单元已经绝灭。

(解焱译)

**Re-introduction Specialist Group
Species Survival Commission**

GUIDELINES FOR RE-INTRODUCTIONS

(as approved by 41st Meeting of Council, May 1995)

INTRODUCTION

These policy guidelines have been drafted by the Re-introduction Specialist Group of the IUCN's Species Survival Commission¹, in response to the increasing occurrence of re-introduction projects worldwide, and consequently, to the growing need for specific policy guidelines to help ensure that the re-introductions achieve their intended conservation benefit, and do not cause adverse side-effects of greater impact. Although IUCN developed a Position Statement on the Translocation of Living Organisms in 1987, more detailed guidelines were felt to be essential in providing more comprehensive coverage of the various factors involved in re-introduction exercises.

These Guidelines are intended to act as a guide for procedures useful to re-introduction programmes and do not represent an inflexible code of conduct. Many of the points are more relevant to re-introductions using captive-bred individuals than to translocations of wild species. Others are especially relevant to globally endangered species with limited numbers of founders. Each re-introduction proposal should be rigorously reviewed on its individual merits. It should be noted that re-introduction is **always** a very lengthy, complex **and expensive** process.

Re-introductions or translocations of species for short-term, sporting or commercial purposes – where there is no intention to establish a viable population – are a different issue and beyond the scope of these guidelines. These include fishing and hunting activities.

This document **has been written to encompass the full range of plant and animal taxa and is therefore general**. It will be regularly revised. Handbooks for re-introducing individual groups of animals and plants will be developed in future.

CONTEXT

The increasing number of re-introductions and translocations led to the establishment of the IUCN Species Survival Commission's Re-introduction Specialist Group. A priority of the Group has been to update IUCN's 1987 Position Statement on the Translocation of Living Organisms, in consultation with IUCN's other Commissions.

It is important that the Guidelines are implemented in the context of IUCN's broader policies pertaining to biodiversity conservation and sustainable management of natural resources. The philosophy for environmental conservation and management of IUCN and other conservation bodies is stated in key documents such as "Caring for the Earth" and the "Global Biodiversity Strategy," which cover the broad themes of the need for approaches with community involvement and participation in sustainable natural resource conservation, an overall enhanced quality of human life and the need to conserve and, where necessary, restore ecosystems. With regard to the latter, the re-introduction of a species is one specific instance of restoration where, in general, only this species is missing. Full restoration of an array of plant and animal species has rarely been tried to date.

Restoration of single species of plants and animals is becoming more frequent around the world. Some succeed, many fail. As this form of ecological management is increasingly common, it is a priority for the Species Survival Commission's Re-introduction Specialist Group to develop guidelines so that re-introductions are both justifiable and likely to succeed, and that the conservation world can learn from each initiative, whether successful or not. It is hoped that these Guidelines, based on extensive review of case-histories and wide consultation across a range of disciplines will introduce more rigour into the concepts, design, feasibility and implementation of re-introduction despite the wide diversity of species and conditions involved.

Thus, the priority has been to develop guidelines that are of direct, practical assistance to those planning, approving or carrying out re-introductions. The primary audience of these Guidelines is, therefore, the practitioners (usually managers or scientists), rather than decision-makers in governments. Guidelines directed towards the latter group would inevitably have to go into greater depth on legal and policy issues.

1. DEFINITION OF TERMS

- a) **“Re-introduction”**: an attempt to establish a species² in an area which was once part of its historical range, but from which it has been **extirpated** or become extinct³. (“Re-establishment” is a synonym, but implies that the re-introduction has been successful).
- b) **“Translocation”**: deliberate and mediated movement of wild individuals to an existing population of conspecifics.
- c) **“Re-enforcement/Supplementation”**: addition of individuals to an existing population of conspecifics.
- d) **“Conservation/Benign Introductions”**: an attempt to establish a species, for the purpose of conservation, outside its recorded distribution but within an appropriate habitat and eco-geographical area. **This is a feasible conservation tool only when there is no remaining area left within a species’ historic range.**

2. AIMS AND OBJECTIVES OF RE-INTRODUCTION

- a) **Aims**: The principal aim of any re-introduction should be to establish a viable, free-ranging population in the wild, of a species, subspecies or race, which has become globally or locally extinct, or extirpated, in the wild. It should be re-introduced within the species’ former natural habitat and range and should require minimal long-term management.
- b) **Objectives**: The objectives of a re-introduction may include: to enhance the long-term survival of a species; to re-establish a keystone species (in the ecological or cultural sense) in an ecosystem; to maintain and/or restore natural biodiversity; to provide long-term economic benefits to the local and/or national economy; to promote conservation awareness, or a combination of these.

