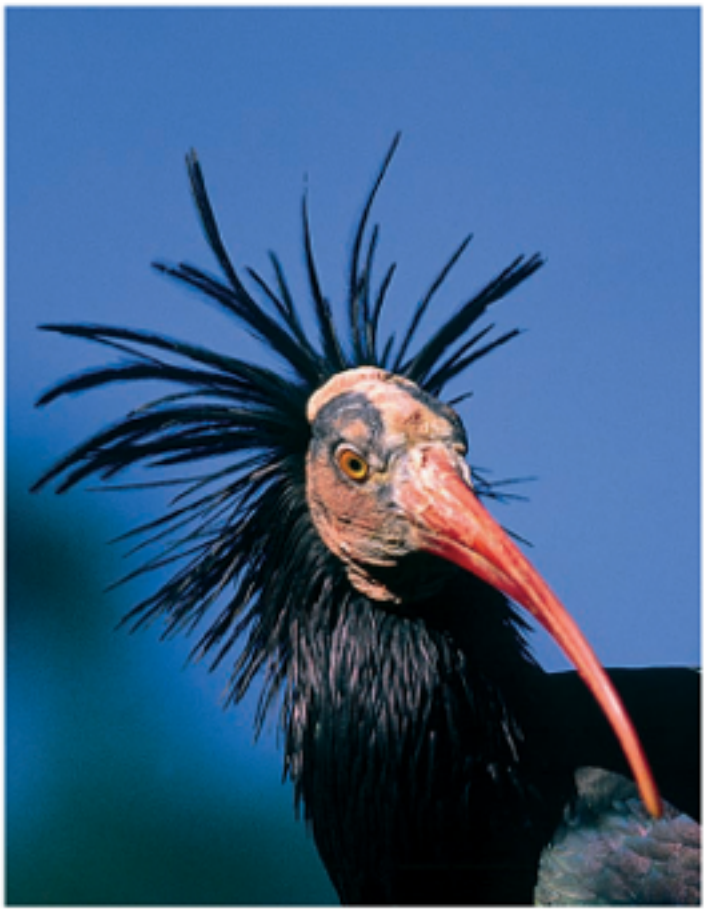
TECHNICAL SERIES No.10

AEWA

International Single Species Action Plan for the Conservation of the Northern Bald Ibis

Geronticus eremita



IAGNBI
International Advisory Group on the Northern Bald Ibis

SEO/BirdLife

BirdLife INTERNATIONAL

Agreement on the Conservation of
African-Eurasian Migratory Waterbirds (AEWA)

International Single Species Action Plan for the Conservation of the Northern Bald Ibis

Geronticus eremita

Technical Series No. 10

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Compilation of this species action plan would not have been possible without the encouragement and comments of the network of experts and representatives from national governmental agencies of the countries involved. We are grateful to Mohammed El Bekkay (Souss Massa National Park, Morocco), Steven Evans (BirdLife South Africa), Taner Hatypoglu (Ministry of Environment and Forest, Turkey), Mike Jordan (Chester Zoo, UK), Kurt Kotrschal (Konrad Lorenz Institute, Austria), Bert Lenten (AEWA), José Manuel López Vázquez (Andalucia Environmental Ministry, Spain), Alberto Madroño (SEO/BirdLife, Spain), Szabolcs Nagy (BirdLife International), Karin Pegoraro (BLU Consulting), Miguel Quevedo (Jerez Zoo, Spain), Elisa Rivera (Bern Convention), Gianluca Serra (Ex UN-FAO), José Tavares (RSPB, UK).

Milestones in the Production of the Plan
Expert workshop: January 2004, Madrid, Spain
First draft: April 2004, presented to experts for comments
Second draft: April 2005, presented to the Range States and the AEWA Technical Committee
Final draft: August 2005, approved by the AEWA 3rd Meeting of Parties in October 2005

Geographical Scope
This International Single Species Action Plan requires implementation in the following three countries regularly supporting the Northern Bald Ibis: Morocco, Syria, and Turkey.

Reviews
This International Single Species Action Plan should be revised in 2015. An emergency review will be undertaken if there are sudden major changes liable to affect the population.

Recommended citation: Jimenez Armesto, M.J., Boehm, C. & Bowden, C. (Compilers). 2006. International Single Species Action Plan for the Conservation of the Northern Bald Ibis *Geronticus eremita*. AEWA Technical Series No. 10. Bonn, Germany.

CONTENTS

Foreword by Mr. Bert Lenten, Executive Secretary, Agreement on the Conservation of African-Eurasian Migratory Waterbird (AEWA)

During their life cycle, migratory waterbirds cover considerable distances in order to find the best ecological conditions and habitats for feeding, breeding and raising their young. However, migration is a perilous journey, presenting a wide range of threats. Only a small number of birds are actually threatened by natural events. Sad but true, human activities are the source of most dangers migrating birds are exposed to. Flying over long distances means crossing many international borders and entering different political areas with their own environmental politics, legislation and conservation measures. It is clear that international cooperation between governments, NGOs and other stakeholders is needed along the whole flyway of a species in order to share knowledge and to coordinate conservation efforts. The necessary legal framework and coordinative instruments for such international cooperation is provided by international agreements such as Agreement on the conservation of African-Eurasian Migratory Waterbirds (AEWA).

One of these coordinative instruments in conservation of biological diversity is International Single Species Action Plans (SSAP). They are being developed to find out more about populations of species with an unfavourable conservation status throughout their whole range, to identify underlying threats and, more importantly, to roster all necessary conservation measures in a systematic and structured way. This information is crucial to tackling the problems that have caused and are still causing decline of these species and to allow action to be taken to improve their status in the long term. Such International SSAPs can only be developed and effectively implemented in close cooperation with Governments, Intergovernmental Organizations and NGOs.

AEWA has therefore initiated this International Single Species Action Plan for the Northern Bald Ibis. The drafting of the plan was carried out by SEO/BirdLife Spain and has been compiled mainly by Maria Jose Jimenez Armesto, Christiane Boehm and Chris Bowden. The key priority for conservation is to ensure the protection of the Moroccan population – the most vital of all populations remaining in the wild. The plan was adopted under Resolution 3.12 at the Third Session of the Meeting of the Parties to AEWA in Dakar, Senegal, October 2005.

The Northern Bald Ibis - a distant relative of storks and herons, was once widespread across northern Africa, the Middle East, and centuries ago even in Europe, but has experienced a sharp decline both in the western and the eastern population. Its conservation status today is “Critically Endangered”. The main cause of the decline is the use of pesticides (DDT), but human disturbance and hunting have also played a role. There are only very few individuals left in the wild, and therefore the Northern Bald Ibis needs special attention.

I strongly hope that the Range States involved will make every effort to implement this Single Species Action Plan and that they will transform it into National Action Plans and work together to halt the decline in the Northern Bald Ibis population in the future. I very much believe that if the measures described in these plans are implemented in reality, this will trigger the recovery of the population of this bird to a favourable conservation status.

