



## 4<sup>th</sup> SESSION OF THE MEETING OF THE PARTIES

15 – 19 September 2008, Antananarivo, Madagascar

*“Flyway Conservation at Work – Review of the Past, Vision for the Future”*

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## REVIEW OF WATERBIRD RE-ESTABLISHMENT IN THE AEWA AREA

### Introduction

According to Paragraph 7.4 of the AEWA Action Plan the Agreement Secretariat, in coordination with the Technical Committee and the Parties, shall prepare a series of international reviews necessary for the implementation of the Action Plan, including, *inter alia*, a Review of waterbird re-establishment in the Agreement area.

After a call for tenders the compilation of this review was commissioned to the Wildfowl & Wetlands Trust. Information from Range States on the implementation of re-establishments was collected through questionnaires.

This review was approved by the Technical Committee at its 8<sup>th</sup> meeting in March 2008 and endorsed by the Standing Committee at its 5<sup>th</sup> meeting June 2008 for submission to MOP4. Conclusions and recommendation from the review served as a basis for draft Resolution 4.4.

### Action requested from the Meeting of the Parties

The Meeting of the Parties is invited to note the Review of waterbird re-establishments in the AEWA area and take its conclusions and recommendations into account in the decision making process.

# **Review of Waterbird Re-establishment in the AEWA Region**

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## Acronyms

AEWA	African-Eurasian Waterbird Agreement
BMU	Federal Ministry for the Environment, Nature Conservation & Nuclear Safety, Germany
BVI	British Virgin Islands
CMS	Convention on Migratory Species
EU	European Union
HAZU	Institute of Ornithology at the Croatian Academy of Sciences and Arts
IAGNBI	International Advisory Group on the Northern Bald Ibis
IAP	International Action Plan
ICONA	National Institute for Nature Conservation in Spain's Ministry of Agriculture
INFS	Istituto Nazionale per la Fauna Selvatica
ISSAP	International Single Species Action Plan
IUCN	International Union for the Conservation of Nature and Natural Resources (World Conservation Union)
JNCC	Joint Nature Conservation Committee
RSG	Re-introduction Specialist Group
RSPB	Royal Society for the Protection of Birds
SSC	Species Survival Commission
TCA	The Conservation Agency
UKBAP	United Kingdom Biodiversity Action Plan
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
WCMC	World Conservation Monitoring Centre
WWT	Wildfowl & Wetlands Trust

## Definitions

**Re-introduction:** an attempt to establish a species in an area which was once part of its historical range, but from which it has been extirpated or become extinct.

**Re-establishment:** a successful re-introduction.

**Re-establishment project:** a synonym for re-introduction; a project that attempts to successfully establish a species in an area which was once part of its historical range, but from which it has been extirpated or become extinct.

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## EXECUTIVE SUMMARY

Re-establishment has received increased attention as a conservation tool over the last two decades resulting in an increase in re-establishment projects worldwide (World Conservation Union and Species Survival Commission Re-introduction Specialist Group (IUCN/SSC RSG) 1995). As re-establishments are sometimes recommendations of action plans and other conservation initiatives it is vital that their occurrence, progress and outcomes are recorded (1) to inform future re-establishment projects for related species and populations, and (2) to allow the implementation of action plans and other conservation initiatives to be monitored.

This report reviews waterbird species re-establishment projects, as per item 7.4 (f) of the African-Eurasian Waterbird Agreement (AEWA) Action Plan.

Seven major objectives were addressed: identifying the species and populations for which re-establishment has been recommended as a conservation measure; identifying the waterbird conservation initiatives with provisions on re-establishment; creating a meta-database containing all relevant data on re-establishments of waterbirds in the AEWA region; assessing existing re-establishment projects against IUCN guidelines; assessing the status of and progress in the implementation of re-establishments by Range States and other stakeholders; and producing recommendations for the future use of re-establishment as a conservation tool.

The review found that re-establishment has been recommended as a conservation measure for six waterbird species in international and national actions plans published since 1995: Lesser White-fronted Goose *Anser erythropus*, Ferruginous Duck *Aythya nyroca*, Crested Coot *Fulica cristata*, White-headed Duck *Oxyura leucocephala*, Maccoa Duck *Oxyura maccoa*, and Corn Crake *Crex crex*. Each of these species except for the Maccoa Duck has been the subject of one or more re-establishment project within the AEWA region. Most projects have failed to result in self-sustaining populations, though varying levels of success have been reported for projects to re-introduce the White-headed Duck in Spain, Ferruginous Duck in Italy, Lesser White-fronted Goose in Sweden, and Corn Crake in the United Kingdom.

Of the 59 conservation initiatives reviewed, 15 had provisions on re-establishment. These initiatives included national and international action plans, international conventions and agreements, and conservation assessment and management plans. The re-establishment recommendations ranged from calling for re-introductions in previously occupied areas according to IUCN guidelines, to calling for particular numbers of birds to be released in particular areas.

A potentially web-accessible meta-database was constructed and populated with data relevant to re-establishments of waterbirds in the AEWA region, incorporating information on species/population, Range States, conservation initiatives, re-establishment projects, references, re-establishment contacts, and data collected as part of a questionnaire survey.

The assessment of existing re-establishment projects found that compliance to IUCN re-introduction guidelines varied from 23% for a White-headed Duck re-introduction in Hungary to 88% for a Corn Crake re-introduction in the United Kingdom. Evaluating success and comparing this with level of compliance indicated that projects showing greater compliance to IUCN guidelines were more likely to be successful.

Re-establishment projects have been implemented for four of the five species for which re-establishment has been recommended in an international single species action plan (ISSAP). The only species where re-establishment has not been implemented despite a recommendation is the Maccoa Duck. Re-establishment projects have been conducted for 33% of the threatened species and 3% of the non-threatened species covered by AEWA.

A number of factors were identified as particularly important to success. These were the completion of a comprehensive feasibility study; pre-release acclimatization of birds to their release area; good quality habitat with the original causes of decline eliminated or reduced; long-term financial and political support; and identification of short and long-term indicators of success.

In order to improve the success of re-establishment as a conservation tool for waterbirds in the AEWA region this report recommends that:

1. Re-establishment projects are conducted in strict accordance with the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995).
2. The *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995, Appendix 3) are adapted for waterbird species and supplemented with checklists of activities for practitioners to complete.
3. The IUCN/SSC Re-introduction Specialist Group (IUCN/SSC RSG) is consulted prior to any re-establishment project.
4. Re-establishment projects are conducted by groups of organisations and experts with diverse skills bases.
5. Networks or groups of experts with knowledge relevant to the re-establishment of a specific species are assembled to act as advisory groups for re-establishment projects of that species.
6. During pre-project activities, particular attention is paid to completing a comprehensive feasibility study and securing long-term financial and political support.
7. During re-introduction activities, particular attention is paid to ensuring birds are acclimatized to their release area, a sufficient amount of good quality habitat is available where the original causes of decline have been eliminated or sufficiently reduced, and short and long-term indicators of success are identified.
8. AEWA National Focus Points maintain a national register of re-establishment projects occurring or planned to occur wholly or in part within their Ranges States.
9. All re-establishment projects are described to the IUCN/SSC RSG.
10. The AEWA re-establishment database is maintained.
11. A standard set of evaluation criteria for waterbird re-establishment projects is developed.

## 1 INTRODUCTION

The variety and numbers of waterbirds on their breeding grounds, migration stop-over sites, and wintering grounds has been reduced due to several factors, among others partial or full destruction or alteration of habitats, unsustainable harvesting, pollution, and invasive alien species.

The African-Eurasian Waterbird Agreement (AEWA) entered into force in 1999 and focuses on the conservation of 235 waterbird species in 117 Range States in Africa, Europe, and parts of Canada, Central Asia and the Middle East. AEWA calls on its Parties to engage in a wide range of conservation actions including the use of re-establishment.

Re-establishment has received increased attention as a conservation tool over the last two decades resulting in an increase in re-establishment projects worldwide (World Conservation Union and Species Survival Commission Re-introduction Specialist Group (IUCN/SSC RSG) 1995). As re-establishments are sometimes recommendations of action plans and other conservation initiatives it is vital that their occurrence, progress and outcomes are recorded (1) to inform future re-establishment projects for related species, and (2) to allow the implementation of action plans and other conservation initiatives to be monitored.

IUCN defines 're-establishment' as a successful 're-introduction', a successful 'attempt to establish a species in an area which was once part of its historical range, but from which it has been extirpated or become extinct'. A re-introduction contrasts with a 'translocation', which is the 'deliberate and mediated movement of wild individuals or populations from one part of their range to another'; a 'reinforcement/supplementation', which is the 'addition of individuals to an existing population of conspecifics'; and a 'conservation/benign introduction', which is 'an attempt to establish a species, for the purpose of conservation, outside its recorded distribution but within an appropriate habitat and ecogeographical area' (IUCN/SSC RSG 1995).

The *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995, Appendix 3) provide specific policy guidelines for each stage of a re-introduction (i.e. a re-establishment project) and state that the objectives of a re-introduction may be 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 (IUCN/SSC RSG 1995).

Paragraph 2.4 of AEWA's Annex 3 (Action Plan) reads "Parties shall exercise the greatest care when re-establishing populations listed in Table 1 into parts of their traditional range where they no longer exist. They shall endeavour to develop and follow a detailed re-establishment plan based on appropriate scientific studies. Re-establishment plans should constitute an integral part of national and, where appropriate, international single species action plans. A re-establishment plan should include assessment of the impact on the environment and shall be made widely available. Parties shall inform the Agreement secretariat, in advance, of all re-establishment programmes for populations listed in Table 1."

The third Meeting of Parties (MOP3) in paragraph 6 of Resolution 3.11, requested the Technical Committee urgently to implement the international context reviews specified in paragraph 7.4 of the Action Plan - including a review of re-establishment projects - to provide future Meetings of Parties with context on these issues.

This report reviews waterbird species re-establishment projects, as per item 7.4 (f) of the AEWA Agreement's Action Plan, with the following objectives:

1. Produce a list of those species for which re-establishments have been identified to be needed, as a priority for the populations listed in Category 1, Column A, Table 1 of the AEWA Action Plan and provide the context against which this has happened.
2. Produce a list of waterbird conservation initiatives requesting or promoting the implementation of re-establishment projects, record the relevant text and assess the content of these recommendations.
3. Set up a meta-database that contains relevant information on:
  - those species/populations for which re-establishment plans have been prepared (and implemented);
  - those species/populations for which re-establishment plans are under development; and
  - those species/populations for which re-establishment plans remain to be developed.
4. Assess re-establishment projects that have occurred for AEWA species in the AEWA region in terms of their compliance to the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995).
5. Assess the status of and progress in the implementation of re-establishment projects by Range States and other stakeholders.
6. Assess the effectiveness of waterbird re-establishment projects in the AEWA region and determine the factors most linked to success in these projects.
7. Provide recommendations for the future use of re-establishment as a conservation tool and outline the improvements needed.

## 2 SPECIES FOR WHICH RE-ESTABLISHMENT PROJECTS ARE NEEDED

### 2.1 Objective

Produce a list of those species for which re-establishments have been identified to be needed, as a priority for the populations listed in Category 1, Column A, Table 1 of the AEWA Action Plan and provide the context against which this has happened.

### 2.2 Method

A total of 38 action plans for waterbird species were reviewed (Table 2-1) to determine for which species or populations re-establishment had been recommended as a conservation measure. The action plans included Council of Europe and European Union action plans; AEWA/CMS action plans; African action plans for globally threatened species; and other national and international action plans. The action plans reviewed represent a sample of the total number available. In particular, it should be noted that only English language action plans were included and of the seven national action plans reviewed, five (71%) were for the United Kingdom. Updates of this review should aim to include non-English action plans and national action plans from a wider range of countries.

**Table 2-1. Waterbird action plans reviewed for re-establishment recommendations.**

Action Plan	Reference
Action Plan for the Conservation of Bird Species Listed in Annex II of the Protocol Concerning SPAs and Biological Diversity in the Mediterranean	(UNEP MAP RAC/SPA 2003)
Action Plan for the Corn Crane ( <i>Crex crex</i> ) in Europe	(Crockford <i>et al.</i> 1996)
Action Plan for the Dalmatian Pelican ( <i>Pelecanus crispus</i> ) in Europe	(Crivelli 1996)
Action Plan for the Pygmy Cormorant ( <i>Phalacrocorax pygmeus</i> ) in Europe	(Crivelli, Nazirides & Jerrentrup 1996)
Action Plan for the White-headed Duck ( <i>Oxyura leucocephala</i> ) in Europe	(Green & Hughes 1996)
Conservation action plans for the Black Crowned Crane ( <i>Balearica pavonina</i> ) and Black Stork ( <i>Ciconia nigra</i> ) in Africa	(Diagana, Dodman & Sylla 2006)
Cranes - Status Survey and Conservation Action Plan	(Meine & Archibald 1996)
Ducks, Geese, Swans and Screamers: An Action Plan for the Conservation of Anseriformes (Second draft)	(Callaghan, in prep.)
European Species Action Plan Ferruginous Duck ( <i>Aythya nyroca</i> )	(Callaghan 1997)
European Species Action Plan Steller's Eider ( <i>Polysticta stelleri</i> )	(Pihl 1999)
European Union Species Action Plan Bittern ( <i>Botaurus stellaris</i> )	(Newbery, Schaffer & Smith 1997)
Grebes - Status Survey and Conservation Action Plan	(O'Donnel & Fields 1997)
International (East Atlantic) Action Plan Roseate Tern ( <i>Sterna dougallii</i> )	(Newbery 1999)
International Action Plan for Audouin's Gull ( <i>Larus audouinii</i> )	(Lambertini 1996)
International Action Plan for the Lesser White-fronted Goose ( <i>Anser erythropus</i> )	(Madsen 1996)
International Action Plan for the Lesser White-fronted Goose ( <i>Anser erythropus</i> ) - updated second draft	(Jones 2006)
International Action Plan for the Marbled Teal ( <i>Marmaronetta angustirostris</i> )	(Green 1995)
International Action Plan for the Red-breasted Goose ( <i>Branta ruficollis</i> )	(Hunter & Black 1996)
International Action Plan for the Slender-billed Curlew ( <i>Numenius tenuirostris</i> )	(Gretton 1996)
International Maccoa Duck ( <i>Oxyura maccoa</i> ) Action Plan	(Berruti <i>et al.</i> 2005)
International Single Species Action Plan for the Conservation of the Lesser Flamingo ( <i>Phoenicopterus minor</i> ) (second draft)	(Childress, Nagy & Hughes 2007)
International Single Species Action Plan for the Conservation of the Maccoa Duck ( <i>Oxyura maccoa</i> )	(Abebe <i>et al.</i> 2007)
International Single Species Action Plan for the Conservation of the Light-bellied Brent Goose - East Canadian High Arctic population ( <i>Branta bernicla hrota</i> )	(Robinson & Colhoun 2006)
International Single Species Action Plan for the Conservation of the Northern Bald Ibis ( <i>Geronticus eremita</i> )	(Armesto, Boehm & Bowden 2006)
International Single Species Action Plan for the Conservation of the Corn Crane ( <i>Crex crex</i> )	(Koffijberg & Schaffer 2006)

Action Plan	Reference
International Single Species Action Plan for the Conservation of the White-headed Duck ( <i>Oxyura leucocephala</i> )	(Hughes, Robinson & Green 2006)
International Single Species Action Plan for the Conservation of the Ferruginous Duck ( <i>Aythya nyroca</i> )	(Robinson & Hughes 2006)
International Single Species Action Plan for the Conservation of the Great Snipe ( <i>Gallinago media</i> )	(Kålås 2004)
International Single Species Action Plan for the Conservation of the Black-winged Pratincole ( <i>Glareola nordmanni</i> )	(Belik & Lebedeva 2004)
International Single Species Action Plan for the Conservation of the Sociable Lapwing ( <i>Vanellus gregarius</i> )	(Tomkovich & Lebedeva 2004)
International Species Action Plan Crested Coot ( <i>Fulica cristata</i> )	(Gomez 1999)
National Action Plan for the Lesser White-fronted Goose (Greece)	(Savas & Nazirides 1999)
National Action Plan for the Pygmy Cormorant ( <i>Phalacrocorax pygmaeus</i> ) (Greece)	(Kazantzidis & Nazirides 1999)
UK Biodiversity Action Plan – Bittern ( <i>Botaurus stellaris</i> )	(UKBAP 1995a)
UK Biodiversity Action Plan – Common Scoter ( <i>Melanitta nigra</i> )	(UKBAP 1998a)
UK Biodiversity Action Plan – Corn Crake ( <i>Crex crex</i> )	(UKBAP 1995b)
UK Biodiversity Action Plan – Red-necked Phalarope ( <i>Phalaropus lobatus</i> )	(UKBAP 1998b)
UK Biodiversity Action Plan – Roseate Tern ( <i>Sterna dougallii</i> )	(UKBAP 1998c)

After an initial list of species was drawn up, consultations were conducted with AEWA National Focal Points to finalise the list – all National Focal Points were asked if re-establishment had been recommended as a conservation measure for any AEWA species in their Range State. Gaps were filled by consulting relevant ornithological experts, including Wetlands International Specialist Group chairs, BirdLife International contacts and International Waterbird Census coordinators.

The action plans recommending re-establishment were identified and the details noted. For each species or population with a recommendation, background information (distribution, IUCN Red List status and factors causing loss or decline/major threats) was gathered to provide context for the recommendations.

Finally, for each species or population with a recommendation, as much information as possible was gathered on re-establishment projects that have been completed, are being conducted, or are being planned to occur in AEWA Range States. Information was gathered by searching scientific literature, popular literature and websites, and by consulting National Focal Points – all National Focal Points were asked if any re-establishments had been conducted or were planned for any AEWA species in their Range State. Again, gaps were filled by consulting relevant ornithological experts, including Wetlands International Specialist Group chairs, BirdLife International contacts and International Waterbird Census coordinators.

## 2.3 Results

The 38 action plans reviewed covered 43 waterbird species to which AEWA applies: 21 of these species have international single species action plans (ISSAPs), and seven have national single species action plans (of which five also have an ISSAP). The species for which action plans recommend re-establishment activities are listed in Table 2-2 with the number of action plans reviewed, the number recommending re-establishment and the IUCN Red List Status (2007) of each species.

**Table 2-2. Species with action plans recommending re-establishment activities.**

Species	IUCN Red List Status (2007) <sup>1*</sup>	No. of action plans reviewed	No. of action plans recommending re-establishment
Corn Crake <i>Crex crex</i>	NT	3	1
Crested Coot <i>Fulica cristata</i>	LC	1	1
Ferruginous Duck <i>Aythya nyroca</i>	NT	2	1
Lesser White-fronted Goose <i>Anser erythropus</i>	VU	3	1
Maccoa Duck <i>Oxyura maccoa</i>	NT	2	1
White-headed Duck <i>Oxyura leucocephala</i>	EN	2	1

\* EN = endangered, VU = vulnerable, NT = near threatened, LC = least concern.

Re-establishment was recommended for only six species (Table 2-2): Corn Crake (UKBAP 1995b), Crested Coot (Gomez 1999), Ferruginous Duck (Callaghan 1997), Lesser White-fronted Goose (Madsen 1996), Maccoa Duck (Abebe *et al.* 2007) and White-headed Duck (Hughes *et al.* 2006). However, as indicated in Table 2-2, re-establishment was not recommended for five of these six species in at least one other action plan. Of the 10 threatened species covered by the ISSAPs, just two (Lesser White-fronted Goose and White-headed Duck) were recommended for re-establishment, and the latest draft of the Lesser White-fronted Goose ISSAP does not recommend re-establishment (Jones 2006).

Re-establishment was discussed at some length in the 1996 *Action Plan for the Dalmatian Pelican *Pelecanus crispus* in Europe* (Crivelli 1996). However, the action plan did not recommend re-establishment, but did recommend that re-introduction techniques were investigated.

The six species for which re-establishment was recommended are discussed in detail in the following sections.

<sup>1</sup> Source: IUCN. 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded 28 September 2007.

**(a) Corn Crake *Crex crex***

Re-establishment of this species was recommended in the 1995 *UK Biodiversity Action Plan Corn Crake *Crex crex** (UKBAP 1995b) as a long-term conservation measure to re-establish the Corn Crake in parts of its former range in the United Kingdom. Re-establishment is not recommended in the 1996 *Action Plan for the Corn Crake (*Crex crex*) in Europe* (Crockford *et al.* 1996) or the 2006 *International Single Species Action Plan for the Conservation of the Corn Crake (*Crex crex*)* (Koffijberg & Schaffer 2006).

**Distribution<sup>2</sup>**

Afghanistan (v), Albania (br), Algeria, Angola (v), Armenia (br), Australia (?), Austria (br), Azerbaijan (br), Belarus (br), Belgium (br), Bosnia and Herzegovina (br), Botswana (v), Bulgaria (br), Cameroon (v), Chad (v), China (br), Congo, Côte d'Ivoire (v), Croatia (br), Czech Republic (br), Democratic Republic of the Congo, Denmark (br), Egypt, Eritrea (v), Estonia (br), Ethiopia, Faroe Islands (ex, br), Finland (br), France (br), Gabon (v), Georgia (br), Germany (br), Ghana (v), Greece (br), Guinea (?), Hungary (br), Iceland (v), Iran (Islamic Republic of) (br), Iraq, Ireland (br), Israel, Italy (br), Kazakhstan (br), Kenya, Kuwait, Kyrgyzstan (br), Latvia (br), Lebanon, Lesotho (v), Libyan Arab Jamahiriya (v), Liechtenstein (br), Lithuania (br), Luxembourg (br), Malawi, Mali (v), Mauritania, Moldova, Republic of (br), Mongolia (v), Morocco, Mozambique, Namibia (v), Netherlands (br), Niger (v), Nigeria (v), Norway (br), Oman, Poland (br), Portugal (v), Romania (br), Russian Federation (br), Rwanda (v), Saint Pierre and Miquelon (v), Saudi Arabia, Serbia and Montenegro (br), Seychelles (v), Slovakia (br), Slovenia (br), Somalia (v), South Africa, Spain (br), Sudan, Swaziland, Sweden (br), Switzerland (br), Syrian Arab Republic, Tajikistan (br), The former Yugoslav Republic of Macedonia (br), Tunisia, Turkey (br), Turkmenistan, Uganda (v), Ukraine (br), United Kingdom (br), United Republic of Tanzania, Uzbekistan, Viet Nam (v), Yemen, Zambia, and Zimbabwe.

(br – breeding; ex – extinct; v – vagrant; ? – outstanding query over status)

**Status<sup>3</sup>**

IUCN Red List: NT (BirdLife International 2006)

Trend: ↓

“Recent surveys in eastern Europe and new population estimates for Asiatic Russia and have shown this species to be considerably more numerous than was thought in the early 1990s. New information suggests that future declines in European Russia are in the region of 10% over the next 10 years because the introduction of intensive agricultural technologies in some areas will be compensated for by the reduction of agricultural production in other areas. In Asiatic Russia, where the bulk of the world population breeds, declines of c. 20% are predicted on the basis of land abandonment, with meadows becoming overgrown by bushy vegetation and trees. For this reason the species is listed as Near Threatened. Nearly qualifies as threatened under criteria A3c” (BirdLife International 2006)

**Factors causing loss or decline (United Kingdom)<sup>4</sup>**

- Loss of traditional grassland habitat mosaics, especially tall vegetation throughout the breeding season.
- Changes in grass management and cutting techniques (e.g. earlier cutting).
- Predation and disturbance may be contributing to the decline in some localities.

<sup>2</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>3</sup> Source: BirdLife International. 2006. *Crex crex*. In: IUCN 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded 28 September 2007.

<sup>4</sup> UKBAP. 1995b. UK Biodiversity Action Plan - Corn Crake (*Crex crex*). Originally published in: Biodiversity: The UK Steering Group Report - Volume II: Action Plans (December 1995, Tranche 1, Vol 2, p102).

**Source of re-establishment recommendation**

UK Biodiversity Action Plan - Corn Crane *Crex crex*. Originally published in:  
Biodiversity: The UK Steering Group Report - Volume II: Action Plans (December 1995, Tranche 1, Vol. 2, p102).

**Completed and ongoing re-establishment projects**

- i. AEWA Range State: **UNITED KINGDOM**  
Region: Cambridge, England  
Organisations involved: RSPB, Whipsnade Wild Animal Park (Zoological Society of London), Natural England, and Pensthorpe Conservation Trust  
Start year: 2000  
End year: Ongoing  
Comments: Some 291 birds were released between 2002 and 2006. Released birds have successfully returned from overwinter migration to Africa and have successfully bred in the wild. The long-term goal of the project is the establishment of a stable population of over 30 pairs.<sup>5</sup>

**Planned re-establishment projects**

None known.

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<sup>5</sup> From a questionnaire completed and returned by Andy Evans (RSPB) (see Appendix 2).

**(b) Crested Coot *Fulica cristata***

Maintaining a captive breeding population of this species for future re-introductions was considered of medium priority in the 1999 *International Species Action Plan Crested Coot *Fulica cristata** (Gomez 1999). The action plan recommended that a re-introduction programme following IUCN guidelines should be implemented in Spain between the Andalucía and Valencia Regions with a total of 50 pairs re-introduced.

**Distribution<sup>6</sup>**

Algeria (ex ?, br), Angola (br), Botswana (br), Burundi (v), ? Democratic Republic of the Congo (br), Eritrea (br), Ethiopia (br), France (v), Italy (v), Kenya (br), Lesotho (br), Madagascar (br), Malawi (br), Malta (v), Morocco (br), ? Mozambique (br), Namibia (br), Oman (v), Portugal (v), Rwanda (br), Somalia (v), South Africa (br), Spain (br), Swaziland (br), Tunisia (ex, br), ? Uganda (br), United Arab Emirates (br, v), ? United Republic of Tanzania (br), Zambia (br), and Zimbabwe (br).

(br – breeding; ex – extinct; v – vagrant; ? – outstanding query over status)

**Status<sup>7</sup>**

IUCN Red List: LC (BirdLife International 2004)

Trend: N/A

“This species has a large range, with an estimated global extent of occurrence of 5,400,000 km<sup>2</sup>. It has a large global population estimated to be 110,000–1,000,000 individuals (Wetlands International 2002). Global population trends have not been quantified, but the species is not believed to approach the thresholds for the population decline criterion of the IUCN Red List (i.e., declining more than 30% in 10 years or 3 generations). For these reasons, the species is evaluated as Least Concern” (BirdLife International 2004)

**Major threats<sup>8</sup>**

- Habitat Loss (importance: critical)
- Habitat Degradation (importance: critical)
- Livestock (importance: high)
- Hunting (importance: medium)
- Fishing (importance: medium)
- Disturbance (importance: low)
- Interaction with Greater Flamingos *Phoenicopterus ruber roseus* (importance: unknown)
- Introduction of other species (importance: unknown)
- Lead poisoning (importance: unknown)

**Source of re-establishment recommendation**

Gomez CR (compiler). 1999. International Species Action Plan Crested Coot (*Fulica cristata*). The European Commission and BirdLife International.

<sup>6</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>7</sup> Source: BirdLife International. 2004. *Fulica cristata*. In: IUCN 7. 2007 IUCN Red List of Threatened Species. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 28 September 2007.