3. MULTIDISCIPLINARY APPROACH

A re-introduction requires a multidisciplinary approach involving a team of persons drawn from a variety of backgrounds. As well as government personnel, they may include persons from governmental natural resource management

agencies, non-governmental organizations, funding bodies, universities, veterinary institutions, zoos (and private animal breeders) and/or botanic gardens, with a full range of suitable expertise. Team leaders should be responsible for coordination between the various bodies and provision should be made for publicity and public education about the project.

4. PRE-PROJECT ACTIVITIES

4a. BIOLOGICAL

(i) Feasibility study and background research

- An assessment should be made of the taxonomic status of individuals to be re-introduced. They should preferably be of the same subspecies or race as those which were extirpated, unless adequate numbers are not available. An investigation of historical information about the loss and fate of individuals from the re-introduction area, as well as molecular genetic studies, should be undertaken in case of doubt as to individuals' taxonomic status. A study of genetic variation within and between populations of this and related taxa can also be helpful. Special care is needed when the population has long been extinct.
- Detailed studies should be made of the status and biology of wild populations (if they exist) to determine the species' critical needs. For animals, this would include descriptions of habitat preferences, intraspecific variation and adaptations to local ecological conditions, social behaviour, group composition, home range size, shelter and food requirements, foraging and feeding behaviour, predators and diseases. For migratory species, studies should include the potential migratory areas. For plants, it would include biotic and abiotic habitat requirements, dispersal mechanisms, reproductive biology, symbiotic relationships (e.g. with mycorrhizae, pollinators), insect pests and diseases. Overall, a firm knowledge of the natural history of the species in question is crucial to the entire re-introduction scheme.
- The species, if any, that has filled the void created by the loss of the species concerned, should be determined; an understanding of the effect the re-introduced species will have on the ecosystem is important for ascertaining the success of the re-introduced population.

- The build-up of the released population should be modelled under various sets of conditions, in order to specify the optimal number and composition of individuals to be released per year and the numbers of years necessary to promote establishment of a viable population.
- A Population and Habitat Viability Analysis will aid in identifying significant environmental and population variables and assessing their potential interactions, which would guide long-term population management.

(ii) **Previous re-introductions**

- Thorough research into previous re-introductions of the same or similar species and wide-ranging contacts with persons having relevant expertise should be conducted prior to and while developing the re-introduction protocol.

(iii) **Choice of release site and type**

- The site should be within the historic range of the species. For an initial re-enforcement there should be few remnant wild individuals. For a re-introduction, there should be no remnant population to prevent disease spread, social disruption and introduction of alien genes. In some circumstances, a re-introduction or re-enforcement may have to be made into an area which is fenced or otherwise delimited, but it should be within the species' former natural habitat and range.
- A conservation/benign introduction should be undertaken only as a last resort when no opportunities for re-introduction into the original site or range exist and only when a significant contribution to the conservation of the species will result.
- The re-introduction area should have assured, long-term protection (whether formal or otherwise).

(iv) **Evaluation of re-introduction site**

- Availability of suitable habitat: re-introductions should only take place where the habitat and landscape requirements of the species are satisfied, and likely to be sustained for the foreseeable future. The possibility of natural habitat change since extirpation must be considered. Likewise, a

change in the legal/political or cultural environment since the species' extirpation needs to be ascertained and evaluated as a possible constraint. The area should have sufficient carrying capacity to sustain growth of the re-introduced population and support a viable (self-sustaining) population in the long run.

- Identification and elimination, or reduction to a sufficient level, of previous causes of decline: could include disease; over-hunting; over-collection; pollution; poisoning; competition with or predation by introduced species; habitat loss; adverse effects of earlier research or management programmes; competition with domestic livestock, which may be seasonal.
- Where the release site has undergone substantial degradation caused by human activity, a habitat restoration programme should be initiated before the re-introduction is carried out.