Bert Lenten
AEWA Executive Secretary

Preface

This International Single Species Action Plan for the Conservation of the Northern Bald Ibis *Geronticus eremita* was commissioned to SEO/BirdLife of Spain. It has been compiled by Maria Jose Jimenez Armesto of SEO/BirdLife, Christiane Boehm (Alpenzoo Innsbruck, Austria) and Chris Bowden (RSPB, UK) in close cooperation with the International Advisory Group on the Northern Bald Ibis (IAGNBI). The drafts of the plan went through rigorous consultations, and the final approved version reflects comments received from a number of experts, governmental officials from the range states, and the AEWA Technical Committee. Financial support for the preparation of this Action Plan was provided by the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). The Action Plan follows the format for Single Species Action Plans approved by the AEWA 2nd Meeting of Parties in September 2002.

Acronyms

BirdLife International / BirdLife Middle East (BLI / BLME)

Doga Dernegi (DD) Natural Society (BirdLife Turkey)

Food and Agriculture Organization of the United Nations (FAO)

Fund for Integrated Rural Development of Syria (FIRDOS)

Haut Commissariat àux Eaux et Fôrets et la Lutte contre la Desertification (HCEFLD)

International Advisory Group on the Northern Bald Ibis (IAGNBI)

International Centre for Agricultural Research in the Dry Areas (ICARDA)

Ministry of Agriculture and Agrarian Reform (MAAR)

Ministry of Local Affairs and Environment (MLAE)

Parc National Souss-Massa (PNSM)

Sociedad Española de Ornitología (SEO/BirdLife)

Species Survival Commission of the IUCN (SSC)

Syrian Society for Conservation of Wildlife (SSCW)

The Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD)

The Royal Society for the Protection of Birds (RSPB)

The World Conservation Union (IUCN)

Executive Summary

The Northern Bald Ibis *Geronticus eremita* has undergone a long history of decline over at least four centuries, having been distributed over much of north and northeast Africa and the Middle East. Two distinct populations have been identified which are genetically distinct. The main western population occurs in Morocco and now numbers around 100 pairs. A relict population of two pairs persists in Syria, providing a precarious opportunity to keep the eastern population going in a truly wild state. Turkish birds are now only semi-wild, but are still a very important genetic resource for a time when reintroduction methodology has been developed further.

It is thought that birds used to winter in Sudan, Eritrea, Saudi Arabia and Yemen. Post-1989 records in Saudi Arabia and Eritrea suggested that an undiscovered breeding colony remained in the Middle East.

The Northern Bald Ibis is still classified as "Critically Endangered" because of its small range and population. The improvement of the population in Morocco is very recent and is mainly due to conservation and management actions. Where this is missing, the decline of a population appears dramatically, like in Syria over the last 20 years.

The main threats to the species over the centuries have been a combination of direct persecution but also the loss of steppe and non-intensive agricultural areas. The chief threats the species now faces differ among the countries where it still occurs.

In Morocco, preventing the loss of feeding areas and disturbance to breeding sites are the most important priorities. Illegal buildings and disturbance close to the breeding cliffs and changes in farming on the feeding grounds are the threats that may have the most severe impact on the population.

In Syria, there are even greater challenges. Hunting is the main threat to the tiny population, and there is the need to control land-use pressures and other local and regional awareness issues. Knowledge of where the birds overwinter is urgently required to reduce potential threats there. Although Turkey has only a semi-wild population, it has to be managed well to build up the genetic stock.

The Northern Bald Ibis is susceptible to pesticides and contaminated water sources, and particular attention to this is needed in all areas where the birds forage in all three countries.

The key priority for conservation is to ensure the protection of the Moroccan population, which has two sites where it occurs. The Souss-Massa National Park was designated specifically to protect nesting and feeding areas.

The main targets recognized increase the number of Northern Bald Ibis colonies in Morocco as well in Syria and Turkey were:

- to maintain agriculture and grazing regimes in order to achieve sustainable exploitation of rangelands and halt the advance of desertification processes;
- to promote alternative sustainable grazing regimes and energy use, coupled with the promotion of socio-economic development of local communities;
- to control firewood collection to prevent destruction or degradation of feeding areas;
- to stop hunting;
- to control the construction of illegal buildings on or near to breeding and feeding sites;
- to reduce the risk of intoxication.

Considerable progress has been made over recent years with methodology that should help with potential reintroduction attempts in future. Establishing a resident population is now a real possibility following work carried out in Austria. But there are still important challenges to getting a migratory

population established, an objective that could well prove to be possible in future. Further work in this area will be useful, but much more detailed information on ecological requirements and previously occupied sites will be necessary.

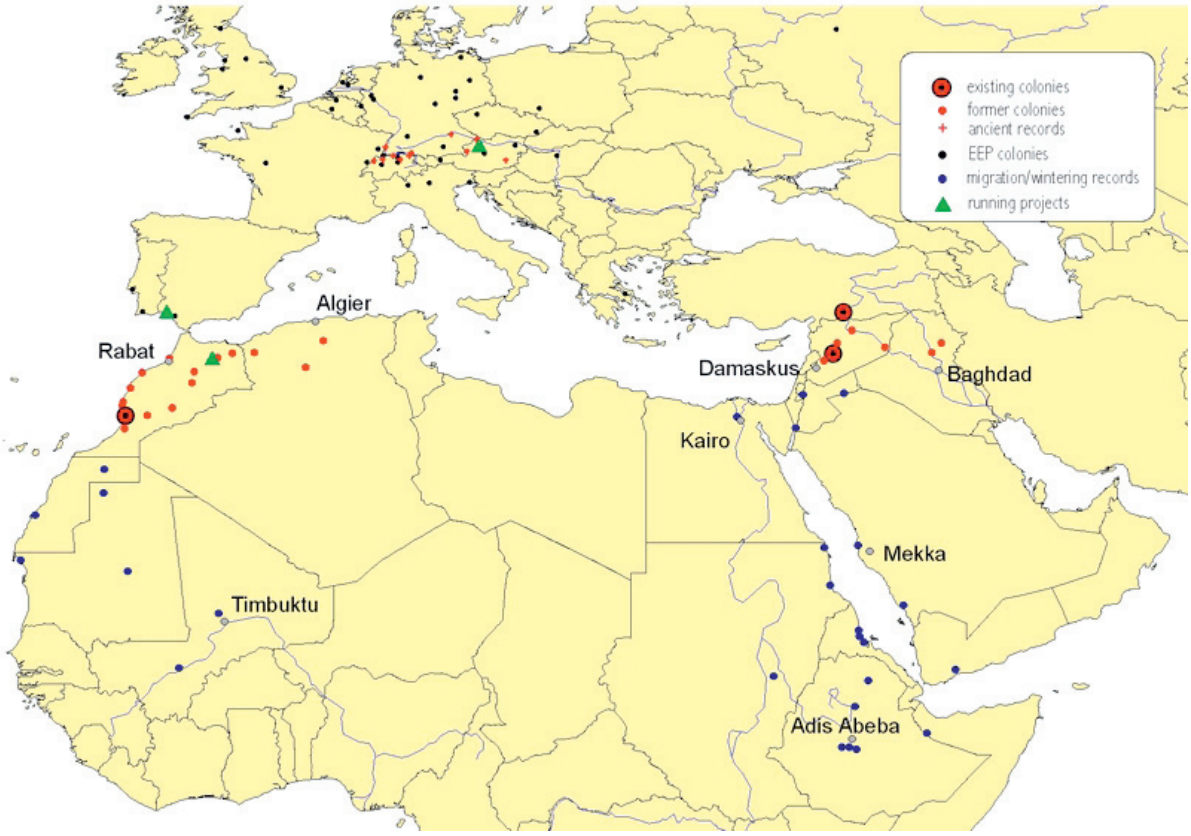
However, this should not in any way distract from the top priorities in Morocco and in Syria to maintain areas of breeding and feeding habitat for these remaining known wild breeding populations.