<sup>8</sup> Gomez CR (compiler). 1999. International Species Action Plan Crested Coot (*Fulica cristata*). The European Commission and BirdLife International.

**Completed and ongoing re-establishment projects**

- i. AEWA Range State: **SPAIN**  
Region: Andalucía (Reserva Concertada "Cañada de los Pájaros")  
Organisations involved: Cañada de los Pájaros  
Start year: 1992  
End year: 1996 (captive breeding continues for possible future releases)  
Comments: The results of releases are unknown - there was no continuous monitoring of this programme.<sup>9</sup>
- ii. AEWA Range State: **SPAIN**  
Region: Valencia (two SPAs)<sup>9</sup>

**Planned re-establishment projects**

None known.

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<sup>9</sup> Gomez CR (compiler). 1999. International Species Action Plan Crested Coot (*Fulica cristata*). The European Commission and BirdLife International.

### (c) Ferruginous Duck *Aythya nyroca*

Re-establishment of this species was recommended in the 1997 *European Species Action Plan Ferruginous Duck Aythya nyroca* (Callaghan 1997) as a last measure conservation strategy to re-introduce the species to areas of its former range. Re-establishment was not a recommendation of the 2006 *International Single Species Action Plan for the Conservation of the Ferruginous Duck Aythya nyroca* (Robinson & Hughes 2006).

#### Distribution<sup>10</sup>

Afghanistan (br), Albania (br), Algeria (br), Armenia (br), Austria (br), Azerbaijan (br), Bahrain (v), Bangladesh, Belarus (br), Belgium, Bhutan, Bosnia and Herzegovina (br), Bulgaria (br), Burkina Faso (v), Cameroon, Cape Verde (v), Central African Republic, Chad, China (br), Croatia (br), Cyprus, Czech Republic (br), Denmark (v), Egypt, Eritrea, Ethiopia, Finland (v), France (br), Gambia (v), Georgia (br), Germany (br), Ghana (v), Greece (br), Hong Kong, China (v), Hungary (br), India (br), Iran (Islamic Republic of) (br), Iraq, Ireland (v), Israel (br), Italy (br), Japan (v), Jordan, Kazakhstan (br), Kenya, Kuwait (v), Kyrgyzstan, Latvia (br), Lebanon, Libyan Arab Jamahiriya, Liechtenstein (v), Lithuania (br), Luxembourg (v), Maldives (v), Mali, Malta, Mauritania, Moldova (Republic of) (br), Mongolia (br), Morocco (br), Myanmar, Nepal, Netherlands (br?), Niger, Nigeria, Norway (v), Oman, Pakistan, Poland (br), Portugal (br?), Qatar (v), Romania (br), Russian Federation (br), Saudi Arabia (br), Senegal, (br), Seychelles (v), Sierra Leone (v), Slovakia (br), Slovenia (br), Spain (br), Sudan, Sweden (v), Switzerland (br), Syrian Arab Republic (v), Tajikistan (br), Thailand (br), ? Togo (v), Tunisia, Turkey (br), Turkmenistan (br), Uganda (v), Ukraine (br), United Arab Emirates, United Kingdom (v), Uzbekistan (br), Viet Nam, ? Western Sahara, and Yemen.

(br – breeding; v – vagrant; ? – outstanding query over status)

#### Status<sup>11</sup>

IUCN Red List: NT (BirdLife International 2006)

Trend: ↓

“Given that this species' range may fluctuate considerably from year to year - particularly in Asia - owing to changing water levels, it is very hard to estimate the global population or trends. Owing to significant local declines it is classified as Vulnerable in Europe. However, evidence of declines in the larger Asian populations is sparse, and sometimes contradictory, so it is currently listed as Near Threatened. Evidence of rapid declines in Asia may warrant uplisting to Vulnerable. Nearly qualifies as threatened under criteria A2cd+3cd” (BirdLife International 2006)

#### Major threats<sup>12</sup>

- Habitat Loss/Degradation (importance: critical)
- Climate change/drought (importance: critical)
- Over-hunting (importance: high)
- Lead poisoning (importance: medium)
- Drowning in fishing nets (importance: medium)
- Pollution (importance: medium)
- Competition with invasive alien species (importance: medium)
- Human disturbance (importance: medium)

<sup>10</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>11</sup> Source: BirdLife International. 2006. *Aythya nyroca*. In: IUCN 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 28 September 2007.

<sup>12</sup> Robinson J & Hughes B (compilers). 2006. *International Single Species Action Plan for the Conservation of the Ferruginous Duck Aythya nyroca*. AEWA Technical Series No. 7. Bonn, Germany.

- Competition with native species (importance: unknown)

### Source of re-establishment recommendation

Callaghan D (compiler). 1997. European Species Action Plan Ferruginous Duck (*Aythya nyroca*). The European Commission and BirdLife International.

### Completed and ongoing re-establishment projects

- AEWA Range State: FRANCE**  
Region: Villars des Dombes  
Start year: 1970s  
Comments: An unsuccessful re-introduction was carried out in the 1970s in Villars des Dombes.<sup>13</sup>
- AEWA Range State: SPAIN**  
Region: Acebuche-Huerto-Pajasarea of the Guadalquivir Marshes  
Organisations involved: Instituto para la Conservación de la Naturaleza (ICONA)  
Start year: 1992  
Comments: A re-introduction programme was launched by the Instituto para la Conservación de la Naturaleza (ICONA) in southwest Spain in 1992. In the Acebuche-Huerto-Pajasarea of the Guadalquivir Marshes, 49 individuals were released in 1992 and 1993, from which three pairs bred in 1993. A further 45 were released in southwest Spain during 1994 and 1995, and over 30 in 1996.<sup>13</sup>
- AEWA Range State: ITALY**  
Comments: There have been around 20 re-introduction programmes in Italy over the past decade. Although most have been unsuccessful, apparently self-sustaining breeding populations were established at the Eastern Bologna Plain and Alviano Lake.<sup>13</sup>
- AEWA Range State: FRANCE**  
Region: Le Marais de Ganne  
Comments: A re-introduction is being attempted at Le Marais de Ganne (Saint Andre des Eaux), where an open enclosure of pinioned birds is used to breed fully-winged juveniles. In 1996, 10 pinioned birds raised 10 fully-winged individuals.<sup>13</sup>

### Planned re-establishment projects

None known.

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<sup>13</sup> Robinson J & Hughes B (compilers). 2006. International Single Species Action Plan for the Conservation of the Ferruginous Duck *Aythya nyroca*. AEWA Technical Series No. 7. Bonn, Germany.

#### (d) Lesser White-fronted Goose *Anser erythropus*

Re-establishment of the Lesser White-fronted Goose was recommended in the 1996 *International Action Plan for the Lesser White-fronted Goose Anser erythropus* (Madsen 1996) for areas where the species has disappeared and other conservation measures have failed. However the updated second draft of the 2006 *International Action Plan for the Lesser White-fronted Goose Anser erythropus* (Jones 2006) did not make such a recommendation and concludes that there is no consensus among Lesser White-fronted Goose stakeholders on the use of captive breeding and re-introduction/restocking as valid conservation tools to be integrated with measures directed at conservation of the surviving wild population.

In November 2005, the Scientific Council of the Convention on Migratory Species (CMS) concluded, as part of its wider recommendation on Lesser White-fronted Geese that:

“For the present, we do not support the introduction of Lesser White-fronts into flyways where they do not occur naturally. We have borne in mind the powerful argument concerning the improved safety of birds in these flyways, as well as practical considerations, such as current proposals that could quickly be put into effect. However, we consider that modifying the natural behaviour of Lesser White-fronts in this respect, as well as unknown ecological effects in the chosen new flyways, and other such considerations, make this technique inappropriate until such time as it may become essential, particularly when major disruption or destruction occurs of key components of the natural flyways. We do not believe that to be the case at present.”<sup>13</sup>

#### Distribution<sup>14</sup>

Albania, Armenia, Austria (v), Azerbaijan, Belarus, Belgium (v), Bosnia and Herzegovina, Bulgaria, China, Croatia, Cyprus (v), Czech Republic, Denmark (v), Egypt (v), Estonia, Finland (br), France (v), Georgia, Germany, Greece, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland (v), Israel, Italy, Japan, Jordan (v), Kazakhstan, Korea (Republic of) (v), Kuwait (v), Latvia, Lithuania, Moldova (Republic of), Mongolia, Myanmar (v), Netherlands (v), Norway (br), Oman (v), Pakistan, Poland, Romania, Russian Federation (br), Serbia and Montenegro, Slovakia, Spain, Sweden (br), Switzerland (v), Syrian Arab Republic, Taiwan, Province of China (v), The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, United Arab Emirates (v), United Kingdom (v), United States (v), and Uzbekistan.

(br – breeding; v – vagrant)

#### Status<sup>15</sup>

IUCN Red List: VU A2bcd+3bcd (BirdLife International 2006)

Trend: ↓

“This species is listed as Vulnerable because it has suffered a rapid population reduction in its key breeding population in Russia, and equivalent declines are predicted to continue over the next 10 years. The small Fennoscandian population has undergone a severe historical decline.” (BirdLife International 2006)

#### Major threats<sup>16</sup>

- Hunting – breeding grounds (importance: medium)
- Hunting – staging/wintering grounds (importance: critical)
- Poisoning – staging/wintering grounds (importance: local)
- Human disturbance – staging/wintering grounds (importance: medium)
- Human disturbance – breeding grounds (importance: local)

<sup>14</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>15</sup> Source: BirdLife International. 2006. *Anser erythropus*. In: IUCN 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 28 September 2007.

<sup>16</sup> Jones T (compiler). 2006. *International Action Plan for the Lesser White-fronted Goose (Anser erythropus)* – Updated second draft. The European Commission and AEWA.

- Predation – breeding grounds (importance: local)
- Agricultural intensification – staging/wintering grounds (importance: high)
- Construction of dams and other river regulation infrastructure, wetland drainage – staging/wintering grounds (importance: high)
- Climate change – breeding grounds (importance: unknown)
- Climate change – staging and wintering grounds (importance: unknown)
- Land abandonment – staging and wintering grounds (importance: medium)
- Overgrazing – breeding grounds (importance: local)
- Pollution of wetlands/water bodies – staging and wintering grounds (importance: local)

### Source of re-establishment recommendation

Madsen J (compiler). 1996. International Action Plan for the Lesser White-fronted Goose (*Anser erythropus*). Pp. 67-78 in Heredia, B, Rose, L & Painter, M (eds). *Globally threatened birds in Europe: action plans*. The European Commission and BirdLife International, Strasbourg.

### Completed and ongoing re-establishment projects

i. AEWA Range State: **SWEDEN**

Region: Swedish Lapland

Start year: 1981

End year: 1999

Comments: 348 captive-bred Lesser White-fronted Geese were released in Swedish Lapland. Barnacle Geese *Branta leucopsis* were used as foster-parents and the re-introduced Lesser White-fronted Geese followed their foster parents to wintering grounds in the Netherlands. A total of 66 young fledged from breeding attempts in the release area up to 1999. The number of fledglings reared between 1999 and 2003 ranged from 13 to 20 annually, with a total for the 5-year period of 83 fledglings from 29 broods.<sup>17</sup>

ii. AEWA Range State: **FINLAND**

Region: Finnish Lapland

Start year: 1987

End year: 1997

Comments: Between 1987 and 1997 about 150 captive-bred Lesser White-fronts were released in Finnish Lapland, but high mortality occurred and no breeding attempts were made by the re-introduced birds. This re-introduction programme did not aim to modify goose migration routes (Markkola *et al.* 1999). Releases were stopped from 1998 (Markkola *et al.* 1999), though Lesser White-fronted Geese continued to be bred in captivity.<sup>17</sup>

<sup>17</sup> Jones T (compiler). 2006. International Action Plan for the Lesser White-fronted Goose (*Anser erythropus*) – Updated second draft. The European Commission and AEWA.

## Planned re-establishment projects

i. AEWA Range States: **GERMANY & SWEDEN**

Region: Swedish Lapland and the Lower Rhine area of Germany

Organisations involved: Operation Lesser White-fronted Goose/Aktion Zwerggans

Comments: This new international, German-based project aims to breed up to 400 Lesser White-fronted Geese in four years and release them in Lapland. The practitioners intend to use ultra-light aircraft as 'foster parents' to guide the birds to wintering grounds in the Lower Rhine area of Germany. Experimental work has been conducted over a six year period.<sup>18</sup>

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<sup>18</sup> Jones T (compiler). 2006. International Action Plan for the Lesser White-fronted Goose (*Anser erythropus*) – Updated second draft. The European Commission and AEWA.

**(e) Maccoa Duck *Oxyura maccoa***

The 2007 *International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa** (Abebe 2007) recommended that the Maccoa Duck be re-introduced to suitable sites in southern Tanzania. This measure was considered of medium importance for the conservation of this species.

**Distribution**<sup>19</sup>

Angola (v), Botswana (br), Burundi (v), Democratic Republic of the Congo (br), Eritrea, Ethiopia (br), Kenya (br), Lesotho, Malawi (v), Namibia (br), Rwanda (br), South Africa (br), Swaziland (v), Uganda (br), United Republic of Tanzania (br), and Zimbabwe (br).

(br – breeding; v – vagrant)

**Status**<sup>20</sup>

IUCN Red List: NT (BirdLife International 2007)

Trend: ↓

“This species has been uplisted to Near Threatened owing to its small population size and ongoing declines resulting from a variety of threats. Further quantitative estimates of the rate of decline may qualify the species for Vulnerable. Almost qualifies for a threatened category under criterion C1” (BirdLife International 2007)

**Major threats**<sup>21</sup>

- Drowning in gill nets (importance: high)
- Draining of wetlands (importance: high)
- Pollution (importance: high)
- Alien vegetation (importance: high)
- Variable water levels (importance: high)
- Improved treatment of sewage water (importance: medium)
- Disturbance (importance: medium)
- Nest predation and poaching (importance: medium)
- Sport hunting (importance: low)
- Botulism (importance: low)
- Competition and hybridisation with *Oxyura jamaicensis* (importance: local)
- Bird trade (importance: local)
- Alien benthic-feeding fish (importance: unknown)

**Source of re-establishment recommendation**

Abebe YD, Baker N, Berruti A, Buijs D, Colahan BD, Davies C, Eksteen J, Evans SW, Kolberg H, Marchant A, Mpofu Z, Nantongo-Kalundu P, Nnyiti PY, Pienaar K, Shaw K, Tyali T, van Niekerk J & Wheeler MJ (compilers). 2007. *International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa**. AEWA Technical Series No. 14. Bonn, Germany.

<sup>19</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>20</sup> Source: BirdLife International. 2007. *Oxyura maccoa*. In: IUCN 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded 28 September 2007.

<sup>21</sup> Abebe YD, Baker N, Berruti A, Buijs D, Colahan BD, Davies C, Eksteen J, Evans SW, Kolberg H, Marchant A, Mpofu Z, Nantongo-Kalundu P, Nnyiti PY, Pienaar K, Shaw K, Tyali T, van Niekerk J & Wheeler MJ (compilers). 2007. *International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa**. AEWA Technical Series No. 14. Bonn, Germany.

**Completed and ongoing re-establishment projects**

None known.

**Planned re-establishment projects**

None known.

**(f) White-headed Duck *Oxyura leucocephala***

Re-establishment of the White-headed Duck was recommended in the 2006 *International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala** (Hughes *et al.* 2006). The action plan recommends that the species is re-introduced to formerly occupied sites, if IUCN criteria can be met. The 1996 *Action Plan for the White-headed Duck *Oxyura leucocephala* in Europe* (Green & Hughes 1996) recommended that re-introductions should be postponed until the problem of the introduced Ruddy Duck *Oxyura jamaicensis* was resolved.

**Distribution**<sup>22</sup>

Afghanistan (br), Albania, Algeria (br), Armenia (br), Austria (v), Azerbaijan, Belgium (v), Bosnia and Herzegovina (v), Bulgaria, China, Croatia (v), Cyprus, Czech Republic (v), ? Denmark (v), Egypt, France (v), Georgia (br), Germany (v), Greece, Hungary (ex, br), India, Iran (Islamic Republic of) (br), Iraq, Israel (v), Italy (ex, br), Jordan (v), Kazakhstan (br), Kyrgyzstan (v), Libyan Arab Jamahiriya (v), Malta (v), Mongolia (v), Morocco, Netherlands (v), Pakistan, Poland (v), Portugal (v), Romania (br), Russian Federation (br), Saudi Arabia (v), Serbia and Montenegro (ex, br), Slovakia (v), Slovenia (v), Spain (br), Switzerland (v), Syrian Arab Republic, Tajikistan, (v), Tunisia (br), Turkey (br), Turkmenistan (br), Ukraine (v), and Uzbekistan (br).

(br – breeding; ex – extinct; v – vagrant; ? – outstanding query over status)

**Status**<sup>23</sup>

IUCN Red List: EN A2bcde (BirdLife International 2006)

Trend: ▼

"Despite uncertainty about the possible large-scale inter-year movement of birds between wintering sites, mid-winter counts indicate that the population of this species has undergone a very rapid decline of over 50% in the last 10 years, which qualifies it as Endangered. Given increases in the Spanish subpopulation, it is projected that the overall rate of decline will be lower in the next 10 years" (BirdLife International 2006)

**Major threats**<sup>24</sup>

- Hybridisation with invasive alien species (importance: critical)
- Climate change/drought (importance: critical)
- Groundwater extraction and infrastructure development (importance: critical)
- Arable farming (importance: critical)
- Over-hunting (importance: high)
- Inadequate wetland management (importance: high)
- Pollution (importance: medium)
- Drowning in fishing nets (importance: medium)
- Lead poisoning (importance: medium)
- Human disturbance (importance: medium)
- Invasive alien species (directly impacting habitat) (importance: low)
- Competition with invasive alien species (importance: low)
- Livestock farming (importance: local)

<sup>22</sup> Source: UNEP-WCMC Species Database. <[sea.unep-wcmc.org](http://sea.unep-wcmc.org)>.

<sup>23</sup> Source: BirdLife International. 2006. *Oxyura leucocephala*. In: IUCN 2007. *2007 IUCN Red List of Threatened Species*. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded 28 September 2007.

<sup>24</sup> Hughes B, Robinson J, Green A, Li D & Mundkur T (compilers). 2006. *International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala**. AEWA Technical Series No. 8. Bonn, Germany.

- Wildfire (importance: local)
- Predation by Brown Rats (importance: local)

### Source of re-establishment recommendation

Hughes B, Robinson J, Green A, Li D & Mundkur T (compilers). 2006. International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala*. AEWA Technical Series No. 8. Bonn, Germany.

### Completed and ongoing re-establishment projects

- i. AEWA Range State: **FRANCE**  
 Region: Lake Biguglia, Corsica  
 Start year: 2001  
 Comments: An EU LIFE project, LIFE97 NAT/F/004226, to re-introduce White-headed Ducks was conducted at Lake Biguglia, Corsica. Five birds were released in 2001 but a self-sustaining population was not established. Three of the released birds disappeared rapidly, the fourth a little later and the fifth one year after release. The White-headed Duck was used as a flagship species for the Biguglia nature reserve and an education programme was conducted.<sup>25</sup>
  
- ii. AEWA Range State: **HUNGARY**  
 Start year: 1982  
 End year: 1992  
 Comments: Four releases of more than 52 birds occurred between 1982 and 1992 but a self-sustaining population could not be attained - the project was terminated in 1992.<sup>25, 26</sup>
  
- iii. AEWA Range State: **ITALY**  
 Region: Gargano National Park, SE Apulia  
 Start year: 1988  
 Comments: Ongoing re-establishment project at Gargano National Park, SE Apulia, but self-sustaining population not yet established.<sup>25</sup>
  
- iv. AEWA Range State: **SPAIN**  
 Region: Mainland  
 Comments: A wild population of >1,200 birds was established, but the exact contribution of the re-establishment project to this population is unknown.<sup>25</sup>  
  
 Region: Majorca  
 Start year: 1995  
 Comments: Re-introduction programme conducted in Majorca, but no birds have been re-introduced since 1995 and a self-sustaining population has not been established.<sup>25</sup>

### Planned re-establishment projects

None known.

<sup>25</sup> Hughes B, Robinson J, Green A, Li D & Mundkur T (compilers). 2006. International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala*. AEWA Technical Series No. 8. Bonn, Germany.

<sup>26</sup> From a questionnaire completed and returned by Bálint Bajomi (see Appendix 2)

### 3 WATERBIRD CONSERVATION INITIATIVES REQUIRING RE-ESTABLISHMENT

#### 3.1 Objective

Produce a list of waterbird conservation initiatives requesting or promoting the implementation of re-establishments, record the relevant text and assess the content of the recommendations.

#### 3.2 Method

A total of 59 waterbird conservation initiatives were reviewed to determine which had provisions on re-establishment and to record the relevant text relating to re-establishment. The initiatives included international conventions and agreements, the Anseriformes action plan and other legally non-binding conservation initiatives, both national and international. To finalise the list, consultations were conducted with AEWA National Focal Points, and gaps were filled by consulting relevant ornithological experts, including Wetlands International Specialist Group chairs, BirdLife International contacts and International Waterbird Census coordinators.

For a complete list of the initiatives reviewed, see Appendix 1.

To assess the content and specificity of the recommendations in international single species action plans (ISSAPs), the text of each ISSAP was broken-down into components (for example, "re-establishments should be conducted according to IUCN re-introduction guidelines and only in areas where the species previously occurred" would have been broken-down into two components concerning IUCN guidelines and release site) and a master list of components was compiled. The text of each ISSAP was then compared against the master list.

#### 3.3 Results

Of the 59 conservation initiatives reviewed, 15 (25%) had provisions on re-establishment (Table 3-1). Some six of these were ISSAPs, two were international action plans for more than one species, one was a national single species action plan, five were international conventions and agreements, and one was a conservation management plan (Table 3-1).

**Table 3-1. Numbers of conservation initiatives with provisions on re-establishment.**

Type of initiative	Number reviewed	Number with provisions on re-establishment (%)
International single species action plans	27	6 (22%)
Other international action plans	7	2 (29%)
National single species action plans	7	1 (14%)
International conventions and agreements	7	5 (71%)
Other (e.g. conservation management plans, directives and protocols)	11	1 (9%)
<b>All</b>	<b>59</b>	<b>15 (25%)</b>

Details of the provisions relevant to re-establishment as a conservation measure are presented in the following sections.

**(a) International Action Plan for the Lesser White-fronted Goose *Anser erythropus* (Madsen 1996)**

Re-introduction and re-stocking was recommended for the Lesser White-fronted Goose when other conservation measures had failed:

“Re-introduction and restocking may be accepted as an alternative way to minimise the risk of extinction of the species but should be applied only when other efforts to conserve the wild population appear to fail and the IUCN criteria for re-introductions are met (Kleiman *et al.* 1994). Re-introduction should only be carried out in areas where the species has disappeared, and measures should be taken to minimise risks to natural populations. As long as captive stocks of Lesser White-fronted Geese exist and can be maintained, there is no urgency for re-introduction and restocking. Therefore, these activities should have lower priority compared to measures focusing on the remaining wild populations. Re-introduction and restocking should be discontinued if a natural recovery of the wild population can be verified.”

Geographical scope of the initiative: Azerbaijan, Bulgaria, Finland, Germany, Greece, Hungary, Kazakhstan, Lithuania, Norway, Romania, Russia, Sweden, Turkey and Ukraine.

Note: The 2006 *International Action Plan for the Lesser White-fronted Goose Anser erythropus* (Jones 2006) does not recommend re-introduction or re-stocking and concludes that there is no consensus among Lesser White-fronted Goose stakeholders on the use of captive breeding and re-introduction/restocking as valid conservation tools.

**(b) International Species Action Plan Crested Coot *Fulica cristata* (Gomez 1999)**

Maintaining a captive stock of Crested Coot was recommended as a conservation priority for the Crested Coot:

“Keeping a breeding population of Crested Coot in captivity to ensure a genetic stock of individuals, as well as increasing the productivity of the wild population by the systematic re-introduction of captive individuals into its natural habitats.

To keep a breeding population of Crested Coot in captivity... it is necessary to ensure a genetic stock of individuals, as well as to increase the productivity of the wild population by the regular re-introduction (following IUCN guidelines) of captive individuals into the wild.”

Re-establishment was recommended as a conservation action specifically for Spain with the following instructions:

“Promote a joint captive breeding programme between Andalucía and Valencia Regions, with a total of 50 pairs. This programme should include:

- Control of genetic variability of individuals obtained in captivity
- Sanitary control of individuals in captivity
- Production of individuals for re-introduction”

“Promote a re-introduction programme following IUCN guidelines. A working group of scientists and technical staff interested in the species should be created to co-ordinate the re-introduction in both Andalucía and Valencia Regions, and should consider as a minimum:

- Number of individuals to release
- Choice of appropriate release sites
- Choice of appropriate release season
- Establishment of the release methodology

- Promotion of a monitoring plan with marked individuals"

Geographical scope of the initiative: Spain, Morocco, Algeria and Portugal.

**(c) International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala* (Hughes *et al.* 2006)**

Re-introduction was recommended to increase the breeding range of the White-headed Duck:

"Re-introduce White-headed Ducks to formerly occupied sites, if IUCN re-introduction criteria can be met."

Geographical scope of the initiative: Afghanistan, Algeria, Armenia, Azerbaijan, Bulgaria, China, France, Georgia, Greece, Iraq, Islamic Republic of Iran, Israel, Italy, Kazakhstan, Mongolia, Morocco, Pakistan, Romania, Russian Federation, Spain, Syrian Arab Republic, Tunisia, Turkey, Turkmenistan, Ukraine, Uzbekistan.

**(d) International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa* (Abebe *et al.* 2007)**

Re-introduction was recommended for the Maccoa Duck into suitable sites in southern Tanzania:

"Re-introduction of birds in suitable sites in southern highlands of Tanzania

1. Identify suitable sites
2. Understand reasons for extirpation
3. Ensure previous threats no longer exist
4. Identify source of eggs/adults of same genetic stock
5. Desktop study of previous programmes/techniques
6. Collaboration with suitable partners
7. Re-introduction

Time-scale: Jan 06 – Jul 06"

Geographical scope of the initiative: Angola, Botswana, Burundi, Ethiopia, Kenya, Lesotho, Namibia, Rwanda, South Africa, Tanzania, Uganda, and Zimbabwe.

**(e) Penguin conservation assessment and management plan (CAMP): report from the workshop held 8-9 September 1996, Cape Town, South Africa (Ellis *et al.* 1998)**

The penguin CAMP proposed that re-introduction techniques should be investigated as a conservation measure:

"Means of establishing new colonies, or of manipulating colonies to expand in a certain direction (to minimize conflict with man), should be investigated. There is a likelihood that studies of behaviour of captive populations can help in this. The possibility of returning birds bred in captivity to the wild should be investigated. The purpose of this would be to augment populations at colonies that are presently depressed or decreasing, and to establish techniques for re-introductions before the overall population has decreased to a critical level. This is a complex procedure and will require the assistance of specialist groups outside southern Africa. The technique, if established, will have value for other *Spheniscus* penguins."

Geographical scope of the initiative: Namibia and South Africa.