(v) **Availability of suitable release stock**

- It is desirable that source animals come from wild populations. If there is a choice of wild populations to supply founder stock for translocation, the source population should ideally be closely related genetically to the original native stock and show similar ecological characteristics (morphology, physiology, behaviour, habitat preference) to the original sub-population.
- Removal of individuals for re-introduction must not endanger the captive stock population or the wild source population. Stock must be guaranteed available on a regular and predictable basis, meeting specifications of the project protocol.
- Individuals should only be removed from a wild population after the effects of translocation on the donor population have been assessed, and after it is guaranteed that these effects will not be negative.
- If captive or artificially propagated stock is to be used, it must be from a population which has been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology.
- Re-introductions should not be carried out merely because captive stocks exist, nor solely as a means of disposing of surplus stock.

- Prospective release stock, including stock that is a gift between governments, must be subjected to a thorough veterinary screening process *before* shipment from original source. Any animals found to be infected or which test positive for non-endemic or contagious pathogens with a potential impact on population levels, must be removed from the consignment, and the uninfected, negative remainder must be placed in strict quarantine for a suitable period before retest. If clear after retesting, the animals may be placed for shipment.
- Since infection with serious disease can be acquired *during* shipment, especially if this is intercontinental, great care must be taken to minimise this risk.
- Stock must meet all health regulations prescribed by the veterinary authorities of the recipient country and adequate provisions must be made for quarantine if necessary.

(vi) **Release of captive stock**

- Most species of mammals and birds rely heavily on individual experience and learning as juveniles for their survival; they should be given the opportunity to acquire the necessary information to enable survival in the wild through training in their captive environment; a captive bred individual's probability of survival should approximate that of a wild counterpart.
- Care should be taken to ensure that potentially dangerous captive-bred animals (such as large carnivores or primates) are not so confident in the presence of humans that they might be a danger to local inhabitants and/or their livestock.

4b. SOCIO-ECONOMIC AND LEGAL REQUIREMENTS

- Re-introductions are generally long-term projects that require the commitment of long-term financial and political support.
- Socio-economic studies should be made to assess impacts, costs and benefits of the re-introduction programme to local human populations.
- A thorough assessment of attitudes of local people to the proposed project is necessary to ensure long-term protection of the re-introduced population,

especially if the cause of species' decline was due to human factors (e.g. over-hunting, over-collection, loss or alteration of habitat). The programme should be fully understood, accepted and supported by local communities.

- Where the security of the re-introduced population is at risk from human activities, measures should be taken to minimise these in the re-introduction area. If these measures are inadequate, the re-introduction should be abandoned or alternative release areas sought.
- The policy of the country to re-introductions and to the species concerned should be assessed. This might include checking existing provincial, national and international legislation and regulations, and provision of new measures and required permits as necessary.
- Re-introduction must take place with the full permission and involvement of all relevant government agencies of the recipient or host country. This is particularly important in re-introductions in border areas, or involving more than one state or when a re-introduced population can expand into other states, provinces or territories.
- If the species poses potential risk to life or property, these risks should be minimised and adequate provision made for compensation where necessary; where all other solutions fail, removal or destruction of the released individual should be considered. In the case of migratory/mobile species, provisions should be made for crossing of international/state boundaries.

5. PLANNING, PREPARATION AND RELEASE STAGES

- Approval of relevant government agencies and land owners, and coordination with national and international conservation organizations.
- Construction of a multidisciplinary team with access to expert technical advice for all phases of the programme.
- Identification of short- and long-term success indicators and prediction of programme duration, in the context of agreed aims and objectives.
- Securing adequate funding for all programme phases.