1. Biological Assessment

General information	The Northern Bald Ibis or Waldrapp Ibis *Geronticus eremita* is about 70-80 cm long and weighs 1,000-1,500 g. The body is elongated and robust with a fairly long neck. The legs are short brownish red. Head and throat are naked and deep red. The nape feathers are elongated. Juvenile birds up to two years have feathers on head and neck, which are greyish and short. Data of historic colonies in the Alps (Switzerland, Germany, Austria) (Gesner 1555, overview in Pegoraro 1996 and 1999), which disappeared during 17th century. Formerly almost certainly throughout North Africa and into the Middle East (Morocco to Algeria, Turkey Syria, Iraq?) until recently in Turkey and Syria; wintering in Saudi Arabia, Ethiopia and Northern Somalia. Since the beginning of the 20th century two disjunct wild populations: western population in Morocco and eastern population in Turkey. Lives in semiarid arid rocky plains, but also in cultivated fields and high altitude pastures and meadows. Nest and roosts in cliffs, often close to watercourses or along the sea. Is a colonial breeder. Feeds on invertebrates, snails, small vertebrates. Sometimes in association with humans, however very shy due to hunting, and affected by disturbance.
Taxonomy	Phylum: *Chordata* Class: *Aves* Order: *Ciconiiformes* Suborder: *Ciconiae* Family: *Threskiornithidae* Subfamily: *Threskiornithinae* Genus: *Geronticus* Species: *Geronticus eremita* L. 1758
Population development	Since the beginning of the 20th century, sharp decline in the western and eastern population. **Eastern population**: Former records tell of thousands of birds (19th century) (Danford 1880, Kummerloeve 1962); 3,000 birds in Birecik 1930, down to 400 in 1982, 5 pairs in 1986, 7 in 1987 and 1 left in 1989 (Akcakaya 1990). The wild colony was declared extinct in 1992 (Akcakaya *et al*. 1992). Main cause of decline was the use of pesticides (DDT) and human disturbance, no hunting in Turkey, but in Syria. In 2002 newly discovered colony with 7 birds, which reproduce. **Western population**: Many colonies in Morocco and Algeria, however sharp decline in the early 20th century. The last colony in Algeria disappeared in the late 1980s. In Morocco about 38 colonies in 1940, 15 in 1975 and by 1989, 3 colonies had survived. Reasons for the decline were human disturbance, hunting and the use of pesticides. Since the late 1990s, the population in Souss-Massa National Park has been stable and, since 1999, increasing (status in 2004: 420 birds).

Distribution throughout the annual cycle	**Eastern population**: Migratory. The birds leave the breeding grounds in late June/early July and return in February. Wintering grounds not well known but most likely the birds migrate south to NE Africa (Ethiopia, Eritrea, Sudan). Syrian birds arrive in February and leave in June. The wintering grounds are not known. The migration of the juveniles is unknown, but they probably migrate with their parents. **Western population**: Dispersive and erratic, not much known and few winter data from Mauritania and even across the Sahara in Mali. Most birds left the breeding areas (Atlas) but stayed in Morocco. Breeding now confined to the fairly resident population in Souss-Massa. Dispersion may occur from September to January.
Survival and productivity	**Survival**: The Northern Bald Ibis is a long living species. In captivity, birds reach an average of 20-25 years (oldest male 37 years, oldest female 30 years (Boehm 1999). As birds start reproduction at an age of 3-5 years, the average age can be put at 10-15 years. **Productivity**: Since 1994-2004, the reproduction rate per breeding pair has varied from 0.6 to 1.6 (El Bekkay *et al*. 2003). Circumstances like time away from the nest when the chicks are young may have the biggest influence in the reproduction success (Bowden *et al*. 2003).
Life history	**Breeding**: Seasonal pairs. Nest building starts in February. Eggs laid in March to early April, incubation 24-28 days, fledging period 40-50 days, time to independence not known, age of maturity 3 years (in captivity). Both parents breed and feed the chicks.
	Feeding: The Northern Bald Ibis feeds on invertebrates (snails, scorpions, spiders, beetles, caterpillars, also earwigs and ants; crickets and locusts seem to play a minor role) and small vertebrates (lizards, small mammals, ground nesting birds) (Malin 1990).
	Outside breeding season: Hardly anything is known about the life history outside the breeding season of wild colonies. Trials with satellite transmitters carried to obtain information on birds' movements outside the breeding season.
Habitat requirements	In contrast to other ibis species, the Northern Bald Ibis is a rather terrestrial bird. It lives in arid and semi-arid steppe and plains with sparse vegetation and also (extensively used) pasture and farmland. It seems important that the vegetation is sparse and not taller tan 15-20 cm. Change in cultivation may lead to quick abandonment of feeding areas and nesting grounds (Hirsch *pers*. *comm.*). As the Northern Bald Ibis mostly probes for prey and is not so much an optical hunter, a soft surface seems to be vital (e.g. in riverbeds, farmland, sand, between small shrubs). **Nesting habitat**: The Northern Bald Ibis nests in sea cliffs and cliff ledges or hollows inland (usually near a river) and will use artificial ledges. However, the size and shape and covering of the ledges seem to be crucial.

Figure 1. Map of the distribution of the species.