**(f) European Species Action Plan Ferruginous Duck *Aythya nyroca* (Callaghan 1997)**

Re-introduction was recommended for the Ferruginous Duck to areas of its former range:

“Re-introduction ought to be considered a last measure in conservation strategies for this species, and any attempts ought to first fulfil the IUCN guidelines for re-introduction (Kleiman *et al.* 1994) and the guidelines developed by Black (1991) for bird re-introductions. Any current programmes that do not satisfy these criteria ought to be terminated, and resources spent more effectively.”

Geographical scope of the initiative: Albania, Armenia, Austria, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Georgia, Germany, Greece, Hungary, Italy (including Sardinia), Lithuania, Moldova, Poland, Romania, Russia (European), Slovakia, Slovenia, Spain, Turkey, Ukraine, former Yugoslav Republic of Macedonia, and Yugoslavia (Serbia-Montenegro).

**(g) Action Plan for the Dalmatian Pelican (*Pelecanus crispus*) in Europe (Crivelli 1996)**

The *Action Plan for the Dalmatian Pelican (Pelecanus crispus) in Europe* (Crivelli 1996) recommended that:

“Techniques for the establishment of new colonies by re-introduction [are] investigated.”

Geographical scope of the initiative: Morocco, Turkey and Syria.

**(h) Cranes - Status survey and conservation action plan (Meine & Archibald 1996)**

At the global level, it was recommended that scientists and conservationists share information about re-introduction techniques, and implement existing recommendations for the sound management and propagation of cranes in captivity and for the coordination of *in situ* and *ex situ* conservation strategies:

“To ensure that the populations of captive cranes are managed in a sound fashion, and that these efforts dovetail with re-introduction and habitat protection programmes, the IUCN/SSC Conservation Breeding Specialist Group has sponsored a series of intensive management workshops, the recommendations of which are recorded in the Crane Conservation Assessment and Management Plan (CAMP) and the Global Crane Action Recommendations (GCAR). Specific recommendations are presented on a species-by-species basis under Priority Conservation Measures in the species accounts in Section 2. Several recommendations are presented on a regional basis in the remainder of this section. These recommendations should be fully implemented as part of a comprehensive crane conservation effort, and should be reviewed and updated regularly.”

Captive propagation and re-introduction is recommended for West Africa:

- “1. Assess the need for a release programme to re-establish the Black Crowned Crane in areas where it has been extirpated. This assessment should, however, stress the need to ensure protection and sound management of habitat before any releases are undertaken.
2. Expand training opportunities in crane husbandry, propagation, and re-introduction techniques.”

Captive propagation and re-introduction is also recommended for East Africa:

- “1. Restrict, if necessary, the reproduction rate among captive Grey Crowned Cranes to allow more space for Black Crowned Cranes.
2. Develop a Global Animal Survival Plan and full PHVA for the Wattled Crane. *In situ* and *ex situ* conservation needs of the Ethiopian population should be determined as part of this process.”

**(i) Pan-European Biological and Landscape Diversity Strategy**

The Pan-European Biological and Landscape Diversity Strategy is a European response to support implementation of the Convention on Biological Diversity. It was proposed in the Maastricht Declaration Conserving Europe's Natural Heritage (1993), and builds on the Bern Convention, the European Conservation Strategy (1990), the Dobruša and Lucerne Ministerial Conferences (1991, 1993), UNCED (1992), and other existing initiatives and programmes.

Article 9 states that as a measure of *ex situ* conservation each Contracting Party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing *in situ* measures:

- “Adopt measures for the recovery and rehabilitation of threatened species and for their re-introduction into their natural habitats under appropriate conditions.”

**(j) UK Biodiversity Action Plan – Corn Crake *Crex crex* (UKBAP 1995b)**

Re-establishment is recommended as a long-term conservation objective for the Corn Crake in the United Kingdom:

- “In the longer-term, re-establish Corn Crakes in parts of its former range in the UK.”

**(k) Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora**

The aim of the European Union Habitats Directive is to protect biodiversity in Europe. Member States are required to report on the implementation of the Habitats Directive every six years.

Article 22 states that each Member State shall:

- “Study the desirability of re-introducing species in Annex IV that are native to their territory where this might contribute to their conservation, provided that an investigation, also taking into account experience in other Member States or elsewhere, has established that such re-introduction contributes effectively to re-establishing these species at a favourable conservation status and that it takes place only after proper consultation of the public concerned.”

**(l) Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)**

The aims of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) are "to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation. Particular emphasis is

given to endangered and vulnerable species, including endangered and vulnerable migratory species."

Article 11 of Chapter V states that each contracting party shall:

"Encourage the re-introduction of native species of wild flora and fauna when this would contribute to the conservation of an endangered species, provided that a study is first made in the light of the experience of other Contracting Parties to establish that such re-introduction would be effective and acceptable."

**(m) Convention on Migratory Species (CMS)**

Article V provides guidelines for Agreements that indicate each Agreement should provide for but not be limited to a set of criteria including:

"Where it appears desirable, the provision of new habitats favourable to the migratory species or re-introduction of the migratory species into favourable habitats."

**(n) Agreement on the Conservation of African-Eurasian Waterbirds (AEWA) and Action Plan (2005-2008)**

Paragraph 2.4 of AEWA's Annex 3 (Action Plan) reads:

"Parties shall exercise the greatest care when re-establishing populations listed in Table 1 into parts of their traditional range where they no longer exist. They shall endeavour to develop and follow a detailed re-establishment plan based on appropriate scientific studies. Re-establishment plans should constitute an integral part of national and, where appropriate, international single species action plans. A re-establishment plan should include assessment of the impact on the environment and shall be made widely available. Parties shall inform the Agreement secretariat, in advance, of all re-establishment programmes for populations listed in Table 1."

**(o) Central Asian Flyway Action Plan for the Conservation of Migratory Waterbirds and Their Habitats**

Paragraph 2.5.1 of the Central Asian Flyway Action Plan requires that Range States exercise great care when executing re-establishment projects, develop detailed plans, include re-establishment in national and international action plans, and report all re-establishment projects to the UNEP/CMS Secretariat.

"Range States shall exercise the greatest care when re-establishing populations listed in Table 2 into parts of their traditional range where they no longer exist. They shall endeavour to develop and follow a detailed re-establishment plan based on appropriate scientific studies. Re-establishment plans should constitute an integral part of national and, where appropriate, international single species action plans. A re-establishment plan should include assessment of the impact on the environment and shall be made widely available. Range States shall inform the Secretariat, in advance, of all re-establishment programmes for populations listed in Table 2."

*Content and specificity of re-establishment recommendations in ISSAPs*

Close reading of the ISSAP re-establishment recommendations identified 14 individual components or specific requirements of the recommendations:

- 1 IUCN criteria should be met.
- 2 Birds should only be re-introduced to formerly occupied sites.
- 3 Measures should be taken to protect natural populations.
- 4 Previous threats should be identified and removed.
- 5 A monitoring plan should be designed.
- 6 A release strategy should be developed.
- 7 Collaborations with suitable partners should be sought.
- 8 A review of previous projects should be made.
- 9 Captive populations should be maintained.
- 10 Attention should be paid to the genetic makeup of birds to be re-introduced.
- 11 Sanitary control measures should be applied to captive populations.
- 12 An advisory expert group should be formed.
- 13 Timescale and/or priority should be indicated.
- 14 The area or region most appropriate for re-introduction should be specified.

The ISSAP recommendations differed widely in the number of components included (Table 3-2). The ISSAP for the Crested Coot (Gomez 1999) included the highest number of components (8), while the ISSAPs for the White-headed Duck (Hughes *et al.* 2006) and Ferruginous Duck (Callaghan 1997) included the lowest (2).

**Table 3-2. Requirements or components of the re-establishment recommendations in international single species action plans (ISSAPs).**

Individual components of re-establishment recommendations in ISSAPs	(a) Lesser White- fronted Goose	(b) Crested Coot	(c) White- headed Duck	(d) Maccoa Duck	(f) Ferrug. Duck
1 IUCN criteria should be met	X	X	X		X
2 Birds should only be re-introduced to formerly occupied sites	X		X		
3 Measures should be taken to protect natural populations	X				
4 Previous threats should be identified and removed				X	
5 A monitoring plan should be designed		X			
6 A release strategy should be developed		X			
7 Collaborations should be sought				X	
8 A review of previous projects should be made				X	
9 Captive populations should be maintained	X	X			
10 Attention should be paid to the genetic makeup of birds to be re-introduced		X		X	
11 Sanitary control measures should be applied to captive populations		X			
12 An advisory expert group should be formed		X			
13 Timescale and/or priority is indicated	X			X	X
14 The area or region most appropriate for re-introduction is specified		X		X	

(a) International Action Plan for the Lesser White-fronted Goose *Anser erythropus* (Madsen 1996).

(b) International Species Action Plan Crested Coot *Fulica cristata* (Gomez 1999).

(c) International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala* (Hughes *et al.* 2006).

(d) International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa* (Abebe *et al.* 2007).

(f) European Species Action Plan Ferruginous Duck *Aythya nyroca* (Callaghan 1997).

## 4 Meta-database for re-establishment projects

### 4.1 Objective

Set up a meta-database that contains relevant information on:

- those species/populations for which re-establishment plans have been prepared (and implemented);
- those species/populations for which re-establishments plans are under development; and
- those species/populations for which re-establishment plans remain to be developed.

The past two decades have seen re-establishment receive increased attention as a conservation tool resulting in an increase in re-establishment projects worldwide (IUCN/SSC RSG 1995). As re-establishments are sometimes recommendations of action plans and other conservation initiatives it is vital that their occurrence, progress and outcomes are recorded (1) to inform future re-establishment projects for related species, and (2) to allow for the implementation of action plans and other conservation initiatives to be monitored.

The IUCN/SSC RSG recently began an ambitious project to create a database of all re-establishment projects worldwide. While there will be overlap between the IUCN/SSC RSG database and the AEWA re-establishment database, the AEWA database will focus equally on projects and recommendations, thus will include information not covered in the IUCN/SSC RSG database such as action plan recommendations and the progress of implementation in the relevant AEWA Range States.

### 4.2 Method

A meta-database of re-establishments was created using Microsoft Access. All relevant re-establishment data, gathered at other stages of this review, was added, including information on species, Range States, conservation initiatives, re-establishment projects, references, re-establishment contacts, and the data collected as part of the questionnaire review regarding IUCN re-introduction guidelines (see Section 5). Links to other species information databases, including the IUCN/SSC RSG database, were also included.

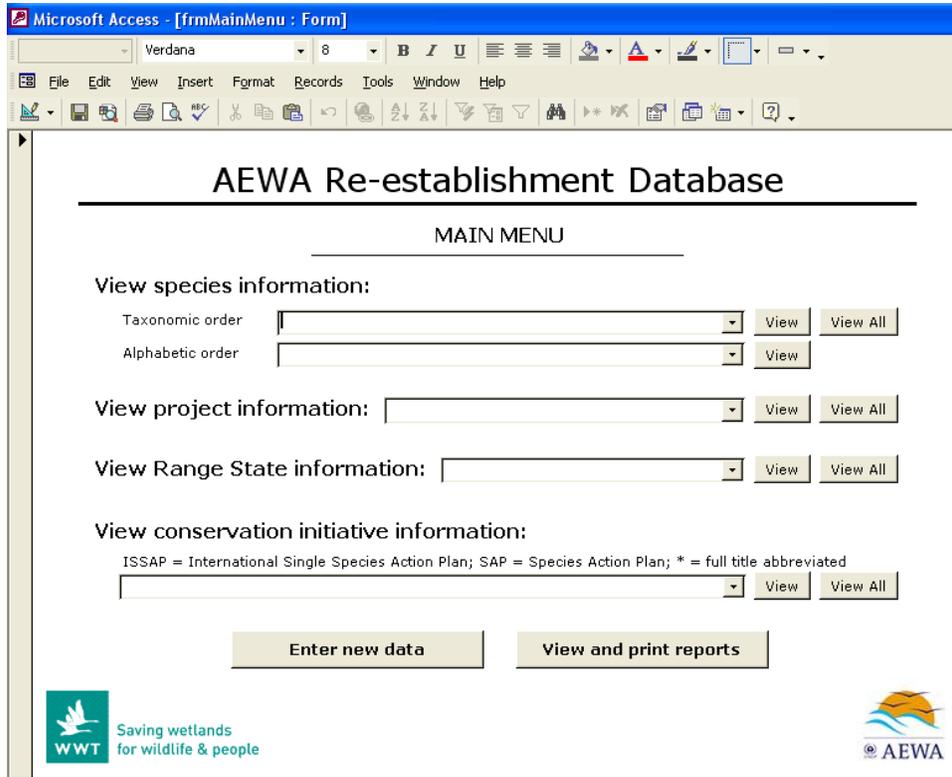
### 4.3 The AEWA re-establishment database

The meta-database currently contains the following information:

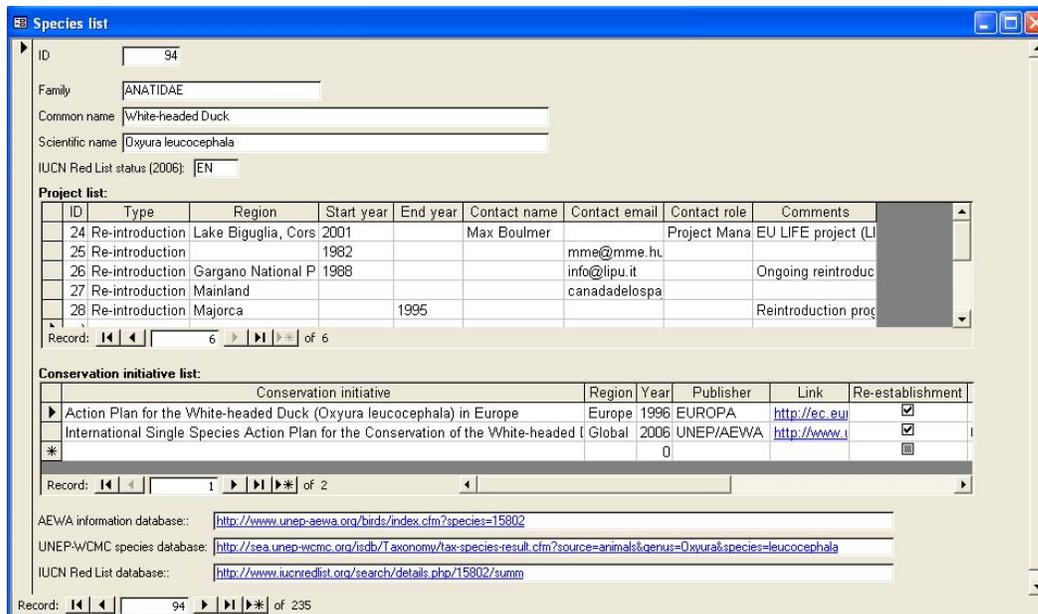
- **Species/population (n=235)**
  - Common name(s)
  - Scientific name
  - Family
  - IUCN Red List status (2007)
  - Link to species information in the AEWA information database
  - Link to species information in the UNEP-WCMC species database
  - Link to species information in the IUCN Red List database
  - Link to species and project information in the IUCN/SSC RSG database
- **Conservation initiatives (n=59)**
  - Name of conservation initiative
  - Geographical scope
  - Subject (one or more species)
  - Year of publishing
  - Publisher
  - Author(s), editor(s) and/or compiler(s)
  - Web link

- Reference
  - Type (international action plan, national action plan, international convention or agreement, or other)
  - For conservation initiatives with provisions on re-establishment, the relevant text from the initiative was included.
- **AEWA Range States ( $n=120$ )**
    - Name of Range State
    - Region
    - AEWA status
    - Name(s) of National Focal Point(s)
    - Contact details for National Focal Points
- **Re-establishment projects ( $n=47$ )**
    - Subject (common and scientific names)
    - Type (re-introduction, re-stocking, feasibility study, etc)
    - AEWA Range State
    - Region
    - Start year
    - End year
    - Name and role of a contact for the project
    - Contact details for above
    - Comments (including information about the number of birds released and the perceived success of the project)
    - References
- **Re-establishment questionnaire returns ( $n=14$ )**
    - Date of return
    - AEWA Range State
    - Name and contact details of the respondent
    - Project ID
    - Questionnaire answers and comments
- **Re-establishment contacts ( $n=150$ )**
    - Name of contact person or group
    - Contact details
    - Area of expertise/knowledge
    - Project involvement
    - Group membership
- **Re-establishment references ( $n=72$ )**
    - Title of reference
    - Author(s), editor(s) and/or compiler(s)
    - Year of publishing
    - Publisher
    - Journal or book if applicable with volume and page details
    - Web link
    - Reference
    - Description

Figures 4-1 and 4-2 illustrate the format of the AEWA re-establishment database.



**Figure 4-1. Screenshot of the main entry page of the database created for re-establishment information relevant to AEWA.**



**Figure 4-2. Screenshot of the species information page for White-headed Duck *Oxyura leucocephala* in the database created for re-establishment information relevant to AEWA.**

## 5 ASSESSMENT OF WATERBIRD RE-ESTABLISHMENT PROJECTS AGAINST IUCN GUIDELINES

### 5.1 Objective

Assess re-establishment projects that have occurred for AEWA species in the AEWA region in terms of their compliance to IUCN re-introduction guidelines.

### 5.2 Method

To assess how closely waterbird re-establishment projects in the AEWA region have followed IUCN re-introduction guidelines, a questionnaire survey was conducted. Data gathered from the survey were analysed to determine how closely the projects had followed IUCN guidelines, how successful the projects had been and if there was a relationship between compliance and success.

#### *Designing the questionnaire*

The questionnaire was designed to address all of the relevant IUCN guidelines. The *IUCN/SSC Guidelines for Re-introductions* (IUCN/SSC RSG 1995, Appendix 3) were broken-down into a list of 43 separate activities, organised under three project phases: pre-project activities; planning, preparation and release stages; and post-release activities. A question was included in the questionnaire to address each activity (Table 5-1). Thus, the questionnaire had 43 questions addressing IUCN guidelines. Of the 43 activities, 41 were requirements of the *IUCN/SSC Guidelines for Re-introductions* (IUCN/SSC RSG 1995) while two were simply suggestions.

**Table 5-1. IUCN re-introduction guidelines and corresponding questions from the re-establishment questionnaire circulated as part of this review.**

IUCN re-introduction guidelines	Corresponding questions in questionnaire
<b>PRE-PROJECT ACTIVITIES</b>	
a. BIOLOGICAL	
(i) Feasibility study and background research	
- Assessment of the taxonomic status of individuals to be re-introduced	2-5 Was an assessment made of the taxonomic status of individuals to be re-introduced?
- Investigation of historical information about the loss and fate of individuals from the re-introduction area	2-13 Were the causes of decline identified?
- Determination of critical needs	2-4 Were the species' critical needs determined?
- Population viability modelling including Population and Habitat Viability Analysis	2-6 Was a Population and Habitat Viability Analysis conducted?
(ii) Previous re-introductions	
- Research into prior re-introductions and contact with relevant experts	2-7 Was a review of re-introductions for similar species conducted?
(iii) Choice of release site	
- Site within historic range of the species	2-8 Was the release site within the historic range of the species?
(Core or periphery)	2-9 Was the release site in the core or at the periphery of the historic range of the species?)
- Assured, long-term protection	2-10 Did the release area have assured, long-term protection?
(iv) Evaluation of re-introduction site	
- Habitat and landscape requirements of the species are satisfied and sustainable	2-11 Was the habitat suitability of the release site assessed through scientific investigation?
- Sufficient carrying capacity	2-12 Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?
- Identification and elimination, or reduction to a sufficient level, of previous causes of decline	2-14 Were the causes of decline eliminated or reduced to a sufficient level?
- Habitat restoration programme if necessary	2-15 Was a habitat restoration programme initiated before re-introduction?
(v) Availability of suitable release stock	

<b>IUCN re-introduction guidelines</b>	<b>Corresponding questions in questionnaire</b>
- Source animals come from wild populations	2-17 Was the stock used captive or wild?
- Stock must be guaranteed available on a regular and predictable basis	2-20 Was stock available on a regular and predictable basis?
- Individuals should only be removed from a wild population after the effects of translocation on the donor population have been assessed, and it is guaranteed that these effects will not be negative	2-18 If wild stock was used, was the effect on the wild source population assessed?
- 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	2-19 If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?
- Veterinary screening process	3-8 Was the health of the release stock monitored before release?
(vi) Release of captive stock	
- Individuals should be given the opportunity to acquire the necessary information to enable survival in the wild	3-21 Were birds acclimatised to local conditions before release?
<b>b. SOCIO-ECONOMIC AND LEGAL REQUIREMENTS</b>	
- Long-term financial support	2-21 Was there long-term financial support for the project?
- Long-term political support	2-22 Was there long-term political support for the project?
- Socio-economic studies	2-24 Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?
- Assessment of local attitudes	2-25 Was an assessment made of the attitudes of local people?
- Full understanding, acceptance and support of local communities	2-26 Were local communities supportive of the re-introduction project?
- Policy of the country where the re-introduction is to take place should be consulted	2-28 Was the country's re-introduction policy consulted?
- Permission and involvement of all relevant government agencies and land owners	2-29 Did the project have permission of the relevant government agencies and land-owners?
<b>PLANNING, PREPARATION AND RELEASE STAGES</b>	
- Construction of a multidisciplinary team with access to expert technical advice	3-2 Was a multidisciplinary team of experts established?
- Identification of short-term success indicators	3-3 Were short-term success indicators identified?
- Identification of long-term success indicators	3-4 Were long-term success indicators identified?
- Prediction of programme duration	2-23 Was the duration of the project predicted?
- Appropriate genetic screening	3-5 Was the release stock genetically screened?
- Appropriate health screening	3-6 Was the release stock screened for disease?
- Appropriate veterinary care	3-9 Was veterinary support available?
- Determination of release strategy	3-10 Was a release strategy prepared?
- Public relations	3-11 Was there a public awareness programme associated with the project?
- Involvement of local people	3-12 Was there local community involvement?
- Interventions when necessary	3-23 Were there any human interventions, e.g. supplemental feeding?
<b>POST-RELEASE ACTIVITIES</b>	
- Post-release monitoring	4-1 Was there post-release monitoring?
- Collection and investigation of mortalities	4-4 Was information collected on causes of mortality in released birds?
- Continued habitat protection or restoration where necessary	4-5 Did habitat protection measures continue after re-introduction?
- Continued public relations	4-6 Were public relation activities continued after re-introduction?
- Evaluation of cost-effectiveness and success	4-2 Was there an evaluation of cost-effectiveness and/or re-introduction success?
- Publications in popular literature	4-7 Were the results published in popular literature?
- Publications in scientific literature	4-8 Were the results published in scientific literature?

In addition to the 43 questions addressing IUCN guidelines (Table 5-1), the questionnaire had nine questions addressing basic project information (species/population, Range State, etc) and six that could be used to indicate success (Table 5-2). Another 16 questions were included to gather additional information such as the number of releases

undertaken and the methods of post-release monitoring (see Appendix 2 for a complete questionnaire).

**Table 5-2. Questions, from the re-establishment questionnaire, dealing with basic project information and success indicators.**

<b>Information required</b>	<b>Corresponding questions in questionnaire</b>
<b>BASIC PROJECT INFORMATION</b>	
- Species name	1-1 Species (provide common and scientific names)
- Range State	1-2 Country
- Organisations involved	1-3 Organisation(s) involved in the project
- Address of project contact	1-4 Address
- Telephone number of project contact	1-5 Telephone number (include international code)
- Fax number of project contact	1-6 Fax number (include international code)
- E-mail address of project contact	1-7 Email address
- Conservation context of project	1-8 Was the re-establishment project part of a conservation strategy? 1-9 If yes, please provide details
<b>SUCCESS INDICATORS</b>	
- Number of birds released	3-18 How many birds were released in total?
- Survival of released birds	3-24 What proportion of birds were known / thought to survive?
- Extent of breeding of the released birds	3-25 Have re-introduced birds bred successfully in the wild?
- Growth rate of the re-introduced population	3-24 What proportion of birds were known / thought to survive? 3-25 Have re-introduced birds bred successfully in the wild?
- How successful the practitioners rated their own project (i.e. if short and/or long-term goals were achieved)	4-1 Was there post-release monitoring? 4-3 Please explain what criteria were used to determine success.
- Whether or not a self-sustaining population of more than 500 individuals was established (Beck <i>et al.</i> 1994)	4-2-2 Was the project considered a re-introduction success? 3-24 What proportion of birds were known / thought to survive? 3-25 Have re-introduced birds bred successfully in the wild? 4-1 Was there post-release monitoring? 4-3 Please explain what criteria were used to determine success.

The questionnaire was produced in both Microsoft Excel and Microsoft Word formats. The Microsoft Excel version was designed so that it could be automatically analysed and uploaded into the AEWA re-establishment database.

#### *Distribution of the questionnaire*

The questionnaire was distributed to AEWA National Focal Points, re-establishment practitioners and other relevant experts. A total of 157 questionnaires were circulated: 120 to AEWA National Focal Points and 37 to re-establishment practitioners and other relevant experts. For National Focal Points with known e-mail addresses, the questionnaire was sent in Microsoft Excel format with an offer to provide a different format (e.g. Microsoft Word) if required.

#### *Collation and analysis of data*

Each questionnaire was reviewed to check the consistency of the answers. The questionnaire was designed to allow for cross-checking. Where answers were inconsistent between related questions or with accompanying comments, minor adjustments were made to improve the consistency, and thus the validity of later analysis. In some questionnaires, answers were left blank that were readily available in literature; these answers were supplemented.

The reviewed questionnaires were then run through a series of procedures in Microsoft Excel to extract the necessary data, calculate each project's level of compliance to IUCN re-introduction guidelines ('IUCN compliance score') and calculate each project's level of success ('success rating').

#### *Calculation of the IUCN compliance scores*

Using an automated Microsoft Excel procedure on the questionnaire data, each re-establishment project was scored regarding its level of compliance at each of the three re-introduction phases (pre-project; planning, preparation and release; and post-release) and overall.

Scores were calculated by awarding points for each guideline followed. Each of the 41 required activities from the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) (Table 5-1) was weighted equally. Equal weights were chosen to ensure that the analysis would indicate overall compliance, and not indicate compliance to particular guidelines that are assumed to be more important or have been shown to be more important in past studies.

Each answer to a question that addressed a required activity was scored from 0 to 4: full compliance was awarded 4 points, partial compliance was awarded 1 to 3 points and no compliance was awarded 0 points (Table 5-3).

Two scores were awarded in addition to the required activity scores: one point for releasing birds into the core of a historical range as opposed to at the periphery; and one point for using wild release stock rather than captive (Table 5-3). These two activities were included because, while they are not required activities, they are suggestions of the *IUCN Guidelines for Re-introductions*.