- Design of pre- and post-release monitoring programme so that each re-introduction is a carefully designed experiment, with the capability to test methodology with scientifically collected data. Monitoring the health of individuals, as well as the survival, is important; intervention may be necessary if the situation proves unforeseeably favourable.
- Appropriate health and genetic screening of release stock, including stock that is a gift between governments. Health screening of closely related species in the re-introduction area.
- If release stock is wild-caught, care must be taken to ensure that: a) the stock is free from infectious or contagious pathogens and parasites *before* shipment and b) the stock will not be exposed to vectors of disease agents which may be present at the release site (and absent at the source site) and to which it may have no acquired immunity.
- If vaccination prior to release, against local endemic or epidemic diseases of wild stock or domestic livestock at the release site, is deemed appropriate, this must be carried out during the "Preparation Stage" so as to allow sufficient time for the development of the required immunity.
- Appropriate veterinary or horticultural measures as required to ensure health of released stock throughout the programme. This is to include adequate quarantine arrangements, especially where founder stock travels far or crosses international boundaries to the release site.
- Development of transport plans for delivery of stock to the country and site of re-introduction, with special emphasis on ways to minimise stress on the individuals during transport.
- Determination of release strategy (acclimatization of release stock to release area; behavioural training – including hunting and feeding; group composition, number, release patterns and techniques; timing).
- Establishment of policies on interventions (see below).
- Development of conservation education for long-term support; professional training of individuals involved in the long-term programme; public relations through the mass media and in local community; involvement where possible of local people in the programme.

- The welfare of animals for release is of paramount concern through all these stages.

6. POST-RELEASE ACTIVITIES

- Post-release monitoring is required of all (or a sample of) individuals. This most vital aspect may be by direct (e.g. tagging, telemetry) or indirect (e.g. spoor, informants) methods as suitable.
- Demographic, ecological and behavioural studies of released stock must be undertaken.
- Study of processes of long-term adaptation by individuals and the population.
- Collection and investigation of mortalities.
- Interventions (e.g. supplemental feeding; veterinary aid; horticultural aid) when necessary.
- Decisions for revision, rescheduling, or discontinuation of programme where necessary.
- Habitat protection or restoration to continue where necessary.
- Continuing public relations activities, including education and mass media coverage.
- Evaluation of cost-effectiveness and success of re-introduction techniques.
- Regular publication in scientific and popular literature.

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- (1) Guidelines for determining procedures for disposal of species confiscated in trade are being developed separately by IUCN.
 - (2) The taxonomic unit referred to throughout the document is species; it may be a lower taxonomic unit (e.g. sub-species or race) as long as it can be unambiguously defined.
 - (3) A taxon is Extinct when there is no reasonable doubt that the last individual has died.

IUCN/SSC Publications

Action Plans

Action Plans assess the conservation status of species and their habitats, and specify conservation priorities. The series (over 40 published to date) is one of the world's most authoritative sources of species conservation information available to natural resource managers, conservationists and government officials around the world.

IUCN Red Lists of Threatened Animals and Plants

Red Lists are lists of all animal or plant species that have been assessed according to the IUCN Red List Categories and Criteria. For each species, the category of threat and relevant criteria are shown, together with the range in which the species occurs.

IUCN Policies and Guidelines

Policies and Guidelines offer scientifically-based conservation principles and guidelines to aid decision-making at both the global and national level.

Monographs (arranged by topic)

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

Crocodiles

Educational Booklets on Mammals

Marine Turtles

Plants

Trade

Others

Occasional Paper Series

Occasional Papers include overviews on the conservation status of species and proceedings of meetings.

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IUCN/Species Survival Commission

The Species Survival Commission (SSC) is one of six volunteer commissions of IUCN – The World Conservation Union, a union of sovereign states, government agencies and non-governmental organizations. IUCN has three basic conservation objectives: to secure the conservation of nature, and especially of biological diversity, as an essential foundation for the future; to ensure that where the earth's natural resources are used this is done in a wise, equitable and sustainable way; and to guide the development of human communities towards ways of life that are both of good quality and in enduring harmony with other components of the biosphere.

The SSC's mission is to conserve biological diversity by developing and executing programs to save, restore and wisely manage species and their habitats. A volunteer network comprised of nearly 7,000 scientists, field researchers, government officials and conservation leaders from almost every country of the world, the SSC membership is an unmatched source of information about biological diversity and its conservation. As such, SSC members provide technical and scientific counsel for conservation projects throughout the world and serve as resources to governments, international conventions and conservation organizations.

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