Breeding information

Breeding	Formerly breeding (date of extinction)	Migration (period)	Non breeding visitor (period)
Morocco		Resident in Souss-Massa, migrating in the Atlas (before extinct there)	
Algeria	1987-1990 (Fellous 2004)	Migrating	
Turkey	1989: date of extinction of wild population (Arihan 1999)	Migrating (breeding from mid February to early August)	
Syria	Breeding, (breeding season from February – July). Recently rediscovered		
Germany	Disappeared in the 16th century (last report 1593)	Migrating (no data on breeding season and migration, but certainly migrating)	
Austria	Disappeared in the 16th century (last report 1584)	Migrating (no data on breeding season and migration, but certainly migrating)	
Switzerland	Disappeared in the 16th century (last report 1535)	Migrating (no data on breeding season and migration, but certainly migrating)	

Former distribution of the Northern Bald Ibis in Europe (Alps Region)

Location	Heard / written	Bones	Seen	Time
Switzerland				
Balm, close to Günsberg (Canton Solothurn)		x (more individuals, with bones from other species) not sure if moved		1941 (Stehlin)
Alt-Warburg, close to Olten, Canton Aargau		x (one specimen)		1400
Bad Pfäfers, Tamina Schlucht, Canton St. Gallen	A hunter looking for Waldrapp nestlings found a spring (story of how this spring was found!?)			1194-1250?
Mariastein, Jura, south of Basle	A medical doctor F. Plattner mentions a Northern Bald Ibis "dinner party" in his diary			1564
Zurich	A guideline that it is forbidden to kill a Northern Bald Ibis			1535
Germany				
Breisach on the River Rhein			Travel report of a breeding colony by Ladislaus, Baron of Zierotin	1593
Kelheim	Cliffs are described as breeding sites (V. Cordus)		?	1585
Passau	Cliffs are described as breeding sites (V. Cordus)		?	1585
Überlingen (Lake Constance)			Extremely cold days in March, Northern Bald Ibises could be caught by hand	1481
Austria				
Salzburg	Ban on catching, hunting, shooting young ibises		Common breeding bird	1544, 1558 1578, 1584
Graz			Breeding colony	
Area around **Danube** and **Save**	Description by locals		?	

2. Available Key Knowledge

Table 2. Population figure

Country	Breeding pairs	Quality	Year(s) of the estimate	Breeding population trend in the last 10 years (or 3 generations)	Quality	Migrating or non breeding visitor	Quality	Year(s) of the estimate	Baseline population	References
Morocco	94 pairs		2004	Stable and increasing						Ribi, M., El Bekkay, M., Oubrou, W., Smith, K. 2004
Syria	3 pairs		2003	Unknown, only discovered in 2002						Bowden 2003, Serra 2003

Table 3. Knowledge on habitat, diet and occurrence of the Northern Bald Ibis in Important Bird Areas and Protected Areas

Type of Knowledge	**Breeding**			**Non-breeding**		
	Morocco	Turkey	Syria	Morocco	Turkey	Syria
Habitat and diet						
- Habitat use						
- Diet						
Site Protection						
- Number of IBAs where the species breeds	1	0		1		
- Proportion of the population in IBAs	100 %	0	0	100 %	0	0
- Proportion of the national population in protected areas	70 %		0			0

3. Threats

The main threats to the species are described in the following table, combined for the population in Morocco, Syria and Turkey.

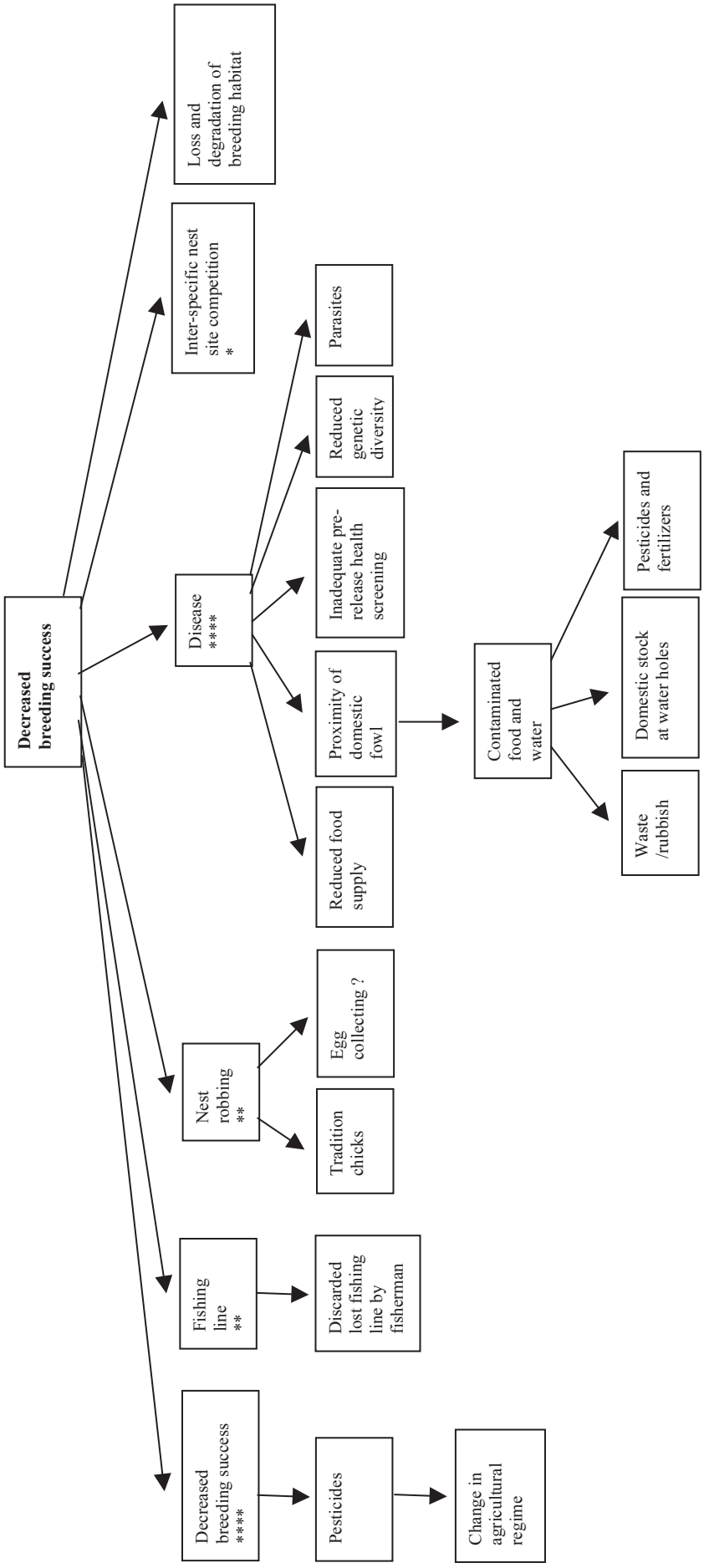
*Table 4.1. The importance of threats resulting in a reduction in breeding success at the national level for Morocco, Syria and Turkey. The threats are ranked relative to each other (**-1**: a threat believed to have a negligible impact, **-2**: a threat believed to have a medium impact, **-3**: a threat believed to have a high impact, and **-4**: a threat believed to have a critical impact and that needs to be addressed immediately). Threats are coded according to the IUCN SSC SiS Threats Authority files. Only countries containing wild and semi-wild populations were included in the threat analyses. Countries in which release programmes are proposed should use the threats shown in the executive summary as a starting point for undertaking feasibility assessments for release programmes.*