**Table 5-3. Scoring system for compliance to IUCN re-introduction guidelines.**

IUCN re-introduction guidelines	Q*	Answers aligned with corresponding scores				
		4	3	2	1	0
<b>PRE-PROJECT ACTIVITIES</b>						
a. BIOLOGICAL						
(i) Feasibility study and background research						
- Assessment of the taxonomic status of 2-5 individuals to be re-introduced		Yes		Partly		No
- Investigation of historical information 2-13 about the loss and fate of individuals from the re-introduction area		Yes		Partly		No
- Determination of critical needs 2-4		Yes		Partly		No
- Population and Habitat Viability Analysis 2-6		Yes		Partly		No
(ii) Previous Re-introductions						
- Research into prior re-introductions and contact with relevant experts 2-7		Yes		Partly		No
(iii) Choice of release site and type						
- Site within historic range of the species 2-8		Yes		Partly		No
- (Core or periphery) 2-9					Core	Periphery
- Assured, long-term protection 2-10		Yes				No
(iv) Evaluation of re-introduction site						
- Habitat and landscape requirements of 2-11 the species are satisfied and sustainable		Yes		Partly		No
- Sufficient carrying capacity 2-12		Yes		Partly		No
- Identification and elimination, or reduction to a sufficient level, of previous causes of decline 2-14		Eliminated	Reduced sufficiently		Reduced somewhat	Not reduced
- Habitat restoration programme if necessary 2-15		Yes		Partly		No

IUCN re-introduction guidelines	Q*	Answers aligned with corresponding scores				
		4	3	2	1	0
(v) Availability of suitable release stock					Wild	Captive
- Source animals come from wild populations	2-17					
- Stock must be guaranteed available on a regular and predictable basis	2-20	Yes		Partly		No
- Individuals should only be removed from a wild population after the effects of translocation on the donor population have been assessed, and it is guaranteed that these effects will not be negative	2-18	Yes		Partly		No
- 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	2-19	Yes		Partly		No
- Veterinary screening process	3-8	Yes				No
(vi) Release of captive stock						
- Individuals should be given the opportunity to acquire the necessary information to enable survival in the wild	3-21	Yes		Partly		No
<b>b. SOCIO-ECONOMIC AND LEGAL REQUIREMENTS</b>						
- Long-term financial support	2-21	Yes		Partly		No
- Long-term political support	2-22	Yes		Partly		No
- Socio-economic studies	2-24	Yes		Partly		No
- Assessment of local attitudes	2-25	Yes		Partly		No
- Full understanding, acceptance and support of local communities	2-26	Yes		Partly		No
- Policy of the country where the re-introduction is to take place should be consulted	2-28	Yes				No
- Permission and involvement of all relevant government agencies	2-29	Yes		Partly		No
<b>PLANNING, PREPARATION AND RELEASE STAGES</b>						
- Construction of a multidisciplinary team with access to expert technical advice	3-2	Yes				No
- Identification of short-term success indicators	3-3	Yes				No
- Identification of long-term success indicators	3-4	Yes				No
- Prediction of programme duration	2-23	Yes		Partly		No
- Appropriate genetic screening	3-5	Yes		Partly		No
- Appropriate health screening	3-6	Yes		Partly		No
- Appropriate veterinary care	3-9	Yes		Somewhat		No
- Determination of release strategy	3-10	Yes		Partly		No
- Public relations	3-11	Yes		Partly		No
- Involvement of local people	3-12	Yes		Partly		No
<b>POST-RELEASE ACTIVITIES</b>						
- Post-release monitoring	4-1	Yes		Somewhat		No
- Collection and investigation of mortalities	4-4	Yes		Partly		No
- Interventions when necessary	3-23	Yes				No
- Continued habitat protection or restoration where necessary	4-5	Yes		Partly		No
- Continued public relations	4-6	Yes		Partly		No
- Evaluation of cost-effectiveness and success	4-2	Yes		Partly		No
- Publications in popular literature	4-7	Yes		Partly		No
- Publications in scientific literature	4-8	Yes		Partly		No

\* Q = question number in re-establishment questionnaire addressing the relevant guideline.

The maximum possible score was 166: 102 for pre-project activities; 40 for planning, preparation and release stages; and 24 for post-release activities. Unanswered questions were not scored with 0 points but were left out of score calculations. Final scores were converted to percentages for each project phase (pre-project activities; planning, preparation and release stages; and post-release activities) and for the project overall.

### Calculating the success ratings

Project success was evaluated using six standard criteria assessed in the questionnaire:

1. The number of birds successfully released from captivity or translocated from a wild population.
2. The survival rate of released birds.
3. The extent of breeding of the re-introduced population.
4. The growth rate of the re-introduced population.
5. How successful the practitioners rated their own project (i.e. if short and/or long-term goals were achieved).
6. Whether or not a self-sustaining population of more than 500 individuals was established (Beck *et al.* 1994).

The criteria were chosen based on past reviews of re-introduction success (Ostermann *et al.* 2001, Beck *et al.* 1994). The first criterion is an indicator of the quality of the captive-breeding techniques and conditions, and/or the methods of translocation from the wild. Criteria 2-4 are indices of the released birds' ability to contribute to the wild population. The fifth criterion is an indicator of the success of the project in relation to the individual project goals. The sixth criterion is a measure of long-term success.

Each criterion was the subject of one or more questions in the re-establishment questionnaire. Some four of the six criteria required categorical answers that could be scored from 0 to 2 (Table 5-4). The remaining two criteria, growth rate and self-sustaining population of over 500 individuals, were determined by evaluating the answers to four questions (Table 5-4) on survival, breeding, project outcomes and post-release monitoring. Growth rate could be scored from 0 to 2, and self-sustaining population from 0 to 1 (Table 5-4).

The maximum score achievable was 11 and the minimum 0. If a questionnaire was submitted without answers to all of the success criteria questions, missing answers were extrapolated from other answers and additional sources of information.

**Table 5-4. Scoring system for re-introduction success.**

Success criteria	Question(s)	Answers aligned with corresponding scores		
		0	1	2
1 Number of birds released	3-18	≤10	11-50	>50
2 Survival of released birds	3-24	≤50%	51-80%	>80%
3 Extent of breeding of the released birds	3-25	None	To some extent	To great extent
4 Growth rate of the re-introduced population	3-24, 3-25, 4-1 & 4-3	No growth	Less than doubled	More than doubled
5 How successful the practitioners rated their own project (i.e. if short and/or long-term goals were achieved)	4-2-2	No	Partly	Yes
6 Whether or not a self-sustaining population of more than 500 individuals was established (Beck <i>et al.</i> 1994)	3-24, 3-25, 4-1 & 4-3	No	Yes	

### Comparison of IUCN compliance scores with success ratings

To assess the relationship between the calculated IUCN compliance scores and success ratings, a regression analysis was performed.

## 5.3 Results

### Questionnaire returns

Of the 157 circulated, 11 questionnaires were completed and returned, and an additional three questionnaires were completed by literature review (Table 5-5).

**Table 5-5. List of the projects for which questionnaires were completed.**

Project code	Species	Location	Questionnaire respondent(s) or literature source
1 WhiDuc HU	White-headed Duck <i>Oxyura leucocephala</i>	Hungary	Bálint Bajomi
2 GreGoo BE	Greylag Goose <i>Anser anser</i>	Belgium	Koen Devos via Wouter Faveyts (Agentschap voor Natuur en Bos)
3 WhiSto BE	White Stork <i>Ciconia ciconia</i>	Belgium	Wim Van Den Bossche (Natuurpunt) via Wouter Faveyts (Agentschap voor Natuur en Bos)
4 FerDuc ES	Ferruginous Duck <i>Aythya nyroca</i>	Spain	(Perez-Rendon 1999)
5 WhiDuc ES 1	White-headed Duck <i>Oxyura leucocephala</i>	Spain (mainland)	(Perez-Rendon 1999)
6 WhiDuc ES 2	White-headed Duck <i>Oxyura leucocephala</i>	Spain (Majorca)	(Perez-Rendon 1999)
7 CorCra UK	Corn Crake <i>Crex crex</i>	United Kingdom	Andy Evans (RSPB)
8 LesWhi FI	Lesser White-fronted Goose <i>Anser erythropus</i>	Finland	Antti Haapanen
9 WhiDuc IT	White-headed Duck <i>Oxyura leucocephala</i>	Italy	Barbara Amadesi (INFS)
10 WhiSto NL	White Stork <i>Ciconia ciconia</i>	The Netherlands	Annemieke Enters & Wim van Nee
11 DalPel CR	Dalmatian Pelican <i>Pelecanus crispus</i>	Croatia	Jasmina Muzinic (HAZU)
12 CarFla BVI	Caribbean Flamingo <i>Phoenicopterus ruber</i>	British Virgin Islands	James Lazell (TCA)
13 PurSwa IT	Purple Swamphen <i>Porphyrio porphyrio</i>	Italy	Alessandro Andreotti (INFS)
14 WatCra ZA	Wattled Crane <i>Grus carunculatus</i>	South Africa	Jeanne Marie Pittman (Johannesburg Zoo)

Unfortunately, four of the returned questionnaires could not be included in further analysis: the re-introduction of Caribbean Flamingo *Phoenicopterus ruber* (CarFla BVI) was excluded because it did not occur in an AEWA Range State; a supplementation of Wattled Crane *Grus carunculatus* (WatCra ZA) was excluded because it did not meet the criteria of a re-establishment project; a re-introduction of Purple Swamphen *Porphyrio porphyrio* in Italy (PurSwa IT) was excluded because the Purple Swamphen is not an AEWA species; and a project to re-introduce Dalmatian Pelican *Pelecanus crispus* in Croatia (DalPel CR) was excluded because the project was in planning stages when the questionnaire was completed.

See Appendix 2 for the completed questionnaires.

*IUCN compliance scores*

The overall IUCN compliance scores ranged from 23% for a re-introduction of the White-headed Duck in Hungary to 88% for a re-introduction of the Corn Crake in the United Kingdom (Table 5-6).

**Table 5-6. Scores for compliance to IUCN re-introduction guidelines for 10 re-establishment projects for waterbird species covered by AEWA.**

<b>Project</b>	<b>Pre-project activities*</b>	<b>Planning, preparation and release stages*</b>	<b>Post-release activities*</b>	<b>All stages*</b>
1 White-headed Duck – Hungary	28%	11%	30%	<b>23%</b>
2 Greylag Goose – Belgium	40%	33%	90%	<b>51%</b>
3 White Stork – Belgium	60%	35%	58%	<b>50%</b>
4 Ferruginous Duck – Spain	69%	10%	20%	<b>46%</b>
5 White-headed Duck – Spain (mainland)	79%	63%	60%	<b>71%</b>
6 White-headed Duck – Spain (Majorca)	60%	25%	80%	<b>61%</b>
7 Corn Crake – United Kingdom	88%	90%	83%	<b>88%</b>
8 Lesser White-fronted Goose - Finland	64%	80%	60%	<b>66%</b>
9 White-headed Duck - Italy	58%	72%	10%	<b>55%</b>
10 White Stork – The Netherlands	55%	56%	83%	<b>61%</b>

\*See Methods section for explanation of calculations and rationale.

*Success ratings*

The calculated success ratings ranged from 1 for the re-introduction of White-headed Duck in Italy that did not result in a self-sustaining population to 9 for the re-introduction of White-headed Duck in Spain (mainland) that did result in a self-sustaining population (Table 5-7).

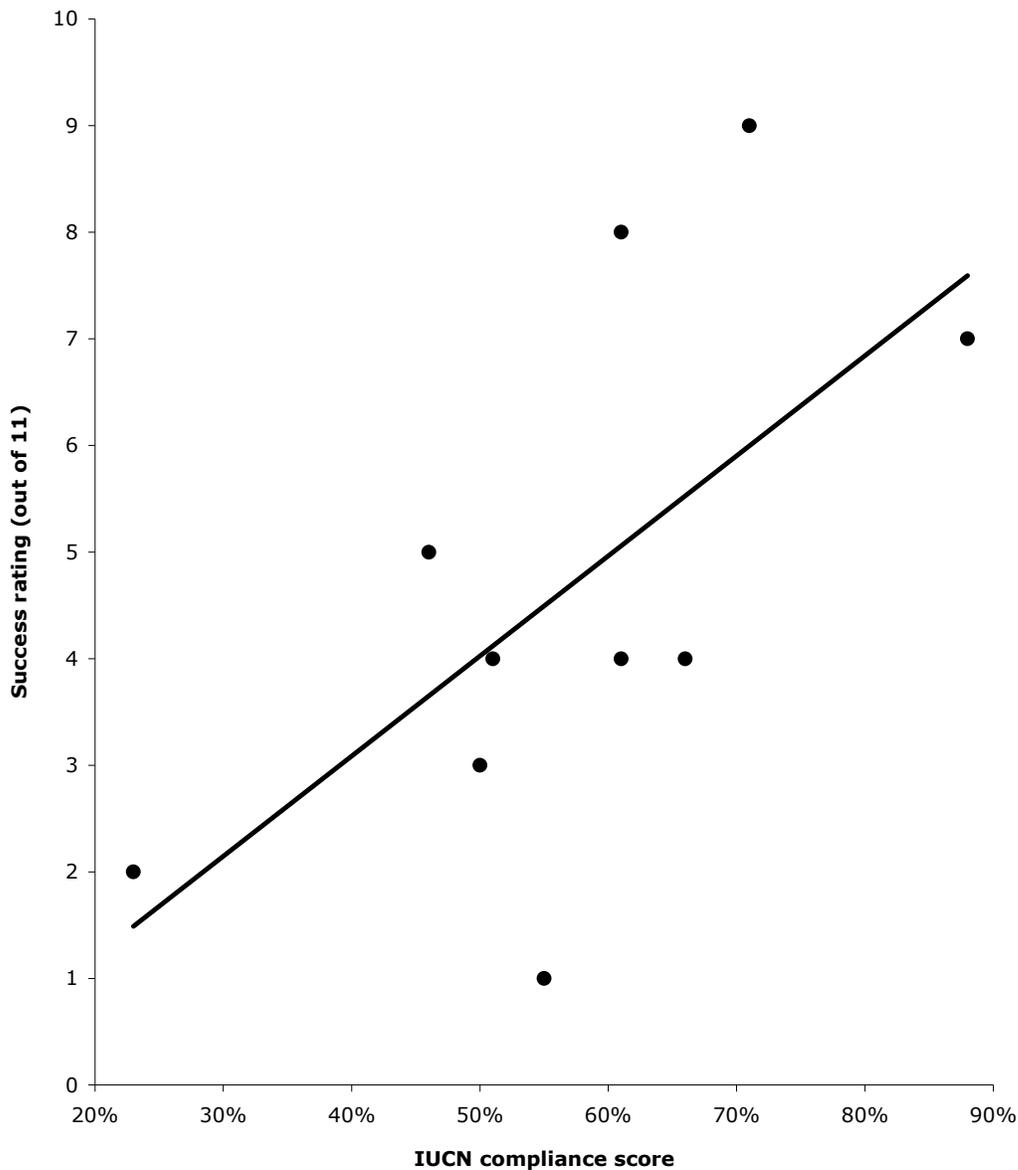
**Table 5-7. The success criteria, success ratings and outcomes of 10 re-establishment projects for waterbird species covered by AEWA.**

Project	Number of birds released	Survival	Breeding	Population growth	Self-rated successful	Self-sustaining population of ≥500	Success rating (/11) *	Outcome of project
1 White-headed Duck Hungary	Unknown but > 52	0 – 10%	None	None	No	No	<b>2</b>	A self-sustaining population was not attained - ended in 1992.
2 Greylag Goose Belgium	3 pairs	Unknown	To great extent	Unknown (pop >700 pairs)	Yes	No	<b>4</b>	Unknown.
3 White Stork Belgium	Unknown but > 150	41-50%	To some extent	Unknown (pop. estimated at 65 pairs)	Not rated	No	<b>3</b>	<65 pairs largely limited to compounds.
4 Ferruginous Duck Spain	100	Unknown	To some extent	Less than doubled	Not rated	No	<b>5</b>	Small numbers of breeding birds.
5 White-headed Duck Spain (mainland)	Unknown	61-70%	To some extent	More than doubled	Yes	Yes	<b>9</b>	A wild population of >1200 birds – exact contribution of re-introduction unknown.
6 White-headed Duck Spain (Majorca)	56	31-40%	To some extent	None	No	No	<b>4</b>	68% of birds disappeared within a year.
7 Corn Crane United Kingdom	291	81-90%	To some extent	Less than doubled	Partly	No	<b>7</b>	Progress toward the establishment of a stable population of >30 pairs - birds have returned from overwinter migration and bred in the wild.
8 Lesser White-fronted Goose Finland	Not reported but ~150	< 50%	Unknown	Unknown (probably minimal)	Not rated	No	<b>4</b>	Few details given – project said to be in preliminary stages
9 White-headed Duck Italy	15	0 – 10%	None	None	Not rated	No	<b>1</b>	Poor captive breeding success and high mortality of re-introduced birds.
10 White Stork The Netherlands	Unknown but > 50	11-20%	To great extent	More than doubled	Yes	No (> 500 pairs but dependent on intervention)	<b>8</b>	In 2007, there were more than 600 pairs

\* See Methods section for explanation of calculations and rationale.

*Comparison of IUCN compliance scores with success ratings*

Regression analysis showed a positive relationship between the IUCN compliance scores and the success ratings that approached significance ( $F=5.05$ ,  $r^2=0.387$ ,  $p=0.055$ ,  $n=10$ ) (Figure 5-1). The project that received the second lowest success rating (2) showed the least amount of compliance with IUCN guidelines (23%), while the three projects that received the highest compliance with IUCN guidelines (88%, 61% and 71%, respectively) showed the highest success ratings (7, 8 and 9) with the exception of the Lesser White-fronted Goose project which scored 66% for compliance but achieved a success rating of only 4 (Figure 5-1). If the data for the Caribbean Flamingo and Purple Swamphen projects were included the relationship was significant ( $F=10.97$ ,  $r^2=0.523$ ,  $p<0.01$ ,  $n=12$ ).



**Figure 5-1. Relationship between the compliance to IUCN guidelines scores and the success ratings for 10 re-establishment projects for AEWA waterbird species in AEWA Range States ( $y=-0.67+9.39x$ ,  $F=5.05$ ,  $r^2=0.387$ ,  $p=0.055$ ,  $n=10$ ).**

## **6 PROGRESS IN IMPLEMENTING RE-ESTABLISHMENT PROJECTS**

### **6.1 Objective**

Assess the status of and progress in the implementation of re-establishment projects by Range States and other stakeholders.

### **6.2 Method**

To assess the status of and progress in the implementation of re-establishment projects, a list of 'species of interest' (Table 6-1) was compiled based on 3 criteria: (1) the 2007 IUCN Red List Status of Vulnerable (VU), Endangered (EN), or Critically Endangered (CR) – these species were classed as threatened; (2) an international single species action plan (ISSAP) existing for the species; or (3) the completion or planning of at least one re-establishment project.

As stated, criterion 1 was assessed using the IUCN Red List (2007). The information required to assess criterion 2 was provided in Section 2 of this review, and the information required to assess criterion 3 was gathered by searching scientific literature, popular literature and websites, and by consulting National Focal Points and other relevant ornithological experts.

These criteria ensured that the list included all threatened species, all species with ISSAPs, and all species for which re-establishment projects had been completed or planned.

The 'species of interest' were divided into three groups: species with ISSAPs that recommended re-establishment; species with ISSAPs that did not recommend re-establishment; and species without ISSAPs. The proportions of species for which re-establishment projects had been implemented were determined within these groups.

### **6.3 Results**

A total of 38 'species of interest' were identified. Of these, 21 were considered threatened, five had had re-establishment recommended in an ISSAP as a conservation measure, and 15 were the subjects of observed (past or current) or expected (planned/future) re-establishment projects (Table 6-1).

**Table 6-1. Species of interest based on IUCN Red List Status, existence of an international single species action plan (ISSAP) or existence of a re-establishment project (observed or expected).**

AEWA waterbird species	ISSAP	IUCN Red List Status (2007)* <sup>27</sup>	Re-est rec**?	Number of projects (observed*)	Number of projects (expected*)
African Penguin <i>Spheniscus demersus</i>	No	VU	No	0	0
Audouin's Gull <i>Larus audouinii</i>	Yes	NT	No	0	0
Avocet <i>Recurvirostra avosetta</i>	No	LC	No	1	0
Bald Ibis <i>Geronticus eremita</i>	Yes	CR	No	5	0
Bank Cormorant <i>Phalacrocorax neglectus</i>	No	EN	No	0	0
Bean Goose <i>Anser fabalis</i>	No	LC	No	1	0
Bittern <i>Botaurus stellaris</i>	Yes	LC	No	0	0
Black-winged Pratincole <i>Glareola nordmanni</i>	Yes	NT	No	0	0
Blue Crane <i>Grus paradisea</i>	No	VU	No	0	0
Brent Goose <i>Branta bernicla</i>	Yes	LC	No	0	0
Cape Gannet <i>Morus capensis</i>	No	VU	No	0	0
Common Crane <i>Grus grus</i>	No	LC	No	0	1
Corn Crake <i>Crex crex</i>	Yes	NT	No	1	0
Crested Coot <i>Fulica cristata</i>	Yes	LC	Yes	2	0
Dalmatian Pelican <i>Pelecanus crispus</i>	Yes	VU	No	0	1
Ferruginous Duck <i>Aythya nyroca</i>	Yes	NT	Yes	23	0
Great Snipe <i>Gallinago media</i>	Yes	NT	No	0	0
Greylag Goose <i>Anser anser</i>	No	LC	No	>>	0
Lesser Flamingo <i>Phoenicopterus minor</i>	Yes	NT	No	0	0
Lesser White-fronted Goose <i>Anser erythropus</i>	Yes	VU	Yes	2	2
Maccoa Duck <i>Oxyura maccoa</i>	Yes	NT	Yes	0	0
Madagascar Pond-heron <i>Ardeola idae</i>	No	EN	No	0	0
Madagascar Pratincole <i>Glareola ocularis</i>	No	VU	No	0	0
Marbled Duck <i>Marmaronetta angustirostris</i>	Yes	VU	No	1	0
Pygmy Cormorant <i>Phalacrocorax pygmeus</i>	Yes	LC	No	0	0
Red-breasted Goose <i>Branta ruficollis</i>	Yes	EN	No	0	0
Roseate Tern <i>Sterna dougallii</i>	Yes	LC	No	0	0
Shoebill <i>Balaeniceps rex</i>	No	VU	No	0	0
Siberian Crane <i>Grus leucogeranus</i>	No	CR	No	1	0
Slaty Egret <i>Egretta vinaceigula</i>	No	VU	No	0	0
Slender-billed Curlew <i>Numenius tenuirostris</i>	Yes	CR	No	0	0
Sociable Lapwing <i>Vanellus gregarius</i>	Yes	CR	No	0	0
Socotra Cormorant <i>Phalacrocorax nigrogularis</i>	No	VU	No	0	0
Steller's Eider <i>Polysticta stelleri</i>	Yes	VU	No	0	0
Wattled Crane <i>Grus carunculatus</i>	No	VU	No	1	0
White Stork <i>Ciconia ciconia</i>	No	LC	No	8	0
White-headed Duck <i>Oxyura leucocephala</i>	Yes	EN	Yes	5	0
White-winged Crane <i>Sarothrura ayresi</i>	No	EN	No	0	0

\* CR = critically endangered, EN = endangered, VU = vulnerable, NT = near threatened, LC = least concern, observed = completed or ongoing, expected = planned for future.

\*\* re-est rec = re-establishment recommended in an ISSAP (i.e. not a national action plan).

>> Multiple re-introductions and introductions (including supplementations for hunting purposes) in at least seven European countries.

Of the 21 species with ISSAPs, five have been recommended for re-establishment. Of these, re-establishment projects have been implemented for both of the two threatened species (Lesser White-fronted Goose and White-headed Duck) and for two out of three of the non-threatened species (Ferruginous Duck and Crested Coot) (Table 6-1). The only species where re-establishment has not been implemented despite a recommendation is the Maccoa Duck.

Of the remaining 214 waterbird species covered by AEWA, re-establishment projects have been conducted for two threatened species and four non-threatened species (Table 6-2). Thus, re-establishments have been conducted for 33% of the threatened species and for 3% of the non-threatened species (Table 6-2).

<sup>27</sup> Source: IUCN. 2007. 2007 IUCN Red List of Threatened Species. <[www.iucnredlist.org](http://www.iucnredlist.org)>.

**Table 6-2. Numbers of re-establishment projects observed and expected for groups of waterbird species covered by AEWA - species were grouped according to their status, the existence of an ISSAP and whether or not that ISSAP recommended re-establishment.**

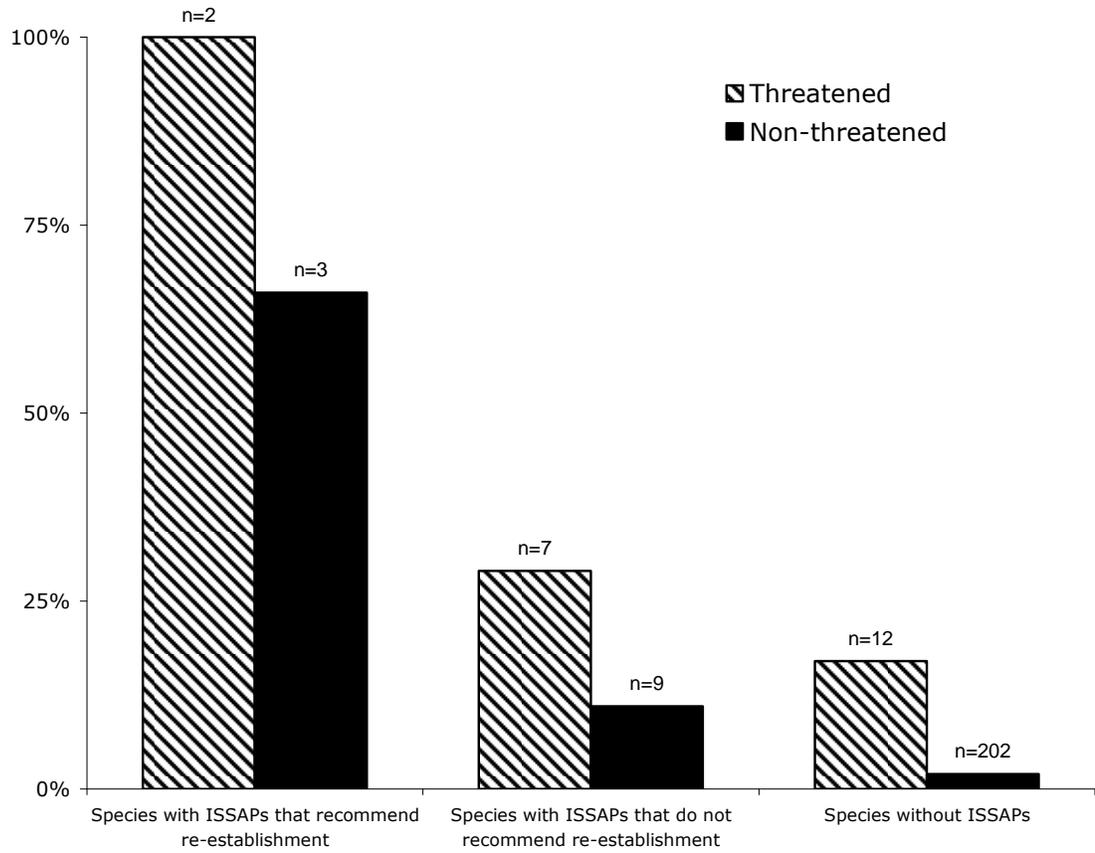
Species group	Number of species	Number of species with re-establishment projects (%)	Number of projects (observed*)	Number of projects (expected*)
<b>Species with an ISSAP recommending re-establishment</b>	<b>5</b>	<b>4 (80%)</b>	<b>32</b>	<b>2</b>
Threatened	2	2 (100%)	7	2
Non-threatened	3	2 (66%)	25	0
<b>Species with an ISSAP not recommending re-establishment</b>	<b>16</b>	<b>3 (19%)</b>	<b>7</b>	<b>1</b>
Threatened	7	2 (29%)	6	1
Non-threatened	9	1 (11%)	1	0
<b>Species without an ISSAP</b>	<b>214</b>	<b>6 (3%)</b>	<b>&gt;&gt;12</b>	<b>1</b>
Threatened	12	2 (17%)	2	0
Non-threatened	202	4 (2%)	>>10	1
<b>All</b>	<b>235</b>	<b>14 (6%)</b>	<b>&gt;&gt;50</b>	<b>4</b>
Threatened	21	6 (33%)	15	3
Non-threatened	214	7 (3%)	>>36	1

\* observed = completed or ongoing, expected = planned for future.