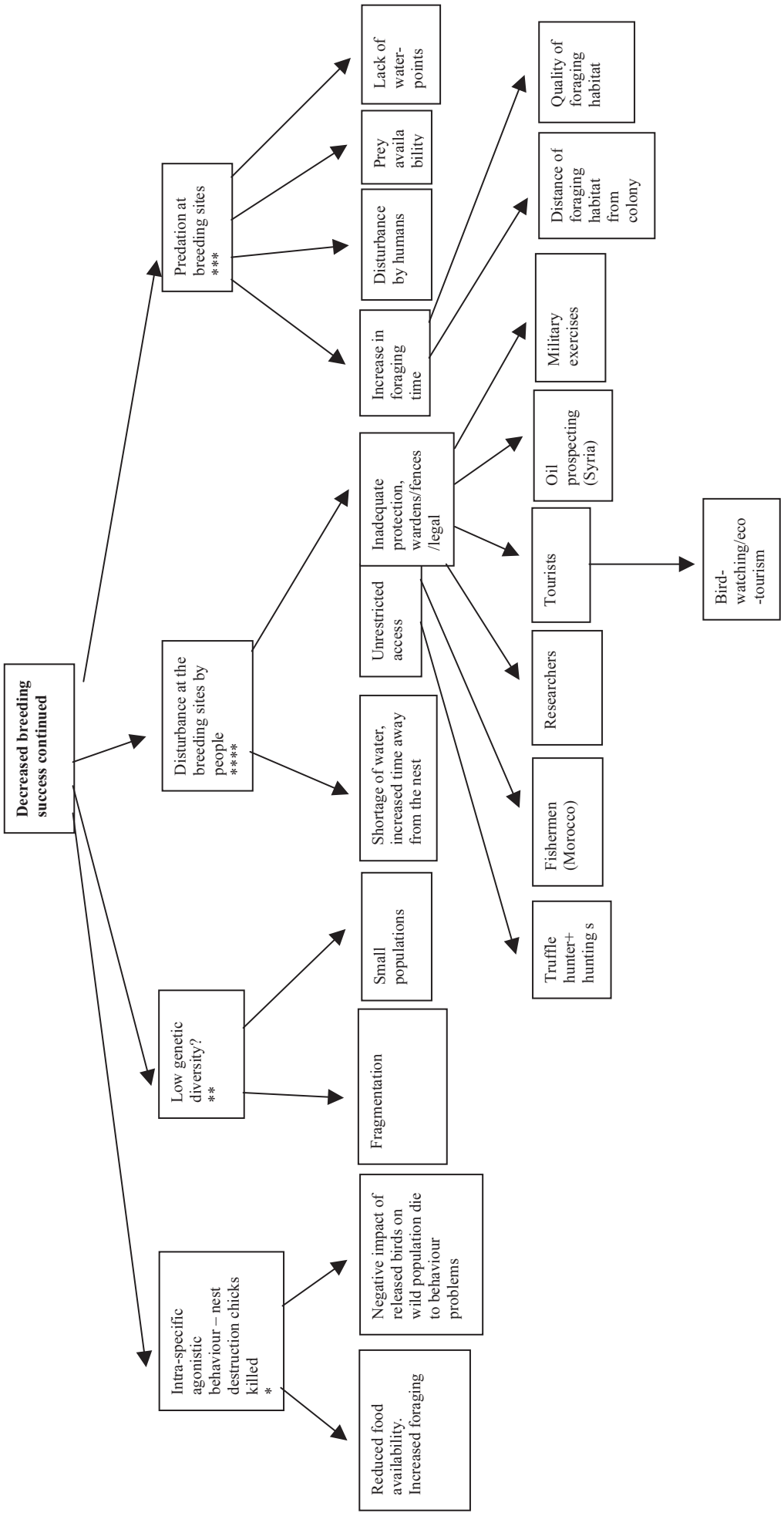
		Countries		
Threat code	**Threats reducing breeding success**	**Morocco**	**Turkey**	**Syria**
1	Loss/degradation of breeding habitat			
1.4.3	Illegal buildings	-4	0	0
1.8	Collapsing of cliffs	-2	-2	-1
1.3.1	Mining – excavating of cliffs	0	0	-1
1.4.6	Nesting places flooded by reservoirs	-1	-2	0
10.6	Military exercises	0	0	0
1.1	Loss/degradation of feeding habitat		-2	
1.1.5	Abandonment	-3	-1	0
1.1.4	Overgrazing	-3	0	-4
1.1.1	Greenhouse crops	-4	-2	0
1.1.1	Irrigated farming barley	-4	0	0
1.3.3.1	Firewood collection	-1	0	-4
7.1	Drought	-2	0	-3
1.4.6	Flooding feeding areas	-1	-2	0
10.1	Tourism development	-2	0	0
1.4.2	Increasing settlements	-2	0	-2

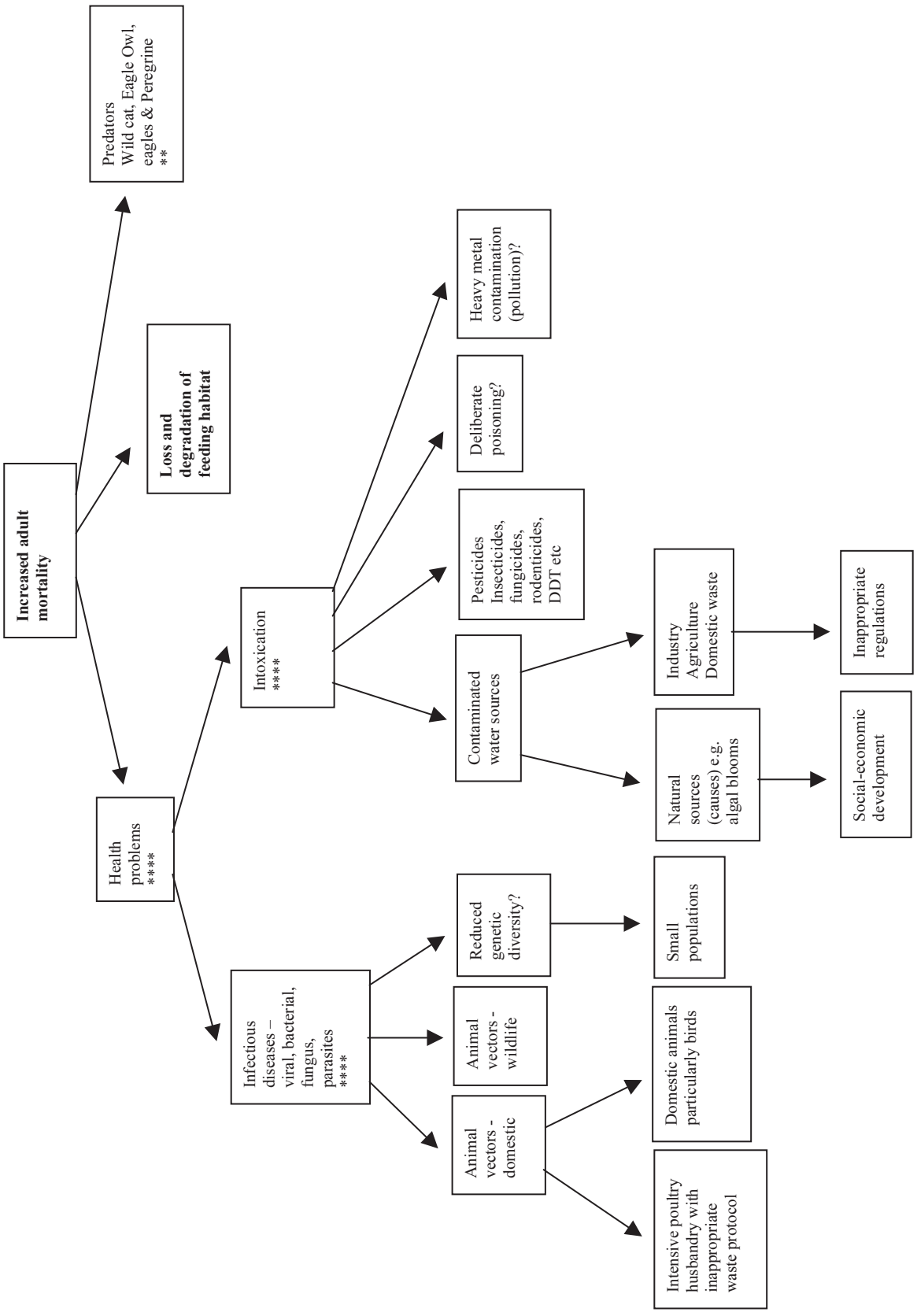
*Table 4.2. The importance of threats resulting in a reduction in adult survival at the national level for Morocco, Syria and Turkey. Threats are coded according to the IUCN SSC SiS Threats Authority files. (**-1**: a threat believed to have a negligible impact, **-2**: a threat believed to have a medium impact, **-3**: a threat believed to have a high impact, and **-4**: a threat believed to have a critical impact and that needs to be addressed immediately). Only countries containing wild and semi-wild populations were included in the threat analyses. Countries in which release programmes are proposed should use the threats listed in the executive summary as a starting point for undertaking feasibility assessments for release programmes.*

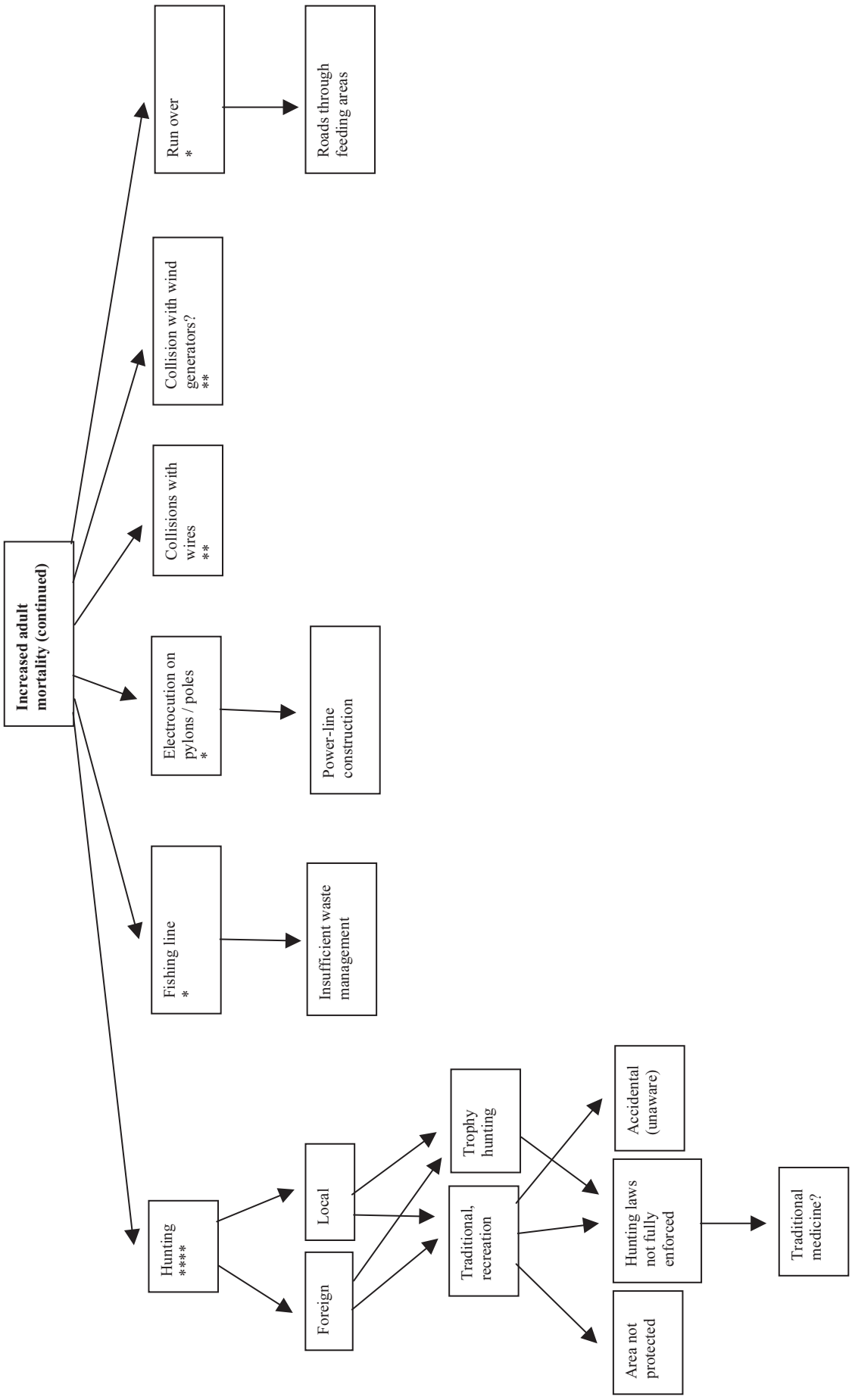
		Countries		
Threat code	**Threats reducing adult survival**	**Morocco**	**Turkey**	**Syria**
	Human activities			
3.5	Nest robbing	-1	0	- 2
10	Disturbance			- 2
10	Unrestricted access			
10.1	Tourists	-2	-2	-2
10.1	Bird-watching	-2	-1	-2
1.3.1	Oil prospecting	0	0	-1
10.6	Military	-2	0	0
1.3.2.1	Fishermen	-3	0	0
3.1.1	Truffle hunters	0	0	-2
6.2.6	Discarded fishing line	-1	-1	0
8.2	Predation at breeding sites			-2
10.7	Disturbance by humans	-2	-1	-2
8.5	Disease			-2
8.5	Contaminated food & water	-2	-3	-3
1.1.4	Proximity of livestock	-1	-1	-3
10.2	Inadequate pre-release health screening	-3	-3	0
8.5	Intensive poultry unit	-4	-1	-3
1.1.4	Domestic animals (especially birds)	-1	-1	-3
6	Inappropriate waste disposal			
6.2.3	Industrial	-1	-1	
6.2.1	Agricultural	-2	-1	
6.2.2	Domestic	-1	-1	-2
6.2.6	Fishermen	-3	-1	0
6.2.1	Application of pesticides	-2	-3	-3
4.1.2.3	Deliberate poisoning	-1	0	-1
3	Shooting by hunters	-2	-1	-2
4.2.1	Erection of pylons/electric poles	-1	-1	-1
4.2.1	Electric cables	-3	-2	-1
4.2.3	Wind generators	-1	0	0
1.4	Roads through feeding areas	-1	-1	-2
	Reduced food supply			-4
6	Pesticides	-2	-3	-2
1.2.2	Change in agriculture	-3	-2	-2