>> Total number is unknown but significantly higher than stated.

The group with the highest proportion of species with re-establishment projects was the group containing species with ISSAPs recommending re-establishment (80%); second was the group containing species with ISSAPs not recommending re-establishment (19%); and the group with the lowest proportion was the group containing species without ISSAPs (3%) (Table 6-2).

Within each of these groups, the proportion of species with re-establishment projects was  $\geq 15\%$  higher for threatened species compared with non-threatened species (Table 6-2, Figure 6-1).



**Figure 6-1. Percentage of species for which re-establishment projects have been implemented.**

## **7 IMPROVING THE EFFECTIVENESS OF RE-ESTABLISHMENT AS A CONSERVATION MEASURE**

### **7.1 Objective**

Assess the effectiveness of waterbird re-establishment projects in the AEWA region and determine the factors that are most linked to success in these projects.

### **7.2 Method**

Using data gathered during the questionnaire survey (Section 5), an assessment was made of the key factors influencing the success or failure of the projects for which questionnaires were returned.

Projects were defined as 'successful' or 'unsuccessful' based on the success ratings calculated in Section 5 of this review and whether or not a stable population is thought to have resulted.

The key factors identified by practitioners as influencing success or failure were extracted from the questionnaires, and the answers to a selection of questions were compared to determine which factors were common to the successful projects versus the unsuccessful projects. The findings from these two procedures were combined into a master list of key factors influencing success.

### **7.3 Results**

Of the 10 projects reviewed by questionnaire, two achieved stable populations (Table 7-1): the re-introduction of the White-headed Duck in mainland Spain and the re-introduction of White Stork in the Netherlands. These projects also received the highest success ratings, 8 and 9, respectively. Based on these two facts the projects were deemed successful. The re-introduction of Corn Crane in the United Kingdom was also considered successful. While a stable population has not yet been established, the project is on-going, has met its intermediate targets and received the third highest success rating, 7. Thus 30% of the projects reviewed were considered successful. Past reviews of re-establishment have found a much lower success rate. Beck *et al.* (1994) found evidence that only 16 (11%) of 145 re-introduction projects were successful, with success defined as establishment of a wild population of  $\geq 500$  individuals free of human support, or population viability as determined by a formal genetic-demographic analysis.

Table 7-1 presents the key factors that practitioners viewed as influencing success or failure for their own projects. Acclimatization of birds pre-release was mentioned three times as a key factor in success and a lack of acclimatization was mentioned once as a key factor in failure. Quality of habitat (relating to protection, management or regeneration) is mentioned three times as a key factor in success.

**Table 7-1. Key factors relating to success or failure in 10 re-establishment projects for waterbird species covered by AEWA.**

Project	Key factors relating to success	Key factors relating to failure	Outcome of project
1 White-headed Duck Hungary			A self-sustaining population could not be attained - the project was stopped in 1992
2 Greylag Goose Belgium	- Birds were initially released into a park with captive waterbirds	- The introduced birds came from Russia and belonged to a subspecies ( <i>Anser anser rubirostris</i> ) not native to the area	A breeding population of >700 pairs of a non-native subspecies - impact of project on this population unknown.
3 White Stork Belgium			<65 pairs largely limited to compounds
4 Ferruginous Duck Spain	- Habitat regeneration - Good acclimatization of birds before release		Small numbers of breeding birds
5 White-headed Duck Spain (mainland)	- Released birds were juveniles - Captive breeding occurring within the release area - Condition of the released birds (healthy and untamed)		A wild population of >1,200 birds
6 White-headed Duck Spain (Majorca)	- Release area is well protected and guarded	- The first release failed because birds were not acclimatised - The second release failed because too few birds were released	68% of birds disappeared within a year
7 Corn Crake United Kingdom	- In-depth understanding of the species' critical needs - Reserve management sympathetic to needs of the released birds		Progress toward the establishment of a stable population of >30 pairs - birds have returned from overwinter migration and bred in the wild.
8 Lesser White-fronted Goose		- No financial support from official sources - Poor political support at the national level	Few details given - project said to be in preliminary stages.
9 White-headed Duck Italy		- Causes of decline not eliminated - Problems rearing birds in captivity - Assessment of reasons for failure pending	Poor captive breeding success and high mortality of re-introduced birds forced a stop to releases.
10 White Stork The Netherlands	- Team were passionate about and dedicated to the project		In 1969, the White Stork was considered extinct in the Netherlands; in 2007, there were over 600 pairs.

Table 7-2 compares the characteristics of the projects considered to be successful and those considered to be unsuccessful. Successful projects eliminated or reduced the causes of decline, had long-term financial and political support, identified success indicators, acclimatized birds to their release areas and monitored the birds post-release. Of the three successful projects, two conducted feasibility studies, one released birds at the core of their historical range, and two had support from local communities.

In common with the successful projects, the majority of unsuccessful projects also reduced sufficiently the causes of decline, monitored birds post-release and acclimatized birds to their release areas.

The factors that differ between successful and unsuccessful projects are long-term financial and political support and the identification of success indicators. Of the three successful projects, two reported having both long-term financial and long-term political

support while the other reported having partial long-term financial support; in comparison, only one unsuccessful project reported having either. Finally each successful project reported identifying short and long-term success indicators. Again something only one unsuccessful project reported.

**Table 7-2. Characteristics of successful and unsuccessful projects for AEWA waterbird species (successful projects are shaded).**

Factor	Projects (numbers correspond projects in Table 7-1)									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Success rating*	2	4	3	5	9	4	7	4	1	8
Feasibility study		No	No				Yes	Partly†	Yes	Partly
Location of release site within the historic range	Periphery		Periphery				Core			
Elimination or reduction of causes of decline**	No	Reduced suff.	Elim.	Reduced some.†	No†	Reduced some.				
Long-term financial support			Partly	No	Yes	No	Yes	No†	Yes	Partly
Long term political support			Partly	No	Yes	No	Yes	No†	Partly	
Identification of success indicators			No	No	Yes		Yes	Yes	Partly	Yes
Acclimatisation	No		Yes	Yes	Partly	Partly	Yes	Yes	Yes	Yes
Human interventions	No		Yes	No	No	Yes	No	No	No	Yes
Local support			Yes	No	No	No	Yes	Yes	Partly	Partly
Post-release monitoring		Yes	Yes	Yes	Yes	Yes	Yes		Partly	Yes

\* See Section 5.

\*\* Elim = eliminated; suff = sufficiently; some = somewhat.

† The answers to the questions addressing these factors did not match accompanying comments – comments were given priority.

- |  |  |
|--|--|
| 1 White-headed Duck – Hungary          | 6 White-headed Duck – Spain (Majorca)  |
| 2 Greylag Goose – Belgium              | 7 Corn Crake – United Kingdom          |
| 3 White Stork – Belgium                | 8 Lesser White-fronted Goose – Finland |
| 4 Ferruginous Duck – Spain             | 9 White-headed Duck – Italy            |
| 5 White-headed Duck – Spain (mainland) | 10 White Stork – the Netherlands       |

Considering the key factors identified by re-introduction practitioners and the factors found common to successful projects and uncommon to unsuccessful projects, the following activities are considered especially crucial to the success of waterbird re-establishment projects:

- Completion of a comprehensive feasibility study.
- Pre-release acclimatization of birds to their release area.
- Good quality habitat with the original causes of decline eliminated or reduced.
- Long-term financial and political support.
- Identification of short and long-term indicators of success.

## 8 RECOMMENDATIONS AND IMPROVEMENTS NEEDED

This report has identified three major areas for improvement regarding re-establishment projects: (1) the success rate of re-establishment projects; (2) the reporting on re-establishment projects; and (3) the evaluation of re-establishment projects.

Evaluating the success of a re-establishment project is a complex process and a variety of factors must be considered. Of the projects assessed as part of this report, only three were considered successful. Past reviews of re-establishment have also found low success rates. Beck *et al.* (1994) found evidence that only 16 (11%) of 145 re-introduction projects were successful with a wild population of  $\geq 500$  individuals established.

In an attempt to improve success, the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) were published in 1995 providing specific policy guidelines for re-establishment projects. Compliance with these guidelines appears to be associated with higher success for waterbird species re-establishment projects. However, the IUCN guidelines were written to encompass the full range of plant and animal taxa and are therefore general. The guidelines are focused on re-establishment projects using captive-bred individuals and toward re-establishment projects of globally threatened species with a limited numbers of founders (IUCN/SSC RSG 1995). For these reasons, guidelines for re-introducing individual species or groups of species should be developed in future.

In addition to guidelines, networks or groups of experts with knowledge relevant to re-establishments of a specific species should be assembled. An example of such a group is the International Advisory Group on the Northern Bald Ibis (IAGNBI). This group was created to ensure international co-ordination and co-operation on Bald Ibis projects. Through regular workshops and newsletters, the group aims to produce release guidelines for the Bald Ibis and review propositions for all Bald Ibis re-introduction projects (Boehm *et al.* 2003).

In order to improve the success rate of re-establishment projects, this report recommends that:

1. **Re-establishment projects are conducted in strict accordance with the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995).**
2. **The *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) are adapted for waterbird species and supplemented with checklists of activities** for practitioners to complete.
3. **The IUCN/SSC Re-introduction Specialist Group (IUCN/SSC RSG) is consulted** prior to any re-establishment project to provide best practice guidance, expertise and a list of relevant contacts for the species to be re-established. Consultations should be made before a feasibility study or any planning has been initiated.
4. **Re-establishment projects are conducted by groups of organisations and experts with diverse skills bases.** Collaboration will bring a number of significant advantages: enhanced expertise, transfer of skills, shared responsibility, shared accountability and increased funding opportunities.
5. **Networks or groups of experts with knowledge relevant to re-establishments of a specific species are assembled** to act as advisory groups for re-establishment projects of the relevant species. These should be assembled for those species for which re-establishment has been recommended and for those species for which re-establishment projects are currently occurring or being planned. It may be appropriate for these species-specific groups to be formed within the IUCN/SSC RSG.

As part of this report, IUCN re-introduction guidelines were evaluated to determine which are most associated with success. While this report recommends that all guidelines be followed (see recommendation 1 above), it also recommends that particular attention be paid to those guidelines most associated with success for waterbird re-establishment projects. Thus, this report recommends that:

6. During pre-project activities, particular attention is paid to the following:
  - **Completing a comprehensive feasibility study**, comprising an assessment against IUCN re-introduction criteria, a review of historic status, an assessment of the species critical needs, a scientific assessment of habitat suitability of the release site, and a Population and Habitat Viability Analysis to determine the number of birds that need to be released to establish a sustainable population.
  - **Securing long-term financial and political support.**
7. During re-introduction activities, particular attention is paid to the following:
  - **Ensuring birds are acclimatized** to their release area prior to release.
  - Ensuring a sufficient amount of **good quality habitat** is available where the original **causes of decline have been eliminated or sufficiently reduced.**
  - **Identifying short and long-term indicators** of success.

Although the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) suggest an assessment phase, in which the experiences and results of projects are regularly evaluated, published results remain scarce (Ostermann *et al.* 2001). In 1994, less than half of the projects known to have re-introduced animals had produced assessment information (Beck *et al.* 1994). As part of this review, information was provided for only 11 waterbird species re-establishment projects despite over 60 known projects having occurred in the AEWA region. This lack of information on re-establishment projects could be in part attributed to the lack of national and international monitoring schemes and a reluctance to report failures. The paucity of information causes difficulties with the evaluation and refinement of re-establishment methods and techniques, thus it is vital that reporting is improved.

In order to inform the triennial up-dates of this review and provide the data necessary to maintain the AEWA re-establishment database, this report recommends that:

8. **AEWA National Focus Points maintain a national register** of re-establishment projects occurring or planned to occur wholly or in part within their corresponding Ranges States. This recommendation is in line with paragraph 2.4 of the AEWA Action Plan requiring Contracting Parties to "inform the Agreement secretariat, in advance, of all re-establishment programmes for populations listed in Table 1."

In order to improve the amount and quality of data available on re-establishment methodologies, this report recommends that:

9. **All re-establishment projects are described to the IUCN/SSC RSG.** A reporting structure should be developed to encourage practitioners to provide detailed information about each project stage. The IUCN/SSC RSG should make this information widely available and accessible.

In order to monitor the implementation of relevant action plans and other conservation initiatives within the AEWA region, this report recommends that:

10. **The AEWA re-establishment database is maintained** with up to date information, on re-establishment projects and recommendations, supplied by Contracting Parties as per recommendation 8 of this report.

Despite the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) providing detailed guidelines for implementing re-establishment projects, a standard set of evaluation criteria does not exist. Standard criteria specifically for evaluating waterbird re-establishment projects would allow for more informative project assessments and provide guidance for standardised reporting, which would in turn generate recommendations for improving project success (Ostermann *et al.* 2001; Stanley Price 1991; Beck *et al.* 1994).

In order to improve the evaluation of re-establishment projects this report recommends that:

11. **A standard set of evaluation criteria for waterbird re-establishment projects is developed** by the AEWA Technical Committee in liaison and consultation with appropriate experts and reported to AEWA Contracting Parties as soon as is possible, as well as being included within the next, triennial update of this review (for the fifth Meeting of Parties in 2011).

## 9 CONCLUSIONS

### *Species/populations for which re-establishments are needed*

Re-establishment has been recommended as a conservation measure for six waterbird species in international and national actions plans published since 1995: Lesser White-fronted Goose (Madsen 1996), Ferruginous Duck (Callaghan 1997), Crested Coot (Gomez 1999), White-headed Duck (Hughes *et al.* 2006), Maccoa Duck (Abebe *et al.* 2007), and Corn Crake (UKBAP 1995b). A variety of projects have been undertaken to fulfil these recommendations.

- **Lesser White-fronted Goose *Anser erythropus***

Re-establishment was recommended in the 1996 *International Action Plan for the Lesser White-fronted Goose *Anser erythropus** (Madsen 1996) for areas where the species had disappeared and other conservation measures had failed. However the second draft of the 2006 *International Action Plan for the Lesser White-fronted Goose *Anser erythropus** (Jones 2006) does not make such a recommendation and concludes that there is no consensus among Lesser White-fronted Goose stakeholders on the use of captive breeding and re-introduction/ restocking as valid conservation tools. In the 1980s, two projects to re-introduce this species were implemented: one in Sweden and the other in Finland. The re-introduced Swedish population is migrating along a route not used by native birds. The Finnish project is reported to have had high-levels of mortality and little breeding success. A new German-based project plans to release 400 captive-bred Lesser White-fronted Geese in Lapland and induce migration to the Lower Rhine area of Germany.

- **Ferruginous Duck *Aythya nyroca***

Re-establishment was recommended in the 1997 *European Species Action Plan Ferruginous Duck *Aythya nyroca** (Callaghan 1997) as a last measure conservation strategy to re-introduce the species to areas of its former range. However, re-establishment was not a recommendation of the 2006 *International Single Species Action Plan for the Conservation of the Ferruginous Duck *Aythya nyroca** (Robinson & Hughes 2006). Over 23 re-introduction projects have been implemented in France, Spain and Italy with little success, apart from two projects in Italy that have reportedly produced self-sustaining populations.

- **Crested Coot *Fulica cristata***

Maintaining a captive breeding population of this species was considered of medium priority in the 1999 *International Species Action Plan Crested Coot *Fulica cristata** (Gomez 1999). The action plan required that a re-introduction programme following IUCN guidelines should be implemented in Spain between the Andalucía and Valencia Regions with a total of 50 pairs re-introduced. Re-introductions of Crested Coot have occurred in both the Andalucía and Valencia regions – the outcomes of these projects are unknown.

- **White-headed Duck *Oxyura leucocephala***

Re-establishment was recommended in the 2006 *International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala** (Hughes *et al.* 2006). The action plan recommended that the species should be re-introduced to formerly occupied sites, if IUCN criteria can be met. A number of re-introductions of this species have occurred with varying success. Projects in France, Hungary and Italy have failed to achieve self-sustaining populations. Of the two known projects occurring in Spain, one is reported to have established a self-sustaining population, of over 1,200 birds.

- **Maccoa Duck *Oxyura maccoa***

Re-establishment was recommended in the 2007 *International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa** (Abebe *et al.* 2006) for suitable sites in southern Tanzania. This measure was considered of medium

importance for the conservation of this species. No known re-establishment projects have been implemented for the Maccoa Duck.

▪ **Corn Crane *Crex crex***

Re-establishment was recommended in the 1995 *UK Biodiversity Action Plan – Corn Crane *Crex crex** (UKBAP 1995b) as a long-term conservation measure to re-establish the species in parts of its former range in the United Kingdom. A project to re-introduce Corn Crane in England began in 2000 and is ongoing – 291 birds were released between 2002 and 2006 and breeding has been reported.

*Waterbird conservation initiatives requiring re-establishment*

Re-establishment can be a recommendation of a variety of conservation initiatives including national and international action plans, international conventions and agreements, and conservation assessment and management plans. Of the 59 initiatives reviewed for this report, 15 had provisions on re-establishment:

1. Action Plan for the Dalmatian Pelican (*Pelecanus crispus*) in Europe (Crivelli 1996).
2. Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) and Action Plan (2005-2008).
3. Central Asian Flyway Action Plan for the Conservation of Migratory Waterbirds and their Habitats.
4. Convention on Migratory Species (CMS).
5. Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention).
6. Cranes - Status survey and conservation action plan (Meine & Archibald 1996).
7. Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
8. European Species Action Plan Ferruginous Duck *Aythya nyroca* (Callaghan 1997).
9. International Action Plan for the Lesser White-fronted Goose *Anser erythropus* (Madsen 1996).
10. International Single Species Action Plan for the Conservation of the White-headed Duck *Oxyura leucocephala* (Hughes *et al.* 2006).
11. International Single Species Action Plan for the Conservation of the Maccoa Duck *Oxyura maccoa* (Abebe *et al.* 2007).
12. International Species Action Plan Crested Coot *Fulica cristata* (Gomez 1999).
13. Pan-European Biological and Landscape Diversity Strategy.
14. Penguin conservation assessment and management plan (CAMP): report from the workshop held 8-9 September 1996, Cape Town, South Africa (Ellis *et al.* 1998).
15. UK Biodiversity Action Plan – Corn Crane *Crex crex* (UKBAP 1995b).

The recommendations in the ISSAPs included in this list differed widely in the level of detail given about the recommended re-establishments. Some discussed a wide range of requirements, such as the maintenance of genetically variable captive populations and the formation of expert advisory groups, while others said little more than that re-establishments should be attempted in previously occupied areas if IUCN criteria can be met. Standardising re-establishment recommendations in future action plans should be considered.

### *Meta-database of re-establishment projects*

The AEWA re-establishment database is a potentially web-accessible central data repository for information about re-establishments of waterbird species covered by AEWA. The AEWA re-establishment database currently incorporates relevant information on species, Range States, conservation initiatives, re-establishment projects, references, re-establishment contacts, and the data collected as part of the questionnaire review regarding IUCN re-introduction guidelines. The database also includes links to other species information databases.

### *Assessment of existing waterbird re-establishment projects against IUCN guidelines*

The compliance of re-establishment projects to IUCN guidelines was found to vary between 23% for a White-headed Duck re-introduction in Hungary and 88% for a Corn Crake re-introduction in the United Kingdom. Of the 10 projects assessed by questionnaire, three were deemed successful based on a variety of criteria: the re-introduction of Corn Crake in the United Kingdom, the re-introduction of White Stork in the Netherlands, and the re-introduction of White-headed Duck in mainland Spain. These three projects received IUCN compliance scores of 88%, 61% and 71%, respectively. The seven projects deemed unsuccessful all received IUCN compliance scores of 61% or less with the exception of the re-introduction of Lesser White-fronted Geese, which scored 66%. When compliance scores were compared with success ratings, there was a positive relationship between IUCN compliance and success. This relationship did not achieve statistical significance but approached significance, and if additional data were included the relationship was significant. Thus, projects that show greater compliance to IUCN re-introduction guidelines seem to achieve higher levels of success.

### *Progress in implementing re-establishment projects*

Re-establishment projects have been implemented for four of the five species for which re-establishment has been recommended in an ISSAP. The only species where re-establishment has not been implemented despite a recommendation is the Maccoa Duck.

Of the remaining 230 waterbird species covered by AEWA, re-establishment projects have been conducted for four threatened species and five non-threatened species. Thus, re-establishments have been conducted for 33% of the threatened species and for 3% of the non-threatened species covered by AEWA.

### *Improving the effectiveness of re-establishment as a conservation measure*

A number of factors were identified as relating to success. In the questionnaire survey, practitioners most commonly identified pre-release acclimatization of released birds and quality of habitat as key factors influencing success. Further assessment of questionnaire results relating compliance to IUCN guidelines and success, revealed a number of factors common to successful projects but uncommon to unsuccessful projects: long-term financial support, long-term political support and the identification of both short and long-term success indicators.

Considering both the factors identified by re-introduction practitioners and the factors linked to success in the questionnaire assessment, the following activities are considered especially crucial to waterbird re-establishment success:

- Completion of a comprehensive feasibility study.
- Pre-release acclimatization of birds to their release area.
- Good quality habitat with the original causes of decline eliminated or reduced.
- Long-term financial and political support.
- Identification of short and long-term indicators of success.

*Recommendations and improvements needed*

In order to improve the success of re-establishment as a conservation tool for waterbird species this report recommends that:

1. Re-establishment projects are conducted in strict accordance with the *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995).
2. The *IUCN Guidelines for Re-introductions* (IUCN/SSC RSG 1995) are adapted for waterbird species and supplemented with checklists of activities for practitioners to complete.
3. The IUCN/SSC Re-introduction Specialist Group (IUCN/SSC RSG) is consulted prior to any re-establishment project to provide best practice guidance, expertise and a list of relevant contacts for the species to be re-established. Consultations should be made before a feasibility study or any planning has been initiated.
4. Re-establishment projects are conducted by groups of organisations and experts with diverse skills bases. Collaboration will bring a number of significant advantages: enhanced expertise, transfer of skills, shared responsibility, shared accountability and increased funding opportunities.
5. Networks or groups of experts with knowledge relevant to re-establishments of a specific species are assembled to act as advisory groups for re-establishment projects of the relevant species. These should be assembled for those species for which re-establishment has been recommended and for those species for which re-establishment projects are currently occurring or being planned. It may be appropriate for these species-specific groups to be formed within the IUCN/SSC RSG.
6. During pre-project activities, particular attention is paid to the following:
  - Completing a comprehensive feasibility study, comprising an assessment against IUCN re-introduction criteria, a review of historic status, an assessment of the species critical needs, a scientific assessment of habitat suitability of the release site, and a Population and Habitat Viability Analysis to determine the number of birds that need to be released to establish a sustainable population.
  - Securing long-term financial and political support.
7. During re-introduction activities, particular attention is paid to the following:
  - Ensuring birds are acclimatized to their release area prior to release.
  - Ensuring a sufficient amount of good quality habitat is available where the original causes of decline have been eliminated or sufficiently reduced.
  - Identifying short and long-term indicators of success.

8. AEWA National Focus Points maintain a national register of re-establishment projects occurring or planned to occur wholly or in part within their Ranges States. This recommendation is in line with paragraph 2.4 of the AEWA Action Plan requiring Contracting Parties to “inform the Agreement secretariat, in advance, of all re-establishment programmes for populations listed in Table 1.”
9. All re-establishment projects are described to the IUCN/SSC RSG. A reporting structure should be developed to encourage practitioners to provide detailed information about each project stage. The IUCN/SSC RSG should make this information widely available and accessible.
10. The AEWA re-establishment database is maintained with up to date information, on re-establishment projects and recommendations, supplied by Contracting Parties as per recommendation 8 of this report.
11. A standard set of evaluation criteria for waterbird re-establishment projects is developed by the AEWA Technical Committee in liaison and consultation with appropriate experts and reported to AEWA Contracting Parties as soon as is possible, as well as being included within the next, triennial update of this review (for the fifth Meeting of Parties in 2011).