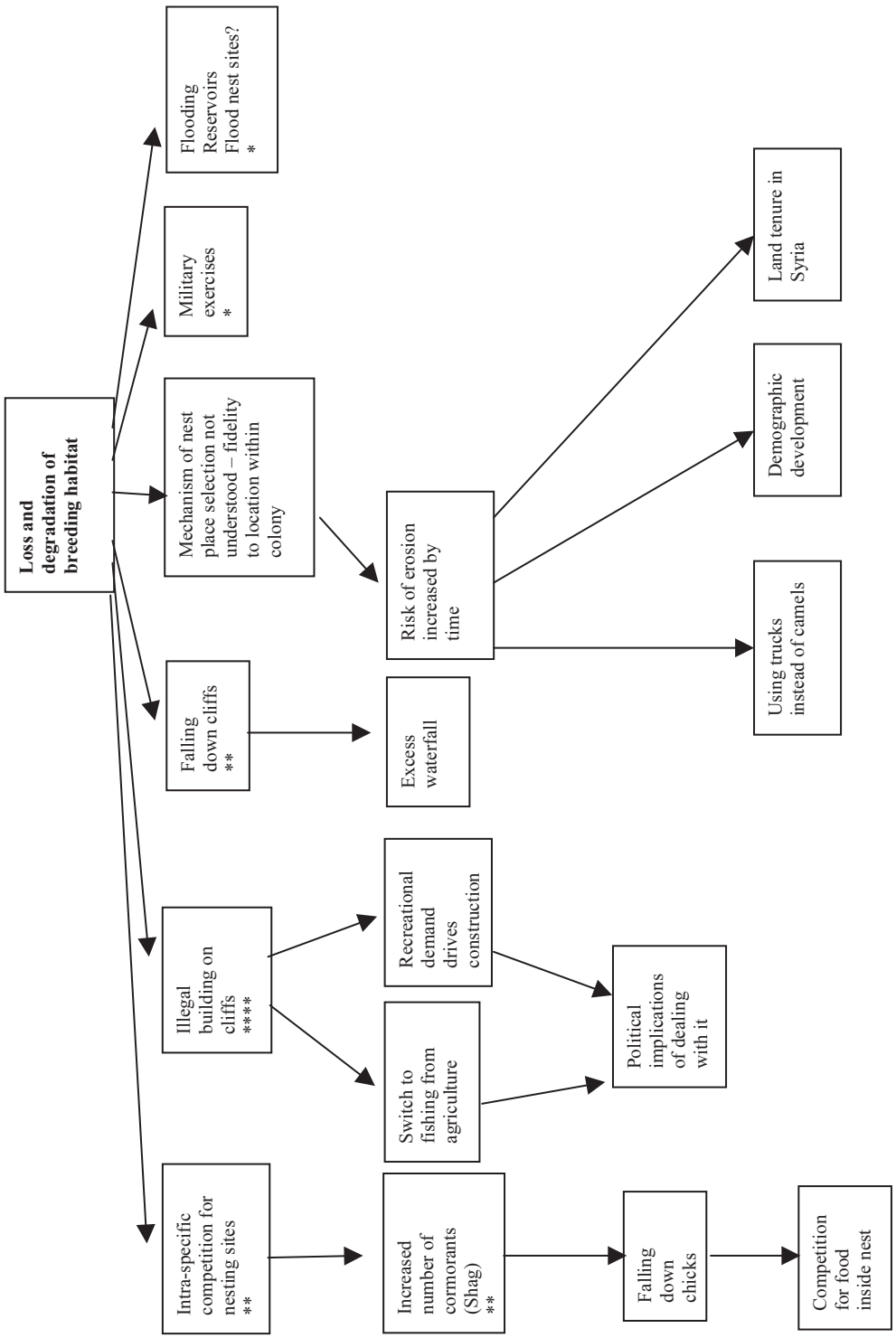
Figure 2. Problem trees

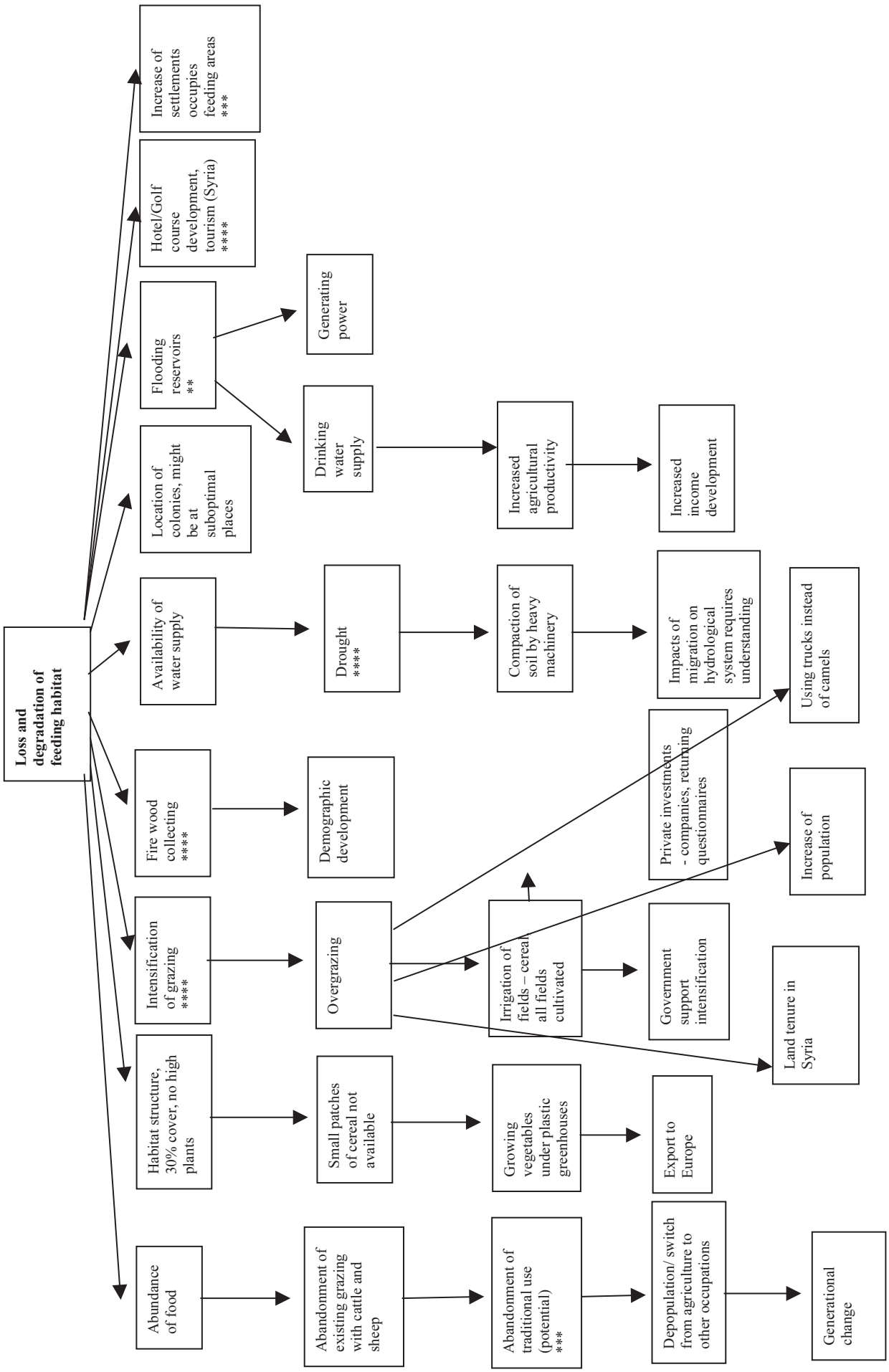

Decreased breeding success
Loss and degradation of breeding habitat
Inter-specific nest site competition *
Disease ****
Parasites
Reduced genetic diversity
Inadequate pre-release health screening
Proximity of domestic fowl
Reduced food supply
Contaminated food and water
Pesticides and fertilizers
Domestic stock at water holes
Waste /rubbish
Nest robbing **
Egg collecting ?
Tradition chicks
Fishing line **
Discarded lost fishing line by fisherman
Decreased breeding success ****
Pesticides
Change in agricultural regime


Decreased breeding success continued
Predation at breeding sites ***
Lack of water-points
Prey availa bility
Disturbance by humans
Increase in foraging time
Quality of foraging habitat
Distance of foraging habitat from colony
Military exercises
Oil prospecting (Syria)
Tourists
Bird-watching/eco -tourism
Researchers
Fishermen (Morocco)
Truffle hunter+ hunting s
Disturbance at the breeding sites by people ****
Inadequate protection, wardens/fences /legal
Unrestricted access
Shortage of water, increased time away from the nest
Low genetic diversity? **
Small populations
Fragmentation
Intra-specific agonistic behaviour – nest destruction chicks killed *
Negative impact of released birds on wild population die to behaviour problems
Reduced food availability. Increased foraging


Increased adult mortality
Predators
Wild cat, Eagle Owl, eagles & Peregrine
**
Loss and degradation of feeding habitat
Health problems
****
Intoxication
****
Heavy metal contamination (pollution)?
Deliberate poisoning?
Pesticides
Insecticides, fungicides, rodenticides, DDT etc
Contaminated water sources
Industry
Agriculture
Domestic waste
Inappropriate regulations
Natural sources (causes) e.g. algal blooms
Social-economic development
Infectious diseases – viral, bacterial, fungus, parasites
****
Reduced genetic diversity?
Small populations
Animal vectors - wildlife
Animal vectors - domestic
Domestic animals particularly birds
Intensive poultry husbandry with inappropriate waste protocol


Increased adult mortality (continued)
Run over *
Roads through feeding areas
Collision with wind generators? **
Collisions with wires **
Electrocution on pylons / poles *
Power-line construction
Fishing line *
Insufficient waste management
Hunting ****
Local
Foreign
Trophy hunting
Traditional, recreation
Accidental (unaware)
Hunting laws not fully enforced
Area not protected
Traditional medicine?


Loss and degradation of breeding habitat
Flooding Reservoirs Flood nest sites? *
Military exercises *
Mechanism of nest place selection not understood – fidelity to location within colony
Falling down cliffs **
Illegal building on cliffs ****
Intra-specific competition for nesting sites **
Risk of erosion increased by time
Land tenure in Syria
Demographic development
Using trucks instead of camels
Excess waterfall
Recreational demand drives construction
Switch to fishing from agriculture
Political implications of dealing with it
Increased number of cormorants (Shag) **