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## Appendices

### Appendix 1. Conservation initiatives reviewed

**Table A1. List of conservation initiatives reviewed for provisions on re-establishment.**

No.	Conservation initiative
1	Action Plan for the Conservation of Bird Species Listed in Annex II of the Protocol Concerning SPAs and Biological Diversity in the Mediterranean
2	Action Plan for the Corn Crake <i>Crex crex</i> in Europe
3	Action Plan for the Dalmatian Pelican <i>Pelecanus crispus</i> in Europe
4	Action Plan for the Pygmy Cormorant <i>Phalacrocorax pygmeus</i> in Europe
5	Action Plan for the White-headed Duck <i>Oxyura leucocephala</i> in Europe
6	African Convention on the Conservation of Nature and Natural Resources (1968)
7	African Convention on the Conservation of Nature and Natural Resources (not yet entered into force)
8	Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) and Action Plan (2005-2008)
9	Central Asian Flyway (CAF) Action Plan
10	Conservation action plans for the Black Crowned Crane <i>Balearica pavonina</i> and Black Stork <i>Ciconia nigra</i> in Africa
11	Conservation Assessment and Management Plan for Southern African Seabirds
12	Convention on Biological Diversity (CBD)
13	Convention on Migratory Species (CMS)
14	Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)
15	Cranes - Status survey and conservation action plan
16	Directive 79/409/EEC on the conservation of wild birds
17	Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment
18	Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
19	Ducks, Geese, Swans and Screamers: An Action Plan for the Conservation of Anseriformes (Second draft)
20	European Species Action Plan Ferruginous Duck <i>Aythya nyroca</i>
21	European Species Action Plan Steller's Eider <i>Polysticta stelleri</i>
22	European Union Species Action Plan Bittern <i>Botaurus stellaris</i>
23	Grebes - Status survey and conservation action plan
24	Grebes: a global action plan for their conservation
25	Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> International Conservation Plan
26	International (East Atlantic) Action Plan Roseate Tern <i>Sterna dougallii</i>
27	International Action Plan for Audouin's Gull <i>Larus audouinii</i>
28	International Action Plan for the Lesser White-fronted Goose <i>Anser erythropus</i>
29	International Action Plan for the Marbled Teal <i>Marmaronetta angustirostris</i>
30	International Action Plan for the Red-breasted Goose <i>Branta ruficollis</i>
31	International Action Plan for the Slender-billed Curlew <i>Numenius tenuirostris</i>
32	International Maccoa Duck <i>Oxyura maccoa</i> Action Plan
33	International Single Species Action Plan for the Conservation of the Sociable Lapwing <i>Vanellus gregarius</i>
34	International Single Species Action Plan for the Conservation of the Black-winged Pratincole <i>Glareola nordmanni</i>
35	International Single Species Action Plan for the Conservation of the Great Snipe <i>Gallinago media</i>
36	International Single Species Action Plan for the Conservation of the Ferruginous Duck <i>Aythya nyroca</i>
37	International Single Species Action Plan for the Conservation of the White-headed Duck <i>Oxyura leucocephala</i>
38	International Single Species Action Plan for the Conservation of the Corn Crake <i>Crex crex</i>
39	International Single Species Action Plan for the Conservation of the Northern Bald Ibis <i>Geronticus eremita</i>
40	International Single Species Action Plan for the Conservation of the Light-bellied Brent Goose (East Canadian High Arctic population) <i>Branta bernicla hrota</i>
41	International Single Species Action Plan for the Conservation of the Maccoa Duck <i>Oxyura maccoa</i>
42	International Single Species Action Plan for the Conservation of the Lesser Flamingo <i>Phoenicopterus minor</i> (Second draft)
43	International Single Species Action Plan for Western Palearctic Population of Lesser White-fronted Goose <i>Anser erythropus</i>
44	International Species Action Plan Crested Coot <i>Fulica cristata</i>
45	Kyiv Resolution on Biodiversity
46	Memorandum of Understanding concerning Conservation Measures for the Siberian Crane <i>Grus leucogeranus</i>

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<b>No.</b>	<b>Conservation initiative</b>
47	National Action Plan for the Lesser White-fronted Goose (Greece)
48	National Action Plan for the Pygmy Cormorant <i>Phalacrocorax pygmaeus</i> (Greece)
49	Pan-European Biological and Landscape Diversity Strategy (PEBLDS)
50	Penguin conservation assessment and management plan (CAMP): report from the workshop held 8-9 September 1996, Cape Town, South Africa
51	Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African region (PPAWFEA)
52	Protocol concerning specially protected areas and biological diversity in the Mediterranean
53	Ramsar Convention on Wetlands (Ramsar)
54	Species Action Plan for the Mediterranean Shag <i>Phalacrocorax aristotelis desmarestii</i> in Europe
55	UK Biodiversity Action Plan - Bittern <i>Botaurus stellaris</i>
56	UK Biodiversity Action Plan - Common Scoter <i>Melanitta nigra</i>
57	UK Biodiversity Action Plan - Corn Crake <i>Crex crex</i>
58	UK Biodiversity Action Plan - Red-necked Phalarope <i>Phalaropus lobatus</i>
59	UK Biodiversity Action Plan - Roseate Tern <i>Sterna dougallii</i>

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## Appendix 2. Completed re-establishment questionnaires

**Figure A2-1. Re-establishment questionnaire for a Corn Crane re-introduction project in the United Kingdom.**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)



1 PROJECT INFORMATION		Answers
<a href="#">1-1</a>	Species (provide common and scientific names)	Corncrake ( <i>Crex crex</i> )
<a href="#">1-2</a>	Country	England
<a href="#">1-3</a>	Organisation(s) involved in the project	RSPB, Whipsnade Wild Animal Park (Zoological Society of
<a href="#">1-4</a>	Address	RSPB, The Lodge, Sandy, Beds. SG19 2DL
<a href="#">1-5</a>	Telephone number (include international code)	+44 (0)1767 680551
<a href="#">1-6</a>	Fax number (include international code)	+44 (0)1767 692365
<a href="#">1-7</a>	Email address	andy.evans@rspb.org.uk
<a href="#">1-8</a>	Was the re-establishment project part of a conservation strategy?	Yes
<a href="#">1-9</a>	If yes, please provide details	Recovery of the UK population. Range expansion in accordance with UK BAP target. See <a href="http://www.rspb.org.uk/ourwork/conservation/species/casestudies/corncrake.asp">http://www.rspb.org.uk/ourwork/conservation/species/casestudies/corncrake.asp</a> for more information

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
<a href="#">2-1</a>	Was a feasibility study carried out?	Yes	Evaluation of potential release sites, modelling of population response (donor and reintroduced populations) carried out in 2001. Trial release of radio-tagged juveniles in 2002.
<a href="#">2-2</a>	Was the project assessed against IUCN re-introduction criteria?	Yes	
<a href="#">2-3</a>	Was a review of historic status conducted?	Yes	See Green, RE & Gibbons, DW 2000. The status of the Corncrake <i>Crex crex</i> in Britain in 1998. <i>Bird Study</i> 47: 129-137.
<a href="#">2-4</a>	Were the species' critical needs determined?	Yes	Sympathetic management (especially later cutting) of agricultural grasslands. Green, RE & Stowe, TJ 1993. The decline of the Corncrake in Britain and Ireland in relation to habitat change. <i>Journal of Applied Ecology</i> 30: 689-695.
<a href="#">2-5</a>	Was an assessment made of the taxonomic status of individuals to be re-introduced?		
<a href="#">2-6</a>	Was a Population and Habitat Viability Analysis conducted?		
<b>Previous re-introductions</b>			
<a href="#">2-7</a>	Was a review of re-introductions for similar species conducted?	No	Unaware of any re-introductions of migrant crakes
<b>Choice of release site and type</b>			
<a href="#">2-8</a>	Was the release site within the historic range of the species?	Yes	See Holloway, S 1996. <i>The Historical Atlas of Breeding Birds in Britain and Ireland 1875-1900</i> . London: T & AD Poyser.
<a href="#">2-9</a>	Was the release site in the core or at the periphery of the historic range of the species?	Core	
<a href="#">2-10</a>	Did the release area have assured, long-term protection?	Yes	RSPB Reserve at core and NE WES scheme grasslands elsewhere
<b>Evaluation of re-introduction site</b>			
<a href="#">2-11</a>	Was the habitat suitability of the release site assessed through scientific investigation?	Yes	Extent of suitable habitat (tall grassland >15 cm, May-August) mapped. Mowing dates of hay fields measured.
<a href="#">2-12</a>	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	Extent of tall, late mown grassland sufficient for >30 pairs, based upon densities elsewhere in range.
<a href="#">2-13</a>	Were the causes of decline identified?	Yes	Earlier cutting of grass, switch from hay to silage, edge to centre mowing patterns see Green, RE, Tyler, GA, Stowe, TJ & Newton, AV 1997. A simulation model of the effect of mowing of agricultural grassland on the breeding success of the Corncrake ( <i>Crex crex</i> ). <i>Journal of Zoology</i> , London 243: 81-115.
<a href="#">2-13-1</a>	If yes, please indicate the top three causes of decline	1. Habitat Loss 2. Accidental mortality 3.	Loss hay meadows and early & late cover Destruction of nests & chicks during crop harvesting

2-14	Were the causes of decline eliminated or reduced to a sufficient level?	Eliminated	Reserve management sympathetic to needs of corncrake
2-15	Was a habitat restoration programme initiated before re-introduction?	No	Not required
<b>Availability of suitable release stock</b>			
2-16	Was a review of potential release stock conducted?	Yes	Pre-existing captive stock of Polish origin in Germany evaluated. Prosepects of establishing a new captive stock from wild-caught birds from Poland or Scotland also evaluated.
2-17	Was the stock used captive or wild?	Other	Some breeding stock from pre-existing captive stock from Germany, others from chicks taken from the wild in Scotland and Poland in 2005. All released birds are captive-bred.
2-18	If wild stock was used, was the effect on the wild source population assessed?	Yes	Impact on local, national and regional populations of taking 15 second brood chicks from Coll, Argyll assessed by population modelling, using data on population size and demographic rates. Adult males taken from Poland were from areas due to be moved early in the season, so mortality and failure to breed very likely.
2-19	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?		Soundly managed, but with small number of founders. Hence, new bloodlines introduced from other captive sources and wild-caught Polish and Scottish birds.
2-20	Was stock available on a regular and predictable basis?	Yes	
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	Yes	
2-22	Was there long-term political support for the project?	Yes	
2-23	Was the duration of the project predicted?	Yes	5-year period planned with evaluation of possible continuation in 2007.
	2-23-1 If yes, what duration was predicted?	4 - 5 years	
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	Costs to nature conservation agencies assessed. No significant costs or impacts to local communities.
2-25	Was an assessment made of the attitudes of local people?	Yes	Only for Scottish donor site
2-26	Were local communities supportive of the re-introduction project?	Yes	
2-27	Was a communication and education programme undertaken?	Yes	Project explained to Landowners and farmers on the Nene Washes by local RSPB staff
2-28	Was the country's re-introduction policy consulted?	Yes	
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	

3 PLANNING, PREPARATION AND RELEASE STAGES		Answers	Comments
3-1	List the organisations which were consulted about the re-introduction project.	UK Corncrake BAP Steering Group, English Nature, Scottish Natural Heritage, Yorkshire Wildlife Trust	
3-2	Was a multidisciplinary team of experts established?	Yes	
3-3	Were short-term success indicators identified?	Yes	indicators included; successful establishment of captive populations in the UK, successful captive breeding to produce 50-100 juveniles for release per year for 5 years, return of released birds in the year after release, successful breeding in the wild
3-4	Were long-term success indicators identified?	Yes	Establishment of a wild population of >30 pairs
3-5	Was the release stock genetically screened?	Yes	
3-6	Was the release stock screened for disease?	Yes	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?	Indigenous	
3-8	Was the health of the release stock monitored before release?	Yes	
3-9	Was veterinary support available?	Yes	
3-10	Was a release strategy prepared?	Yes	
3-11	Was there a public awareness programme associated with the project?	Yes	Information to local farmers and landowners- not general public
3-12	Was there local community involvement?	No	
3-13	Year of start of planning.	2000	
3-14	Year of start of re-introduction.	2002	
3-15	Year of finish of re-introduction.	On going	
3-16	Year of finish of project.	On going	

3-17	How many releases were undertaken?	every year 2002-2006	Ongoing in 2007
3-18	How many birds were released in total?	291	2002-2006 total
3-18-1	What proportion were juveniles?	91 - 100%	
3-18-2	What proportion were adults?	0 - 10%	
3-18-3	What proportion were males?	Don't know	
3-18-4	What proportion were females?	Don't know	
3-19	Were habitat-enhancement and restoration measures undertaken?	Yes	Delayed mowing and grazing of release areas and areas to which breeding birds returned to enhance habitat and improve breeding success.
3-20	Was the release stock from a similar habitat to the release site?	Yes	n/a released birds are all captive bred
3-21	Were birds acclimatised to local conditions before release?	Yes	
3-22	Was the re-establishment a hard or soft release?	Soft	Chicks acclimatised to wild insects in pens at release site for 20-25 days but not fed after release.
3-23	Were there any human interventions, e.g. supplemental feeding?	No	Fed before release but not afterwards
3-24	What proportion of birds were known / thought to survive?	81 - 90%	Survival of radio-tagged sample until autumn migration
3-25	Have re-introduced birds bred successfully in the wild?	To some extent	
3-26	What is the estimated cost of the project (please indicate currency)?	30,000 p.a.	GBP

4 POST-RELEASE ACTIVITIES		Answers	Comments
4-1	Was there post-release monitoring?	Yes	
4-1-1	If yes, what form did the monitoring take?	Yes	
	a. Abundance	No	
	b. Productivity (breeding success)	Yes	Juvenile survival monitored by radio-tagging a sample. Survival to adulthood monitored by recapture.
	c. Survival	Yes	
	d. Immigration and emigration (movements)	Yes	Please state.
	e. Other		
4-1-2	If yes, how long was monitoring conducted for?		Up to migration for radio-tracking (<1 month). Whole of each breeding season for counts.
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	Yes	
4-2-1	If yes, was the project considered cost-effective?	Partly	
4-2-2	If yes, was the project considered a re-introduction success?	Partly	
4-3	Please explain what criteria were used to determine success.		Ultimately success will be a population of >30 pairs maintained without further releases. Intermediate criteria are successful return of birds from overwinter migration to Africa and breeding in the wild. Both achieved.
4-4	Was information collected on causes of mortality in released birds?	Yes	
4-5	Did habitat protection measures continue after re-introduction?	Yes	
4-6	Were public relation activities continued after re-introduction?	Yes	
4-7	Were the results published in popular literature?	Yes	
4-8	Were the results published in scientific literature?	No	
4-8-1	If yes, please provide references		

**Figure A2-2. Re-establishment questionnaire for a Ferruginous Duck re-introduction project in Spain.**

AEWA re-establishment questionnaire




**Questions**

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)

1 PROJECT INFORMATION		Answers
<a href="#">1-1</a>	Species (provide common and scientific names)	Ferruginous Duck ( <i>Aythya nyroca</i> )
<a href="#">1-2</a>	Country	Spain
<a href="#">1-3</a>	Organisation(s) involved in the project	Donana National Park, as part of the Ministry of Environment
<a href="#">1-4</a>	Address	
<a href="#">1-5</a>	Telephone number (include international code)	
<a href="#">1-6</a>	Fax number (include international code)	
<a href="#">1-7</a>	Email address	
<a href="#">1-8</a>	Was the re-establishment project part of a conservation strategy?	
<a href="#">1-9</a>	If yes, please provide details	

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
<a href="#">2-1</a>	Was a feasibility study carried out?		
<a href="#">2-2</a>	Was the project assessed against IUCN re-introduction criteria?		
<a href="#">2-3</a>	Was a review of historic status conducted?	Partly	There is little information on the Spanish population which is almost extinct, but the biology of the species is well known.
<a href="#">2-4</a>	Were the species' critical needs determined?	Yes	See above.
<a href="#">2-5</a>	Was an assessment made of the taxonomic status of individuals to be re-introduced?		
<a href="#">2-6</a>	Was a Population and Habitat Viability Analysis conducted?	No	
<b>Previous re-introductions</b>			
<a href="#">2-7</a>	Was a review of re-introductions for similar species conducted?		
<b>Choice of release site and type</b>			
<a href="#">2-8</a>	Was the release site within the historic range of the species?	Yes	At the beginning of the century, the Ferruginous Duck population around Donana was estimated to be 500 pairs, it probably was the biggest in Spain.
<a href="#">2-9</a>	Was the release site in the core or at the periphery of the historic range of the species?		
<a href="#">2-10</a>	Did the release area have assured, long-term protection?		
<b>Evaluation of re-introduction site</b>			
<a href="#">2-11</a>	Was the habitat suitability of the release site assessed through scientific investigation?		Please explain.
<a href="#">2-12</a>	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	The release area is located within the Donana National Park.
<a href="#">2-13</a>	Were the causes of decline identified?	Yes	The main causes of decline were hunting and habitat degradation.
<a href="#">2-13-1</a>	If yes, please indicate the top three causes of decline	1. Harvesting 2. Habitat Loss 3.	
<a href="#">2-14</a>	Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	The release area has been rehabilitated and hunting is banned.
<a href="#">2-15</a>	Was a habitat restoration programme initiated before re-introduction?		Please explain.
<b>Availability of suitable release stock</b>			
<a href="#">2-16</a>	Was a review of potential release stock conducted?		
<a href="#">2-17</a>	Was the stock used captive or wild?	Captive	If Other, please explain.
<a href="#">2-18</a>	If wild stock was used, was the effect on the wild source population assessed?	Not applicable	
<a href="#">2-19</a>	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?		
<a href="#">2-20</a>	Was stock available on a regular and predictable basis?		
<b>Socio-economic and legal requirements</b>			
<a href="#">2-21</a>	Was there long-term financial support for the project?	No	
<a href="#">2-22</a>	Was there long-term political support for the project?	No	
<a href="#">2-23</a>	Was the duration of the project predicted?	No	
<a href="#">2-23-1</a>	If yes, what duration was predicted?		

2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?		
2-25	Was an assessment made of the attitudes of local people?		
2-26	Were local communities supportive of the re-introduction project?	No	
2-27	Was a communication and education programme undertaken?	No	
2-28	Was the country's re-introduction policy consulted?		
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	Work was carried out by the Donana National Park, dependent of the Ministry of the Environment.

**3 PLANNING, PREPARATION AND RELEASE STAGES**      **Answers**      **Comments**

3-1	List the organisations which were consulted about the re-introduction project.		
3-2	Was a multidisciplinary team of experts established?		
3-3	Were short-term success indicators identified?	No	Please explain.
3-4	Were long-term success indicators identified?	No	Please explain.
3-5	Was the release stock genetically screened?	No	No genetic screening of release stock was done.
3-6	Was the release stock screened for disease?	Partly	Captive breeding was done under strict veterinary control.
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?		
3-8	Was the health of the release stock monitored before release?		
3-9	Was veterinary support available?		
3-10	Was a release strategy prepared?		
3-11	Was there a public awareness programme associated with the project?		
3-12	Was there local community involvement?		
3-13	Year of start of planning.		
3-14	Year of start of re-introduction.		
3-15	Year of finish of re-introduction.		
3-16	Year of finish of project.		
3-17	How many releases were undertaken?		
3-18	How many birds were released in total?	100	Population is thought to be between 20 and 25 pairs.
3-18-1	What proportion were juveniles?		
3-18-2	What proportion were adults?		
3-18-3	What proportion were males?		
3-18-4	What proportion were females?		
3-19	Were habitat-enhancement and restoration measures undertaken?		Please explain.
3-20	Was the release stock from a similar habitat to the release site?	Yes	Captive breeding was carried out within the release area.
3-21	Were birds acclimatised to local conditions before release?	Yes	Captive breeding was carried out within the release area.
3-22	Was the re-establishment a hard or soft release?	Hard	Since birds were born near the release area, they were released right after they completed their development.
3-23	Were there any human interventions, e.g. supplemental feeding?	No	
3-24	What proportion of birds were known / thought to survive?		
3-25	Have re-introduced birds bred successfully in the wild?	To great extent	20 pairs in the last years.
3-26	What is the estimated cost of the project (please indicate currency)?		Indicate currency here.

**4 POST-RELEASE ACTIVITIES**      **Answers**      **Comments**

4-1	Was there post-release monitoring?	Yes	Release area is regularly monitored.
4-1-1	If yes, what form did the monitoring take?		
	a. Abundance		
	b. Productivity (breeding success)		
	c. Survival		
	d. Immigration and emigration (movements)		
	e. Other		Please state.
4-1-2	If yes, how long was monitoring conducted for?		
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	No	It was not thought to be necessary. Costs were low since means and facilities used were already in place.
4-2-1	If yes, was the project considered cost-effective?		
4-2-2	If yes, was the project considered a re-introduction success?		

4-3 Please explain what criteria were used to determine success.

Re-introduced birds bred in the wild: at least 20 pairs in the last years.  
 Key factors in success:  
 Habitat regeneration  
 Good acclimatization of birds before release

- 4-4 Was information collected on causes of mortality in released birds?
- 4-5 Did habitat protection measures continue after re-introduction?
- 4-6 Were public relation activities continued after re-introduction?
- 4-7 Were the results published in popular literature?
- 4-8 Were the results published in scientific literature?

No  
 Yes  
 No  
 No

Dead birds were not collected. Only 3 birds were known to have died.

4-8-1 If yes, please provide references

**Figure A2-3. Re-establishment questionnaire for a White Stork re-introduction project in the Netherlands.**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)





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**1 PROJECT INFORMATION** **Answers**

<a href="#">1-1</a> Species (provide common and scientific names)	white stork (Ciconia Ciconia)
<a href="#">1-2</a> Country	The Netherlands
<a href="#">1-3</a> Organisation(s) involved in the project	Vogeltrekstation Arnhem Holland, Vogelbescherming Nederland
<a href="#">1-4</a> Address	Annemieke Enters & Wim van Nee, Topaasdreef 25, NL-7828 AG
<a href="#">1-5</a> Telephone number (include international code)	
<a href="#">1-6</a> Fax number (include international code)	
<a href="#">1-7</a> Email address	wanciconia@hetnet.nl
<a href="#">1-8</a> Was the re-establishment project part of a conservation strategy?	No
<a href="#">1-9</a> If yes, please provide details	

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**2 PRE-PROJECT ACTIVITIES** **Answers**   **Comments**

**Feasibility study and background research**

<a href="#">2-1</a> Was a feasibility study carried out?	Partly	
<a href="#">2-2</a> Was the project assessed against IUCN re-introduction criteria?	Don't know	
<a href="#">2-3</a> Was a review of historic status conducted?	Yes	
<a href="#">2-4</a> Were the species' critical needs determined?	Partly	
<a href="#">2-5</a> Was an assessment made of the taxonomic status of individuals to be re-introduced?	Don't know	
<a href="#">2-6</a> Was a Population and Habitat Viability Analysis conducted?	Don't know	

**Previous re-introductions**

<a href="#">2-7</a> Was a review of re-introductions for similar species conducted?	Yes	
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**Choice of release site and type**

<a href="#">2-8</a> Was the release site within the historic range of the species?	Yes	
<a href="#">2-9</a> Was the release site in the core or at the periphery of the historic range of the species?	Not applicable	
<a href="#">2-10</a> Did the release area have assured, long-term protection?	No	

**Evaluation of re-introduction site**

<a href="#">2-11</a> Was the habitat suitability of the release site assessed through scientific investigation?	Don't know	Please explain.
<a href="#">2-12</a> Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Partly	Please explain.
<a href="#">2-13</a> Were the causes of decline identified?	Yes	
<a href="#">2-13-1</a> If yes, please indicate the top three causes of decline	1. Pollution 2. Habitat Loss 3. Human disturbance	
<a href="#">2-14</a> Were the causes of decline eliminated or reduced to a sufficient level?	Reduced somewhat	Pollution is reduced since 1969. There still is habitat loss, but people are also improving the environment. We think that human disturbance will never disappear in a crowded country like the Netherlands.
<a href="#">2-15</a> Was a habitat restoration programme initiated before re-introduction?	No	Please explain.

**Availability of suitable release stock**

<a href="#">2-16</a> Was a review of potential release stock conducted?	Yes	
<a href="#">2-17</a> Was the stock used captive or wild?	Captive	If Other, please explain.
<a href="#">2-18</a> If wild stock was used, was the effect on the wild source population assessed?	Not applicable	
<a href="#">2-19</a> If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	No	In 1969 most storks were from the East and Middle European population
<a href="#">2-20</a> Was stock available on a regular and predictable basis?	Yes	

**Socio-economic and legal requirements**

<a href="#">2-21</a> Was there long-term financial support for the project?	Partly	
<a href="#">2-22</a> Was there long-term political support for the project?	Don't know	
<a href="#">2-23</a> Was the duration of the project predicted?	No	
<a href="#">2-23-1</a> If yes, what duration was predicted?		
<a href="#">2-24</a> Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	as far as we know
<a href="#">2-25</a> Was an assessment made of the attitudes of local people?	No	as far as we know

2-26	Were local communities supportive of the re-introduction project?	partly	
2-27	Was a communication and education programme undertaken?	Partly	
2-28	Was the country's re-introduction policy consulted?	Yes	as far as we know
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	

**3 PLANNING, PREPARATION AND RELEASE STAGES**

	Answers	Comments
3-1	List the organisations which were consulted about the re-introduction project.	don't know
3-2	Was a multidisciplinary team of experts established?	Yes No professionals but a team of people who learned by experience and working with heart and soul.
3-3	Were short-term success indicators identified?	Don't know Please explain.
3-4	Were long-term success indicators identified?	Yes Please explain.
3-5	Was the release stock genetically screened?	No
3-6	Was the release stock screened for disease?	No
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?	Not applicable
3-8	Was the health of the release stock monitored before release?	Don't know
3-9	Was veterinary support available?	Somewhat
3-10	Was a release strategy prepared?	Yes
3-11	Was there a public awareness programme associated with the project?	Partly
3-12	Was there local community involvement?	Yes
3-13	Year of start of planning.	1969
3-14	Year of start of re-introduction.	1969
3-15	Year of finish of re-introduction.	2000
3-16	Year of finish of project.	On going
3-17	How many releases were undertaken?	
3-18	How many birds were released in total?	It is not possible to give an accurate answer. During a long period, storks were born in captivity and released a few years later.
3-18-1	What proportion were juveniles?	0 - 10%
3-18-2	What proportion were adults?	81 - 90%
3-18-3	What proportion were males?	Don't know
3-18-4	What proportion were females?	Don't know
3-19	Were habitat-enhancement and restoration measures undertaken?	Yes
3-20	Was the release stock from a similar habitat to the release site?	Partly
3-21	Were birds acclimatised to local conditions before release?	Yes
3-22	Was the re-establishment a hard or soft release?	Soft
3-23	Were there any human interventions, e.g. supplemental feeding?	Yes
3-24	What proportion of birds were known / thought to survive?	11 - 20%
3-25	Have re-introduced birds bred successfully in the wild?	To great extent
3-26	What is the estimated cost of the project (please indicate currency)?	not possible to give an answer

**4 POST-RELEASE ACTIVITIES**

	Answers	Comments
4-1	Was there post-release monitoring?	Yes Please explain.
4-1-1	If yes, what form did the monitoring take?	
a. Abundance	Yes	
b. Productivity (breeding success)	Yes	
c. Survival	Yes	
d. Immigration and emigration (movements)	Yes	wintering
e. Other		
4-1-2	If yes, how long was monitoring conducted for?	2+ years from 1969 and still going on!
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	Partly
4-2-1	If yes, was the project considered cost-effective?	Don't know
4-2-2	If yes, was the project considered a re-introduction success?	Yes

4-3 Please explain what criteria were used to determine success.

Storks are back in the Dutch landscape. In 1969 storks became extinct in the Netherlands, in 2007 there were more than 600 pairs!

4-4 Was information collected on causes of mortality in released birds?

Yes

4-5 Did habitat protection measures continue after re-introduction?

Yes

4-6 Were public relation activities continued after re-introduction?

Yes

4-7 Were the results published in popular literature?

Yes

4-8 Were the results published in scientific literature?

Partly

4-8-1 If yes, please provide references

**Figure A2-4. Re-establishment questionnaire for a Greylag Goose re-introduction project in Belgium.**

AEWA re-establishment questionnaire

**Questions**

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)




1 PROJECT INFORMATION		Answers
1-1	Species (provide common and scientific names)	Greylag Goose ( <i>Anser anser</i> )
1-2	Country	Belgium
1-3	Organisation(s) involved in the project	Zwin Biological Station
1-4	Address	
1-5	Telephone number (include international code)	
1-6	Fax number (include international code)	
1-7	Email address	
1-8	Was the re-establishment project part of a conservation strategy?	Yes
1-9	If yes, please provide details	The (private) organiser refers to the disappearance of the species in Belgium (and in large parts of Europe) as a result of excessive hunting.

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
2-1	Was a feasibility study carried out?	No	
2-2	Was the project assessed against IUCN re-introduction criteria?	No	
2-3	Was a review of historic status conducted?	Partly	
2-4	Were the species' critical needs determined?	Don't know	
2-5	Was an assessment made of the taxonomic status of individuals to be re-introduced?	Don't know	
2-6	Was a Population and Habitat Viability Analysis conducted?	Don't know	
<b>Previous re-introductions</b>			
2-7	Was a review of re-introductions for similar species conducted?	Partly	the organiser refers to similar projects in other countries
<b>Choice of release site and type</b>			
2-8	Was the release site within the historic range of the species?	Yes	
2-9	Was the release site in the core or at the periphery of the historic range of the species?	Don't know	
2-10	Did the release area have assured, long-term protection?	Yes	nature reserve of 1500 ha
<b>Evaluation of re-introduction site</b>			
2-11	Was the habitat suitability of the release site assessed through scientific investigation?	No	Please explain.
2-12	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	outside the nature reserve, large polder areas with grasslands and arable fields were present
2-13	Were the causes of decline identified?	Partly	
2-13-1	If yes, please indicate the top three causes of decline	1. Harvesting 2. Human disturbance 3.	
2-14	Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	Adjusted hunting legislation, more protected areas
2-15	Was a habitat restoration programme initiated before re-introduction?	No	Please explain.
<b>Availability of suitable release stock</b>			
2-16	Was a review of potential release stock conducted?	Don't know	
2-17	Was the stock used captive or wild?	Don't know	If Other, please explain.
2-18	If wild stock was used, was the effect on the wild source population assessed?	Don't know	
2-19	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	No	The introduced birds came from Russia and belonged to another subspecies <i>A. anser rubirostris</i>
2-20	Was stock available on a regular and predictable basis?	Don't know	
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	Don't know	probably yes, it was a private initiative
2-22	Was there long-term political support for the project?	Don't know	
2-23	Was the duration of the project predicted?	Don't know	
2-23-1	If yes, what duration was predicted?		
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	
2-25	Was an assessment made of the attitudes of local people?	No	
2-26	Were local communities supportive of the re-introduction project?	Don't know	
2-27	Was a communication and education programme undertaken?	Partly	
2-28	Was the country's re-introduction policy consulted?	No	there was no clear policy at that time
2-29	Did the project have permission of the relevant government agencies and land-owners?	Don't know	

3 PLANNING, PREPARATION AND RELEASE STAGES		Answers	Comments
3-1	List the organisations which were consulted about the re-introduction project.		
3-2	Was a multidisciplinary team of experts established?	No	
3-3	Were short-term success indicators identified?	Don't know	Please explain.
3-4	Were long-term success indicators identified?	Don't know	Please explain.
3-5	Was the release stock genetically screened?	No	
3-6	Was the release stock screened for disease?	Don't know	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?	Don't know	
3-8	Was the health of the release stock monitored before release?	Don't know	
3-9	Was veterinary support available?	Don't know	
3-10	Was a release strategy prepared?	Yes	
3-11	Was there a public awareness programme associated with the project?	Don't know	probably as a part of a more general nature education programme in the nature reserve
3-12	Was there local community involvement?	Don't know	
3-13	Year of start of planning.	1950	
3-14	Year of start of re-introduction.	1955	first breeding in 1956
3-15	Year of finish of re-introduction.	1955	
3-16	Year of finish of project.	On going	Birds still breeding freely in the area, part of strongly increased population of the species in Belgium by now
3-17	How many releases were undertaken?	1	
3-18	How many birds were released in total?	3 pairs	
3-18-1	What proportion were juveniles?		
3-18-2	What proportion were adults?	91 - 100%	
3-18-3	What proportion were males?	41 - 50%	
3-18-4	What proportion were females?	41 - 50%	
3-19	Were habitat-enhancement and restoration measures undertaken?	No	Please explain.
3-20	Was the release stock from a similar habitat to the release site?	Don't know	probably not (see origin of introduced birds)
3-21	Were birds acclimatised to local conditions before release?	Don't know	
3-22	Was the re-establishment a hard or soft release?	Soft	
3-23	Were there any human interventions, e.g. supplemental feeding?		the birds were first released in a park environment with captive wwaterbirds
3-24	What proportion of birds were known / thought to survive?	Don't know	
3-25	Have re-introduced birds bred successfully in the wild?	To great extent	regional breeding population estimated at > 700 pairs in 2002, out of a total Belgian population of 1000-1300 pairs Indicate currency here.
3-26	What is the estimated cost of the project (please indicate currency)?		
4 POST-RELEASE ACTIVITIES		Answers	Comments
4-1	Was there post-release monitoring?	Yes	The population was monitored intensively for at least 8 years
4-1-1	If yes, what form did the monitoring take?		
a.	Abundance	Yes	
b.	Productivity (breeding success)	Yes	
c.	Survival	Yes	
d.	Immigration and emigration (movements)	Yes	
e.	Other	Yes	habitat use - feeding ecology
4-1-2	If yes, how long was monitoring conducted for?	2+ years	
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	Partly	
4-2-1	If yes, was the project considered cost-effective?	Don't know	
4-2-2	If yes, was the project considered a re-introduction success?	Yes	
4-3	Please explain what criteria were used to determine success.		population growth; exchange with wild (migrating) populations
4-4	Was information collected on causes of mortality in released birds?	Don't know	
4-5	Did habitat protection measures continue after re-introduction?	Yes	
4-6	Were public relation activities continued after re-introduction?	Yes	

- 4-7 Were the results published in popular literature?
- 4-8 Were the results published in scientific literature?

Yes	
Yes	

4-8-1 If yes, please provide references

De Scheidauer T. R., 1968. La population expérimentale d'oies cendrées dans la réserve du Zwin. Ardea 56: 228-247 (with english summary).

**Figure A2-5. Re-establishment questionnaire for a White-headed Duck re-introduction project in Hungary.**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)




1 PROJECT INFORMATION		Answers
<a href="#">1-1</a>	Species (provide common and scientific names)	White-headed Duck ( <i>Oxyura leucocephala</i> )
<a href="#">1-2</a>	Country	Hungary
<a href="#">1-3</a>	Organisation(s) involved in the project	Hungarian Ornithological Society, Wildfowl & Wetlands Trust
<a href="#">1-4</a>	Address	MME, Koltu u. 21, 1121 Budapest, Hungary
<a href="#">1-5</a>	Telephone number (include international code)	
<a href="#">1-6</a>	Fax number (include international code)	
<a href="#">1-7</a>	Email address	<a href="mailto:mme@mme.hu">mme@mme.hu</a>
<a href="#">1-8</a>	Was the re-establishment project part of a conservation strategy?	
<a href="#">1-9</a>	If yes, please provide details	

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
<a href="#">2-1</a>	Was a feasibility study carried out?	No	
<a href="#">2-2</a>	Was the project assessed against IUCN re-introduction criteria?	No	The criteria didn't exist at that time.
<a href="#">2-3</a>	Was a review of historic status conducted?	Yes	
<a href="#">2-4</a>	Were the species' critical needs determined?	No	
<a href="#">2-5</a>	Was an assessment made of the taxonomic status of individuals to be re-introduced?	No	
<a href="#">2-6</a>	Was a Population and Habitat Viability Analysis conducted?	No	
<b>Previous re-introductions</b>			
<a href="#">2-7</a>	Was a review of re-introductions for similar species conducted?	No	
<b>Choice of release site and type</b>			
<a href="#">2-8</a>	Was the release site within the historic range of the species?	Yes	
<a href="#">2-9</a>	Was the release site in the core or at the periphery of the historic range of the species?	Periphery	
<a href="#">2-10</a>	Did the release area have assured, long-term protection?	Yes	
<b>Evaluation of re-introduction site</b>			
<a href="#">2-11</a>	Was the habitat suitability of the release site assessed through scientific investigation?	No	Please explain.
<a href="#">2-12</a>	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Partly	Please explain.
<a href="#">2-13</a>	Were the causes of decline identified?	Partly	
<a href="#">2-13-1</a>	If yes, please indicate the top three causes of decline	1. Changes in dynamics 2. Habitat Loss 3. Harvesting	
<a href="#">2-14</a>	Were the causes of decline eliminated or reduced to a sufficient level?	Not reduced	Please explain.
<a href="#">2-15</a>	Was a habitat restoration programme initiated before re-introduction?	No	Please explain.
<b>Availability of suitable release stock</b>			
<a href="#">2-16</a>	Was a review of potential release stock conducted?	Partly	
<a href="#">2-17</a>	Was the stock used captive or wild?	Captive	If Other, please explain.
<a href="#">2-18</a>	If wild stock was used, was the effect on the wild source population assessed?		
<a href="#">2-19</a>	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	No	
<a href="#">2-20</a>	Was stock available on a regular and predictable basis?	Partly	
<b>Socio-economic and legal requirements</b>			
<a href="#">2-21</a>	Was there long-term financial support for the project?	Don't know	
<a href="#">2-22</a>	Was there long-term political support for the project?	Yes	
<a href="#">2-23</a>	Was the duration of the project predicted?	No	
<a href="#">2-23-1</a>	If yes, what duration was predicted?		
<a href="#">2-24</a>	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	
<a href="#">2-25</a>	Was an assessment made of the attitudes of local people?	No	
<a href="#">2-26</a>	Were local communities supportive of the re-introduction project?	Don't know	
<a href="#">2-27</a>	Was a communication and education programme undertaken?	No	
<a href="#">2-28</a>	Was the country's re-introduction policy consulted?	Not applicable	

2-29 Did the project have permission of the relevant government agencies and land-owners?	Yes	
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**3 PLANNING, PREPARATION AND RELEASE STAGES**      **Answers**      **Comments**

3-1 List the organisations which were consulted about the re-introduction project.		
3-2 Was a multidisciplinary team of experts established?		
3-3 Were short-term success indicators identified?	No	Please explain.
3-4 Were long-term success indicators identified?	No	Please explain.
3-5 Was the release stock genetically screened?	No	
3-6 Was the release stock screened for disease?	Partly	
3-7 If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?		
3-8 Was the health of the release stock monitored before release?	No	
3-9 Was veterinary support available?	Somewhat	
3-10 Was a release strategy prepared?	No	
3-11 Was there a public awareness programme associated with the project?	No	
3-12 Was there local community involvement?	No	
3-13 Year of start of planning.	1982	
3-14 Year of start of re-introduction.	1986	
3-15 Year of finish of re-introduction.	1988	
3-16 Year of finish of project.	1992	
3-17 How many releases were undertaken?	4	
3-18 How many birds were released in total?	> 52	No information available on 4th release in 91
3-18-1 What proportion were juveniles?	11 - 20%	
3-18-2 What proportion were adults?	81 - 90%	
3-18-3 What proportion were males?	41 - 50%	
3-18-4 What proportion were females?	51 - 60%	
3-19 Were habitat-enhancement and restoration measures undertaken?	No	Please explain.
3-20 Was the release stock from a similar habitat to the release site?	No	
3-21 Were birds acclimatised to local conditions before release?	No	
3-22 Was the re-establishment a hard or soft release?	Hard	
3-23 Were there any human interventions, e.g. supplemental feeding?	No	
3-24 What proportion of birds were known / thought to survive?	0 - 10%	
3-25 Have re-introduced birds bred successfully in the wild?	No	
3-26 What is the estimated cost of the project (please indicate currency)?		Indicate currency here.

**4 POST-RELEASE ACTIVITIES**      **Answers**      **Comments**

4-1 Was there post-release monitoring?	No	Please explain.
4-1-1 If yes, what form did the monitoring take?		
a. Abundance		
b. Productivity (breeding success)		
c. Survival		
d. Immigration and emigration (movements)		
e. Other		Please state.
4-1-2 If yes, how long was monitoring conducted for?		
4-2 Was there an evaluation of cost-effectiveness and/or re-introduction success?	Partly	
4-2-1 If yes, was the project considered cost-effective?	Don't know	
4-2-2 If yes, was the project considered a re-introduction success?	No	
4-3 Please explain what criteria were used to determine success.		
4-4 Was information collected on causes of mortality in released birds?	No	
4-5 Did habitat protection measures continue after re-introduction?	Yes	
4-6 Were public relation activities continued after re-introduction?	No	
4-7 Were the results published in popular literature?	Don't know	
4-8 Were the results published in scientific literature?	Yes	

4-8-1 If yes, please provide references

See references provided by the Hungarian Ornithological Society + the followings: Bajomi, B. 2003a. Factors influencing the success of reintroduction programs: a comparative analysis of the reintroduction of the white-headed duck and the beaver in Hungary [dissertation, in Hungarian]. Available at [http://www.greenfo.hu/adatbazisok/szakdolgozatok\\_item.php?szd=2](http://www.greenfo.hu/adatbazisok/szakdolgozatok_item.php?szd=2), 79 p. Faculty of Genetics, University Eötvös Lóránd (ELTE), Budapest.

Bajomi, B. 2003b. White-headed duck breeding and reintroduction programme in Hungary, 1982-1992. Threatened Waterfowl Specialist Group News:73-76.

Bajomi, B. 2004. Lessons learned from the unsuccessful reintroduction of the White-headed Duck (*Oxyura leucocephala*) [in Hungarian]. Természetvédelmi Közlemények 11:429-437

**Figure A2-6. Re-establishment questionnaire for a White-headed Duck re-introduction project in Spain (mainland).**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)




1 PROJECT INFORMATION		Answers
1-1	Species (provide common and scientific names)	White-headed Duck ( <i>Oxyura leucocephala</i> )
1-2	Country	Spain
1-3	Organisation(s) involved in the project	Donana National Park, as part of the Ministry of Environment
1-4	Address	
1-5	Telephone number (include international code)	
1-6	Fax number (include international code)	
1-7	Email address	
1-8	Was the re-establishment project part of a conservation strategy?	Yes
1-9	If yes, please provide details	A plan for the recovery of the White-headed Duck which included captive-breeding and re-introduction was drawn.

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
2-1	Was a feasibility study carried out?		
2-2	Was the project assessed against IUCN re-introduction criteria?	Yes	
2-3	Was a review of historic status conducted?	Yes	
2-4	Were the species' critical needs determined?		
2-5	Was an assessment made of the taxonomic status of individuals to be re-introduced?		
2-6	Was a Population and Habitat Viability Analysis conducted?	No	
<b>Previous re-introductions</b>			
2-7	Was a review of re-introductions for similar species conducted?		
<b>Choice of release site and type</b>			
2-8	Was the release site within the historic range of the species?	Yes	All releases of captive-bred birds were done in areas where the species was present in the past, or where it became extinct in the last 25 years.
2-9	Was the release site in the core or at the periphery of the historic range of the species?		
2-10	Did the release area have assured, long-term protection?	Yes	Most of the lakes and wetlands where the species is found are protected.
<b>Evaluation of re-introduction site</b>			
2-11	Was the habitat suitability of the release site assessed through scientific investigation?		Please explain.
2-12	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	Please explain.
2-13	Were the causes of decline identified?	Yes	
2-13-1	If yes, please indicate the top three causes of decline	1. Harvesting 2. Habitat Loss 3. Natural disasters	Prolonged drought periods
2-14	Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	Hunting is now controlled and a good part of the habitat has been regenerated. Droughts are still a problem.
2-15	Was a habitat restoration programme initiated before re-introduction?	Yes	Please explain.
<b>Availability of suitable release stock</b>			
2-16	Was a review of potential release stock conducted?		
2-17	Was the stock used captive or wild?		If Other, please explain.
2-18	If wild stock was used, was the effect on the wild source population assessed?		
2-19	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?		
2-20	Was stock available on a regular and predictable basis?		
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	Yes	A plan for the recovery of the White-headed Duck which included captive-breeding and re-introduction was drawn. Donana National Park, as part of the Ministry of the Environment, run with the costs of the project.
2-22	Was there long-term political support for the project?	Yes	See above.
2-23	Was the duration of the project predicted?	Don't know	
2-23-1	If yes, what duration was predicted?		
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?		

2-25	Was an assessment made of the attitudes of local people?		
2-26	Were local communities supportive of the re-introduction project?	No	
2-27	Was a communication and education programme undertaken?	No	
2-28	Was the country's re-introduction policy consulted?		
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	

**3 PLANNING, PREPARATION AND RELEASE STAGES**      **Answers**      **Comments**

3-1	List the organisations which were consulted about the re-introduction project.		
3-2	Was a multidisciplinary team of experts established?	Yes	Please explain.
3-3	Were short-term success indicators identified?	Yes	The main objective of the recovery plan was to reach a stable population of more than 1000 birds.
3-4	Were long-term success indicators identified?		No genetic screening was carried out on any of the released birds.
3-5	Was the release stock genetically screened?	No	Captive breeding was done under strict veterinary control.
3-6	Was the release stock screened for disease?	Partly	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?		
3-8	Was the health of the release stock monitored before release?		
3-9	Was veterinary support available?		
3-10	Was a release strategy prepared?		
3-11	Was there a public awareness programme associated with the project?		
3-12	Was there local community involvement?		
3-13	Year of start of planning.		
3-14	Year of start of re-introduction.		
3-15	Year of finish of re-introduction.		
3-16	Year of finish of project.		
3-17	How many releases were undertaken?		
3-18	How many birds were released in total?		
3-18-1	What proportion were juveniles?	91 - 100%	All birds were about 2 months old.
3-18-2	What proportion were adults?		
3-18-3	What proportion were males?		
3-18-4	What proportion were females?		
3-19	Were habitat-enhancement and restoration measures undertaken?		Please explain.
3-20	Was the release stock from a similar habitat to the release site?		
3-21	Were birds acclimatised to local conditions before release?	Partly	They were in most of all releases. These were carried out next to the breeding centre within Donana National Park.
3-22	Was the re-establishment a hard or soft release?	Hard	
3-23	Were there any human interventions, e.g. supplemental feeding?	No	
3-24	What proportion of birds were known / thought to survive?	61 - 70%	20-30% disappeared in the first year
3-25	Have re-introduced birds bred successfully in the wild?	To some extent	At least 40 pairs bred.
3-26	What is the estimated cost of the project (please indicate currency)?		Indicate currency here.

**4 POST-RELEASE ACTIVITIES**      **Answers**      **Comments**

4-1	Was there post-release monitoring?	Yes	For at least three years, an intensive monitoring of the released birds took place. All birds were ringed. After that volunteers and amateurs have constantly provided data on released birds.
4-1-1	If yes, what form did the monitoring take?		
a.	Abundance		
b.	Productivity (breeding success)		
c.	Survival		
d.	Immigration and emigration (movements)		
e.	Other		Please state.
4-1-2	If yes, how long was monitoring conducted for?	2+ years	
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	Yes	
4-2-1	If yes, was the project considered cost-effective?		
4-2-2	If yes, was the project considered a re-introduction success?	Yes	

4-3 Please explain what criteria were used to determine success.

The wild population is now estimated to be about 1200 birds. There is no need for further re-introductions.  
 Key factors in the success:  
 1 The age of the released birds  
 2 Captive breeding taking place within the release area  
 3 The general state of released birds (healthy and untamed)

- 4-4 Was information collected on causes of mortality in released birds?
- 4-5 Did habitat protection measures continue after re-introduction?
- 4-6 Were public relation activities continued after re-introduction?
- 4-7 Were the results published in popular literature?
- 4-8 Were the results published in scientific literature?

No	Only 3 birds were found dead.
Yes	Not only continued, but increased.
No	
Yes	

4-8-1 If yes, please provide references

Only one article was published. Information concerning this re-introduction is kept in the Ministry of the Environment.

**Figure A2-7. Re-establishment questionnaire for a White-headed Duck re-introduction project in Spain (Majorca).**

AEWA re-establishment questionnaire

**Questions**

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)




1 PROJECT INFORMATION		Answers
1-1	Species (provide common and scientific names)	White-headed Duck ( <i>Oxyura leucocephala</i> )
1-2	Country	Spain
1-3	Organisation(s) involved in the project	Donana National Park and S'Albufera National Park, both
1-4	Address	
1-5	Telephone number (include international code)	
1-6	Fax number (include international code)	
1-7	Email address	
1-8	Was the re-establishment project part of a conservation strategy?	
1-9	If yes, please provide details	

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
2-1	Was a feasibility study carried out?		
2-2	Was the project assessed against IUCN re-introduction criteria?		
2-3	Was a review of historic status conducted?	Yes	
2-4	Were the species' critical needs determined?	Yes	
2-5	Was an assessment made of the taxonomic status of individuals to be re-introduced?		
2-6	Was a Population and Habitat Viability Analysis conducted?	No	
<b>Previous re-introductions</b>			
2-7	Was a review of re-introductions for similar species conducted?		
<b>Choice of release site and type</b>			
2-8	Was the release site within the historic range of the species?	Yes	It's believed that it was in the past.
2-9	Was the release site in the core or at the periphery of the historic range of the species?		
2-10	Did the release area have assured, long-term protection?	Yes	The release site is fully protected.
<b>Evaluation of re-introduction site</b>			
2-11	Was the habitat suitability of the release site assessed through scientific investigation?		Please explain.
2-12	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	Please explain.
2-13	Were the causes of decline identified?	Yes	
2-13-1	If yes, please indicate the top three causes of decline	1. Harvesting 2. 3.	Hunting was the main problem. It has been banned.
2-14	Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	Hunting banned.
2-15	Was a habitat restoration programme initiated before re-introduction?		Please explain.
<b>Availability of suitable release stock</b>			
2-16	Was a review of potential release stock conducted?		
2-17	Was the stock used captive or wild?		If Other, please explain.
2-18	If wild stock was used, was the effect on the wild source population assessed?		
2-19	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?		
2-20	Was stock available on a regular and predictable basis?		
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	No	
2-22	Was there long-term political support for the project?	No	
2-23	Was the duration of the project predicted?		
2-23-1	If yes, what duration was predicted?		
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?		
2-25	Was an assessment made of the attitudes of local people?		
2-26	Were local communities supportive of the re-introduction project?	No	
2-27	Was a communication and education programme undertaken?	Yes	
2-28	Was the country's re-introduction policy consulted?		

2-29 Did the project have permission of the relevant government agencies and land-owners?	Yes	Work was split between Donana National Park and S'Albufera National Park, both dependent on the central and autonomous government.
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3 PLANNING, PREPARATION AND RELEASE STAGES	Answers	Comments
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<p>3-1 List the organisations which were consulted about the re-introduction project.</p>		
<p>3-2 Was a multidisciplinary team of experts established?                  3-3 Were short-term success indicators identified?                  3-4 Were long-term success indicators identified?                  3-5 Was the release stock genetically screened?</p>	<p>No</p>	<p>Please explain.                  Please explain.                  There was no genetic screening of release stock.</p>
<p>3-6 Was the release stock screened for disease?                  3-7 If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?                  3-8 Was the health of the release stock monitored before release?                  3-9 Was veterinary support available?                  3-10 Was a release strategy prepared?                  3-11 Was there a public awareness programme associated with the project?</p>	<p>Partly</p>	<p>Captive breeding was carried out under strict veterinary control.</p>
<p>3-12 Was there local community involvement?</p>		
<p>3-13 Year of start of planning.                  3-14 Year of start of re-introduction.                  3-15 Year of finish of re-introduction.                  3-16 Year of finish of project.</p>	<p>1992                  On going                  On going</p>	
<p>3-17 How many releases were undertaken?                  3-18 How many birds were released in total?                  3-18-1 What proportion were juveniles?                  3-18-2 What proportion were adults?                  3-18-3 What proportion were males?                  3-18-4 What proportion were females?</p>	<p>2                  56</p>	
<p>3-19 Were habitat-enhancement and restoration measures undertaken?                  3-20 Was the release stock from a similar habitat to the release site?                  3-21 Were birds acclimatised to local conditions before release?</p>	<p>Partly</p>	<p>Please explain.                  Not in the first release which was a complete failure. In the second attempt, birds were acclimatised for 2 months before being released and it was very successful.</p>
<p>3-22 Was the re-establishment a hard or soft release?                  3-23 Were there any human interventions, e.g. supplemental feeding?</p>	<p>Mixture                  Yes</p>	<p>First release was hard; second was soft.                  During the second release when birds were acclimatised, they were given supplementary feeding.</p>
<p>3-24 What proportion of birds were known / thought to survive?                  3-25 Have re-introduced birds bred successfully in the wild?                  3-26 What is the estimated cost of the project (please indicate currency)?</p>	<p>Don't know                  To some extent</p>	<p>No dead birds were found. In the first release, 32/40 birds disappeared; in the second release, 6/16 disappeared.                  At least one female raised 2 chicks.                  Indicate currency here.</p>

4 POST-RELEASE ACTIVITIES	Answers	Comments
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<p>4-1 Was there post-release monitoring?</p>	Yes	The release area is monitored regularly
<p>4-1-1 If yes, what form did the monitoring take?                  a. Abundance                  b. Productivity (breeding success)                  c. Survival                  d. Immigration and emigration (movements)                  e. Other</p>		Please state.
<p>4-1-2 If yes, how long was monitoring conducted for?</p>		
<p>4-2 Was there an evaluation of cost-effectiveness and/or re-introduction success?                  4-2-1 If yes, was the project considered cost-effective?                  4-2-2 If yes, was the project considered a re-introduction success?</p>		

4-3 Please explain what criteria were used to determine success.

Key factors affecting success:  
 1 The failure of the first release was due to lack of acclimatization of birds  
 2 The second release was successful but the number of released birds was very small - only 16  
 3 Release area is well protected and guarded

- 4-4 Was information collected on causes of mortality in released birds?
- 4-5 Did habitat protection measures continue after re-introduction?
- 4-6 Were public relation activities continued after re-introduction?
- 4-7 Were the results published in popular literature?
- 4-8 Were the results published in scientific literature?

No	
Yes	
Yes	
Yes	

4-8-1 If yes, please provide references

**Figure A2-8. Re-establishment questionnaire for a White Stork re-introduction project in Belgium.**

AEWA re-establishment questionnaire			
Questions			
<a href="#">Instructions</a>	<a href="#">Questions</a>	<a href="#">Explanatory notes</a>	<a href="#">Contact details</a>
<b>1 PROJECT INFORMATION</b>		<b>Answers</b>	
<a href="#">1-1</a>	Species (provide common and scientific names)	White Stork <i>Ciconia ciconia</i>	
<a href="#">1-2</a>	Country	Belgium	
<a href="#">1-3</a>	Organisation(s) involved in the project	Agentschap Natuur en Bos, Natuurpunt, provinciaal Natuurpark	
<a href="#">1-4</a>	Address	Natuurpunt Coxiestraat11 2800 Mechelen, Belgium	
<a href="#">1-5</a>	Telephone number (include international code)	+32 15 297249	
<a href="#">1-6</a>	Fax number (include international code)	+32 15 424921	
<a href="#">1-7</a>	Email address	<a href="mailto:wim.vandenbossche@natuurpunt.be">wim.vandenbossche@natuurpunt.be</a>	
<a href="#">1-8</a>	Was the re-establishment project part of a conservation strategy?	yes	
<a href="#">1-9</a>	If yes, please provide details	Reintroduction of White Stork true establishment of stork villages (cfr. Switzerland, The Netherlands). I was not involved in the reintroduction projects as such but am monitoring the breeding numbers and success since 1999.	
<b>2 PRE-PROJECT ACTIVITIES</b>		<b>Answers</b>	<b>Comments</b>
<b>Feasibility study and background research</b>			
<a href="#">2-1</a>	Was a feasibility study carried out?	no	
<a href="#">2-2</a>	Was the project assessed against IUCN re-introduction criteria?	partly	
<a href="#">2-3</a>	Was a review of historic status conducted?	yes	
<a href="#">2-4</a>	Were the species' critical needs determined?	yes	
<a href="#">2-5</a>	Was an assessment made of the taxonomic status of individuals to be re-introduced?	no	
<a href="#">2-6</a>	Was a Population and Habitat Viability Analysis conducted?	partly	for one of the stork villages (Mechelen)
<b>Previous re-introductions</b>			
<a href="#">2-7</a>	Was a review of re-introductions for similar species conducted?	no	
<b>Choice of release site and type</b>			
<a href="#">2-8</a>	Was the release site within the historic range of the species?	yes	
<a href="#">2-9</a>	Was the release site in the core or at the periphery of the historic range of the species?	periphery	
<a href="#">2-10</a>	Did the release area have assured, long-term protection?	yes	for part of the habitat
<b>Evaluation of re-introduction site</b>			
<a href="#">2-11</a>	Was the habitat suitability of the release site assessed through scientific investigation?	No	Please explain.
<a href="#">2-12</a>	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Partly	The species is using cultivated landscape during the breeding season so it is difficult to evaluate the long-term survival of the species
<a href="#">2-13</a>	Were the causes of decline identified?	yes	
<a href="#">2-13-1</a>	If yes, please indicate the top three causes of decline	1. Accidental mortality 2. Accidental mortality 3. Habitat Loss	large winter mortality in west Africa poaching/shooting of adult birds degradation of habitat in river valleys
<a href="#">2-14</a>	Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	winter mortality believed to be less, new additional wintergrounds are used (Spain)
<a href="#">2-15</a>	Was a habitat restoration programme initiated before re-introduction?	no	Please explain.
<b>Availability of suitable release stock</b>			
<a href="#">2-16</a>	Was a review of potential release stock conducted?	Partly	
<a href="#">2-17</a>	Was the stock used captive or wild?	captive	If Other, please explain.
<a href="#">2-18</a>	If wild stock was used, was the effect on the wild source population assessed?		
<a href="#">2-19</a>	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	No	
<a href="#">2-20</a>	Was stock available on a regular and predictable basis?	Yes	from other stork villages
<b>Socio-economic and legal requirements</b>			
<a href="#">2-21</a>	Was there long-term financial support for the project?	Partly	
<a href="#">2-22</a>	Was there long-term political support for the project?	Yes	
<a href="#">2-23</a>	Was the duration of the project predicted?	No	
<a href="#">2-23-1</a>	If yes, what duration was predicted?		
<a href="#">2-24</a>	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	Partly	for one of the stork villages (Mechelen)
<a href="#">2-25</a>	Was an assessment made of the attitudes of local people?	Partly	for one of the stork villages (Mechelen)

2-26	Were local communities supportive of the re-introduction project?	Yes	
2-27	Was a communication and education programme undertaken?	Yes	
2-28	Was the country's re-introduction policy consulted?	Not applicable	not existing at the start
2-29	Did the project have permission of the relevant government agencies and land-owners?	Partly	

3 PLANNING, PREPARATION AND RELEASE STAGES		Answers	Comments
3-1	List the organisations which were consulted about the re-introduction project.	Swiss, Dutch and French stork programs	
3-2	Was a multidisciplinary team of experts established?	No	
3-3	Were short-term success indicators identified?	No	Please explain.
3-4	Were long-term success indicators identified?	No	Please explain.
3-5	Was the release stock genetically screened?	No	
3-6	Was the release stock screened for disease?	Partly	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?	Indigenous	
3-8	Was the health of the release stock monitored before release?	Don't know	
3-9	Was veterinary support available?	Yes	
3-10	Was a release strategy prepared?	Partly	
3-11	Was there a public awareness programme associated with the project?	Yes	
3-12	Was there local community involvement?	Partly	for one of the stork villages (Mechelen)
3-13	Year of start of planning.	Unknown	
3-14	Year of start of re-introduction.	1957	1957 Zwin, 1986 Mechelen (Planck), 2000 (Ath)
3-15	Year of finish of re-introduction.	2000	
3-16	Year of finish of project.	On going	
3-17	How many releases were undertaken?	3 locations	
3-18	How many birds were released in total?	unknown but >150	
3-18-1	What proportion were juveniles?	Don't know	
3-18-2	What proportion were adults?	Don't know	
3-18-3	What proportion were males?	Don't know	
3-18-4	What proportion were females?	Don't know	
3-19	Were habitat-enhancement and restoration measures undertaken?	Partly	Very little on feeding habitat, some promotion for protection. More work is done on providing nesting platforms in potential habitat.
3-20	Was the release stock from a similar habitat to the release site?	Partly	
3-21	Were birds acclimatised to local conditions before release?	Yes	
3-22	Was the re-establishment a hard or soft release?	Mixture	more soft
3-23	Were there any human interventions, e.g. supplemental feeding?	Yes	
3-24	What proportion of birds were known / thought to survive?	Don't know	local survival > 50%
3-25	Have re-introduced birds bred successfully in the wild?	To great extent	
3-26	What is the estimated cost of the project (please indicate currency)?	unknown	Indicate currency here.

4 POST-RELEASE ACTIVITIES		Answers	Comments
4-1	Was there post-release monitoring?	Yes	Birds were mostly ringed, some with conventional transmitters. After establishment also with satellite transmitters
4-1-1	If yes, what form did the monitoring take?		
a.	Abundance	Yes	
b.	Productivity (breeding success)	Yes	
c.	Survival	Yes	
d.	Immigration and emigration (movements)	Yes	
e.	Other	Yes	migration (satellite tracking)
4-1-2	If yes, how long was monitoring conducted for?	2+ years	
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	No	
4-2-1	If yes, was the project considered cost-effective?		
4-2-2	If yes, was the project considered a re-introduction success?		
4-3	Please explain what criteria were used to determine success.		

- 4-4 Was information collected on causes of mortality in released birds?
- 4-5 Did habitat protection measures continue after re-introduction?
- 4-6 Were public relation activities continued after re-introduction?
- 4-7 Were the results published in popular literature?
- 4-8 Were the results published in scientific literature?

Partly	for one of the stork villages (Mechelen)
Partly	
Yes	
Yes	
No	

4-0-1 If yes, please provide references

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**Figure A2-9. Re-establishment questionnaire for a White-headed Duck re-introduction project in Italy.**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)





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**1 PROJECT INFORMATION** **Answers**

<a href="#">1-1</a> Species (provide common and scientific names)	White-headed Duck ( <i>Oxyura leucocephala</i> )	
<a href="#">1-2</a> Country	Italy	
<a href="#">1-3</a> Organisation(s) involved in the project	1) LIPU (Italian League Protection of Birds)	
<a href="#">1-4</a> Address	via Trento 49, 43100 Parma 2) Gargano National Park via S. Antonio Abate 121, 71037 Monte Sant'Angelo (FG)	
<a href="#">1-5</a> Telephone number (include international code)	(1) 0039-521273043, (2) 0039-884568911	
<a href="#">1-6</a> Fax number (include international code)	(1) 0039-521273419, (2) 0039-884561348	
<a href="#">1-7</a> Email address	marco.gustin@lipu.it, info@garogargano.it	
<a href="#">1-8</a> Was the re-establishment project part of a conservation strategy?	No	
<a href="#">1-9</a> If yes, please provide details		

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**2 PRE-PROJECT ACTIVITIES** **Answers**   **Comments**

**Feasibility study and background research**

<a href="#">2-1</a> Was a feasibility study carried out?	Yes	
<a href="#">2-2</a> Was the project assessed against IUCN re-introduction criteria?	Partly	
<a href="#">2-3</a> Was a review of historic status conducted?	Yes	
<a href="#">2-4</a> Were the species' critical needs determined?	Partly	
<a href="#">2-5</a> Was an assessment made of the taxonomic status of individuals to be re-introduced?	Yes	
<a href="#">2-6</a> Was a Population and Habitat Viability Analysis conducted?	Yes	Although based upon data from other geographical areas.

**Previous re-introductions**

<a href="#">2-7</a> Was a review of re-introductions for similar species conducted?	Partly	Within the feasibility study, success or failure causes of similar projects conducted in Spain and Hungary for White-headed Duck reintroduction, were analysed. Also the experiences in Sardinia and Corsica were considered.
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**Choice of release site and type**

<a href="#">2-8</a> Was the release site within the historic range of the species?	Yes	
<a href="#">2-9</a> Was the release site in the core or at the periphery of the historic range of the species?	Core	Considering the highly-fragmented historic distribution of this species in Italy, it's difficult to assess the position of the releasing sites. However, Italy is in a central position between Eastern and Western populations.
<a href="#">2-10</a> Did the release area have assured, long-term protection?	Yes	The release sites are included in the Gargano National Park

**Evaluation of re-introduction site**

<a href="#">2-11</a> Was the habitat suitability of the release site assessed through scientific investigation?	Yes	
<a href="#">2-12</a> Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	The release sites are about 500 ha but they are surrounded by a lot of smaller wetlands which should be enough to support a viable population.
<a href="#">2-13</a> Were the causes of decline identified?	Yes	
<a href="#">2-13-1</a> If yes, please indicate the top three causes of decline	1. Habitat Loss 2. Harvesting 3. Human disturbance	Illegal too
<a href="#">2-14</a> Were the causes of decline eliminated or reduced to a sufficient level?	Reduced sufficiently	Currently, poaching still exist but it is reducing
<a href="#">2-15</a> Was a habitat restoration programme initiated before re-introduction?	No	

**Availability of suitable release stock**

<a href="#">2-16</a> Was a review of potential release stock conducted?	Yes	
<a href="#">2-17</a> Was the stock used captive or wild?	Captive	
<a href="#">2-18</a> If wild stock was used, was the effect on the wild source population assessed?		
<a href="#">2-19</a> If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	Don't know	

2-20	Was stock available on a regular and predictable basis?	No	Due to problems in chick rearing (high mortality)
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	Yes	
2-22	Was there long-term political support for the project?	Partly	
2-23	Was the duration of the project predicted?	Yes	
2-23-1	If yes, what duration was predicted?	4 - 5 years	Only considering the period for the releases
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	
2-25	Was an assessment made of the attitudes of local people?	No	
2-26	Were local communities supportive of the re-introduction project?	Partly	
2-27	Was a communication and education programme undertaken?	Partly	Leaflets and posters were circulated to increase public awareness
2-28	Was the country's re-introduction policy consulted?	Yes	
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	

3 PLANNING, PREPARATION AND RELEASE STAGES	Answers	Comments
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3-1	List the organisations which were consulted about the re-introduction project.	Italian Wildlife Institute (INFS) - Ministry of Environment	
3-2	Was a multidisciplinary team of experts established?	Yes	
3-3	Were short-term success indicators identified?	Yes	
3-4	Were long-term success indicators identified?		
3-5	Was the release stock genetically screened?	No	
3-6	Was the release stock screened for disease?	Yes	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?		
3-8	Was the health of the release stock monitored before release?	Yes	
3-9	Was veterinary support available?	Yes	
3-10	Was a release strategy prepared?	Yes	
3-11	Was there a public awareness programme associated with the project?	Partly	see point 2-27
3-12	Was there local community involvement?	No	
3-13	Year of start of planning.	1998	the year is approximate
3-14	Year of start of re-introduction.	2002	first experimental release; the year is exact
3-15	Year of finish of re-introduction.	2002	
3-16	Year of finish of project.	2006	The project has been temporarily suspended in 2006, and is currently under revision. Low captive breeding success and high mortality of the re-introduced specimens forced to stop the releases pending assessment of failure causes.
3-17	How many releases were undertaken?	1	experimental release.
3-18	How many birds were released in total?	15	
3-18-1	What proportion were juveniles?		
3-18-2	What proportion were adults?		
3-18-3	What proportion were males?		
3-18-4	What proportion were females?		
3-19	Were habitat-enhancement and restoration measures undertaken?	No	
3-20	Was the release stock from a similar habitat to the release site?	No	it was a captive stock
3-21	Were birds acclimatised to local conditions before release?	Yes	Birds were put in outdoor aviaries before the release
3-22	Was the re-establishment a hard or soft release?	Soft	
3-23	Were there any human interventions, e.g. supplemental feeding?	No	
3-24	What proportion of birds were known / thought to survive?	0 - 10%	
3-25	Have re-introduced birds bred successfully in the wild?	No	
3-26	What is the estimated cost of the project (please indicate currency)?	about 500.000 euro	

4 POST-RELEASE ACTIVITIES	Answers	Comments
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4-1	Was there post-release monitoring?	Somewhat	
4-1-1	If yes, what form did the monitoring take?		
a.	Abundance	Yes	
b.	Productivity (breeding success)		
c.	Survival		

d. Immigration and emigration (movements)		
e. Other		
4-1-2 If yes, how long was monitoring conducted for?	3 - 6 months	
4-2 Was there an evaluation of cost-effectiveness and/or re-introduction success?		
4-2-1 If yes, was the project considered cost-effective?		
4-2-2 If yes, was the project considered a re-introduction success?		
4-3 Please explain what criteria were used to determine success.		
4-4 Was information collected on causes of mortality in released birds?	No	
4-5 Did habitat protection measures continue after re-introduction?	Yes	
4-6 Were public relation activities continued after re-introduction?	No	
4-7 Were the results published in popular literature?	No	
4-8 Were the results published in scientific literature?	No	
4-8-1 If yes, please provide references		

**Figure A2-10. Re-establishment questionnaire for a Lesser White-Fronted Goose re-introduction project in Finland.**

AEWA re-establishment questionnaire

Questions

[Instructions](#)   [Questions](#)   [Explanatory notes](#)   [Contact details](#)




1 PROJECT INFORMATION		Answers
1-1	Species (provide common and scientific names)	Lesser White fronted Goose, <i>Anser erythropus</i>
1-2	Country	Finland
1-3	Organisation(s) involved in the project	Ass. the Friends of the White fronted Goose
1-4	Address	c/o Dr. Antti Haapanen, Huhtasuontie 7, 00950 Helsinki Finland
1-5	Telephone number (include international code)	358 9 3253804
1-6	Fax number (include international code)	none
1-7	Email address	antti.haapanen@kolumbus.fi
1-8	Was the re-establishment project part of a conservation strategy?	Yes
1-9	If yes, please provide details	The aim of our association is to reintroduce the species as a Finnish breeding species. The project is at present in its preliminary phase. In coming future we hope to enter into real process.

2 PRE-PROJECT ACTIVITIES		Answers	Comments
<b>Feasibility study and background research</b>			
2-1	Was a feasibility study carried out?	Yes	The Swedish introduction serves as a feasibility study
2-2	Was the project assessed against IUCN re-introduction criteria?	Yes	
2-3	Was a review of historic status conducted?	Yes	
2-4	Were the species' critical needs determined?	Yes	
2-5	Was an assessment made of the taxonomic status of individuals to be re-introduced?	Yes	
2-6	Was a Population and Habitat Viability Analysis conducted?	Yes	
<b>Previous re-introductions</b>			
2-7	Was a review of re-introductions for similar species conducted?	Yes	
<b>Choice of release site and type</b>			
2-8	Was the release site within the historic range of the species?	Yes	
2-9	Was the release site in the core or at the periphery of the historic range of the species?		
2-10	Did the release area have assured, long-term protection?		
<b>Evaluation of re-introduction site</b>			
2-11	Was the habitat suitability of the release site assessed through scientific investigation?	Yes	Introductions are made in an area where there has existed a breeding population. We do not see any major changes in the breeding habitat quality.
2-12	Was there sufficient habitat at the release site to support a viable (self-sustaining) population in the long-term?	Yes	The whole northernmost subarctic/subalpine region and northernmost part of the boreal region forms an extensive habitat for the species.
2-13	Were the causes of decline identified?	Yes	overhunting, mostly during the migration and wintering
2-13-1	If yes, please indicate the top three causes of decline	1. Harvesting 2. Harvesting 3. Habitat Loss	
2-14	Were the causes of decline eliminated or reduced to a sufficient level?	Eliminated	The causes were eliminated by changing the migration route
2-15	Was a habitat restoration programme initiated before re-introduction?	Partly	In Sweden and Finland there has been extensive restoration of Baltic Sea coastal meadows.
<b>Availability of suitable release stock</b>			
2-16	Was a review of potential release stock conducted?	Yes	
2-17	Was the stock used captive or wild?	Captive	If Other, please explain.
2-18	If wild stock was used, was the effect on the wild source population assessed?	No	
2-19	If captive or artificially propagated stock was used, was it from a population which had been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology?	Yes	Yes. To our best knowledge.
2-20	Was stock available on a regular and predictable basis?	Yes	
<b>Socio-economic and legal requirements</b>			
2-21	Was there long-term financial support for the project?	Partly	No official support. The ass. is committed.

2-22	Was there long-term political support for the project?	Don't know	There is a local court decision in favour.
2-23	Was the duration of the project predicted?	Don't know	
2-23-1	If yes, what duration was predicted?		
2-24	Were socio-economic studies conducted to assess impacts, costs, and benefits of the re-establishment programme to local human populations?	No	
2-25	Was an assessment made of the attitudes of local people?	Partly	
2-26	Were local communities supportive of the re-introduction project?	Yes	
2-27	Was a communication and education programme undertaken?	No	
2-28	Was the country's re-introduction policy consulted?	Not applicable	It was tried. The Min. of Env. refused to cooperate
2-29	Did the project have permission of the relevant government agencies and land-owners?	Yes	The decision of the local court.

**3 PLANNING, PREPARATION AND RELEASE STAGES**      **Answers**      **Comments**

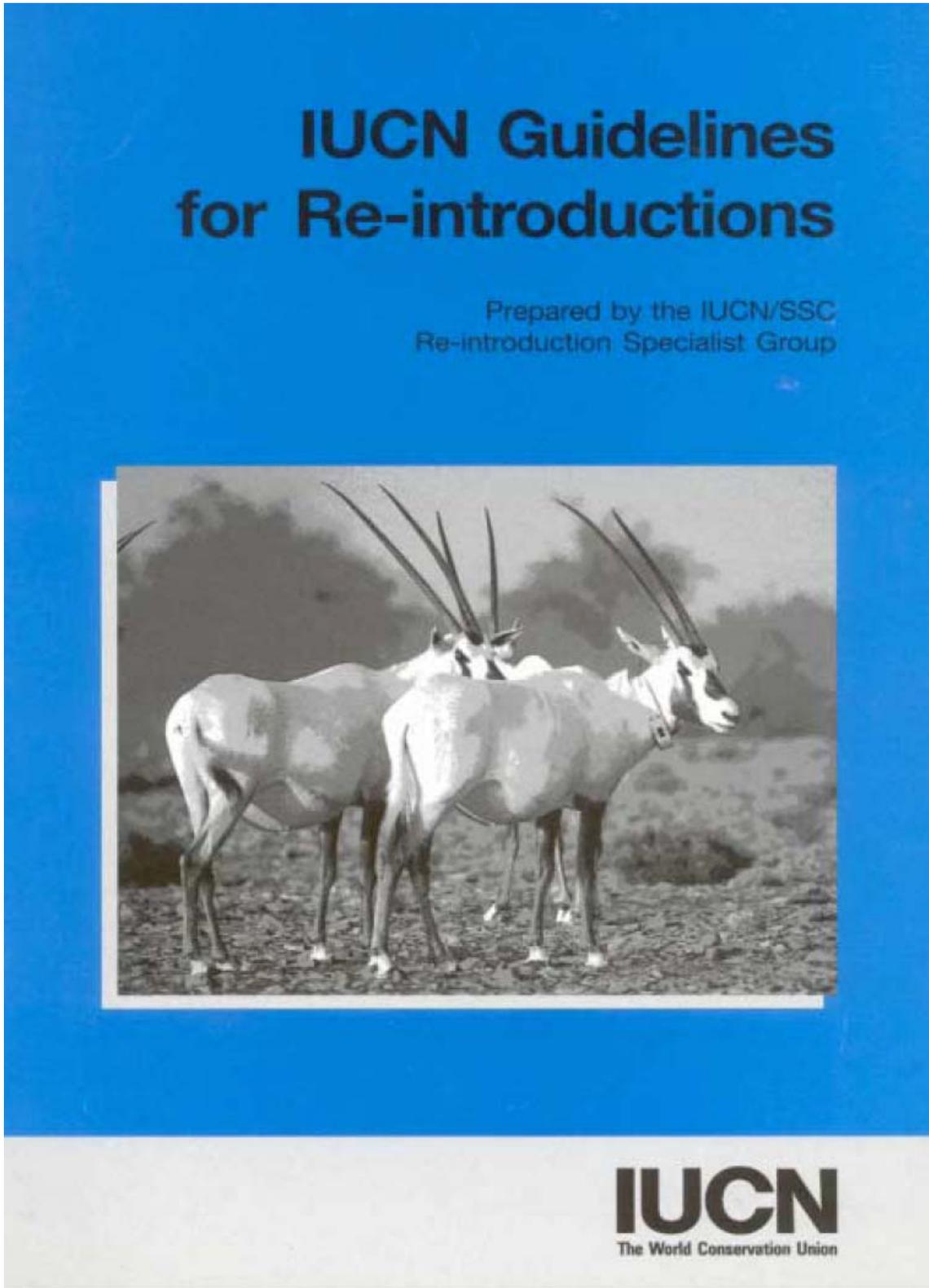
3-1	List the organisations which were consulted about the re-introduction project.	No one	
3-2	Was a multidisciplinary team of experts established?	No	
3-3	Were short-term success indicators identified?	Yes	Observations in the wintering site in Netherlands
3-4	Were long-term success indicators identified?	Yes	Breeding population in the Finnish Lapland
3-5	Was the release stock genetically screened?	Yes	
3-6	Was the release stock screened for disease?	Yes	
3-7	If wild stock was used, was it from an indigenous population, or from an already reintroduced one (was it a serial translocation)?		
3-8	Was the health of the release stock monitored before release?		
3-9	Was veterinary support available?		
3-10	Was a release strategy prepared?		
3-11	Was there a public awareness programme associated with the project?		
3-12	Was there local community involvement?		
3-13	Year of start of planning.	1999	
3-14	Year of start of re-introduction.	2004	
3-15	Year of finish of re-introduction.	Unknown	
3-16	Year of finish of project.	Unknown	
3-17	How many releases were undertaken?	information only for our own use	formation will be given on 3-17 and 3-18
3-18	How many birds were released in total?		
3-18-1	What proportion were juveniles?		
3-18-2	What proportion were adults?		
3-18-3	What proportion were males?		
3-18-4	What proportion were females?		
3-19	Were habitat-enhancement and restoration measures undertaken?	Partly	Habitat restoration has been made south from breeding area, but important resting sites during migration
3-20	Was the release stock from a similar habitat to the release site?	Don't know	
3-21	Were birds acclimatised to local conditions before release?	Yes	
3-22	Was the re-establishment a hard or soft release?	Don't know	
3-23	Were there any human interventions, e.g. supplemental feeding?	No	
3-24	What proportion of birds were known / thought to survive?	Don't know	
3-25	Have re-introduced birds bred successfully in the wild?	Don't know	The project is in its preliminary phase
3-26	What is the estimated cost of the project (please indicate currency)?	Not known	The project is based mostly on the voluntary support of the members

**4 POST-RELEASE ACTIVITIES**      **Answers**      **Comments**

4-1	Was there post-release monitoring?	Don't know	not a relevant question in this phase
4-1-1	If yes, what form did the monitoring take?		
a.	Abundance		
b.	Productivity (breeding success)		
c.	Survival		
d.	Immigration and emigration (movements)		
e.	Other		Please state.
4-1-2	If yes, how long was monitoring conducted for?		
4-2	Was there an evaluation of cost-effectiveness and/or re-introduction success?	No	
4-2-1	If yes, was the project considered cost-effective?		

4-2-2 If yes, was the project considered a re-introduction success?		
4-3 Please explain what criteria were used to determine success.	Not relevant now. The healthy breeding population	
4-4 Was information collected on causes of mortality in released birds?	No	We have not had enough money for relevant equipments such as radio tagging
4-5 Did habitat protection measures continue after re-introduction?	Yes	
4-6 Were public relation activities continued after re-introduction?	Yes	
4-7 Were the results published in popular literature?	Yes	preliminary results so far
4-8 Were the results published in scientific literature?	Yes	The birds were seen in late autumn 2004 and early winter in 2005. The scientific paper below gives not correct years although they refer these birds
4-8-1 If yes, please provide references	Koffijberg, K., Cottaar, F. & van der Jeugd, H. 2005: Pleisteerplaatsen van Dwerganzen Anser erythropus in Nederland.- Sovon-informatierapport 2005/06.	

**Appendix 3. IUCN Guidelines for Re-introductions**



The designation of geographical entities in this book, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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# IUCN Guidelines for Re-introductions

Prepared by the IUCN/SSC Re-introduction Specialist Group



## Acknowledgements

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**The African Wildlife Foundation (AWF)** supports the RSG, which works from AWF's Office of African Operations in Nairobi, Kenya.

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.

The Species and Ecosystems Programme seeks to enhance the conservation of species and ecosystems of conservation significance in Africa, and minimize the threats to in-situ conservation of Africa's biological diversity posed by inadequate support for resource management. AWF supports the work of the RSG as part of its Species and Ecosystems Programme, recognizing that the extreme vulnerability of small populations is a global conservation problem, and that lessons learned can be usefully shared between Africa and other continents.

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The OES has the principal responsibility for formulating and implementing U.S. policies for oceans, environmental, scientific, and technological aspects of U.S. relations with other governmental and multilateral institutions. The Bureau's activities cover a broad range of foreign policy issues relating to environment, pollution, tropical forests, biological diversity, wildlife, oceans policy, fisheries, global climate change, atmospheric ozone-depletion, space, and advanced technologies.

**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:  
<http://iucn.org/themes/ssc/pubs/policy/index-1.htm>

# IUCN/SSC Guidelines for Re-Introductions

**Prepared by the SSC Re-introduction Specialist Group**

**Approved by the 41st Meeting of the IUCN Council, Gland Switzerland, May 1995**

## INTRODUCTION

These policy guidelines have been drafted by the Re-introduction Specialist Group of the IUCN's Species Survival Commission (1), 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/SSC 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 "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 regards 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-introductions 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

**"Re-introduction"**: an attempt to establish a species **(2)** in an area which was once part of its historical range, but from which it has been extirpated or become extinct **(3)** ("Re-establishment" is a synonym, but implies that the re-introduction has been successful).

**"Translocation"**: deliberate and mediated movement of wild individuals or populations from one part of their range to another.

**"Re-inforcement/Supplementation"**: addition of individuals to an existing population of conspecifics.

**"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 principle 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 organisations; 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 re-introduction protocol.

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

- Site should be within the historic range of the species. For an initial re-inforcement 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-inforcement 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 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 minimize 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 mammal 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 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 minimize 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 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 publications in scientific and popular literature.

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### Footnotes:

- (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. subspecies 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

The IUCN/SSC Re-introduction Specialist Group (RSG) is a disciplinary group (as opposed to most SSC Specialist Groups which deal with single taxonomic groups), covering a wide range of plant and animal species. The RSG has an extensive international network, a re-introduction projects database and re-introduction library. The RSG publishes a bi-annual newsletter RE-INTRODUCTION NEWS.

If you are a re-introduction practitioner or interested in re-introductions please contact:

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