Falling down chicks
Competition for food inside nest


Loss and degradation of feeding habitat
Increase of settlements occupies feeding areas ***
Hotel/Golf course development, tourism (Syria) ****
Flooding reservoirs **
Generating power
Location of colonies, might be at suboptimal places
Drinking water supply
Increased agricultural productivity
Increased income development
Availability of water supply
Drought ****
Compaction of soil by heavy machinery
Impacts of migration on hydrological system requires understanding
Fire wood collecting ****
Demographic development
Intensification of grazing ****
Overgrazing
Private investments - companies, returning questionnaires
Using trucks instead of camels
Irrigation of fields – cereal all fields cultivated
Increase of population
Government support intensification
Habitat structure, 30% cover, no high plants
Small patches of cereal not available
Growing vegetables under plastic greenhouses
Export to Europe
Land tenure in Syria
Abundance of food
Abandonment of existing grazing with cattle and sheep
Abandonment of traditional use (potential) ***
Depopulation/ switch from agriculture to other occupations
Generational change

4. Policies and Legislation Relevant for Management

Table 5. International conservation and legal status of the species.

World Status	European status	SPEC category	EU Birds Directive Annex	Bern Convention Annex	Bonn Convention Annex	African-Eurasian Migratory Waterbird Agreement	Convention on the International Trade in Endangered Species
Critically Endangered	Critically Endangered	SPEC 1		Annex II	Annex 1	A 1a 1b 1c	Annex 1

Table 6. National conservation and legal status.

Country	Status in National Red Data Book	Legal protection from killing	Year of protection status	Penalties for illegal killing or nest destruction	Highest responsible authority
Morocco		The main population included in the Souss-Massa National Park. The species is protected under the national legislation from capture, hunting, captivity and trade.	National Park created in 1991 Tamri area is Site d´importance biologique et ecologique.	Approx. 5,000 MAD (around 455 EUR)	HCEFLD
Syria		There has been a hunting moratorium since the early 1990s - lack of enforcement makes this regulation ineffective.	Decree no. 28 issued in 1967 by the Syrian Ministry of Agriculture, aimed at protecting several birds considered beneficial to agriculture, includes NBI (not mentioned, description quite clear). This decree is being updated.		
Turkey	CR	Hunting Law		2,500,000,000 TI (US$1,850)	Min. of Env. and Forestry

Table 7. Site (and habitat) protection and research.

Country	Percentage of population included in IBAs	Percentage of population included in SPAs	Percentage of population included in Ramsar sites	Percentage of population included in national protected areas	Research carried out in the last 5 years
Morocco	100%		The Souss-Massa wetland (1,000 ha) was declared a Ramsar site in 2005.	70%	Intensive monitoring of the breeding and feeding sites at the PNSM and Tamri site (by PNSM team and RSPB/SEO
Syria	0			In 2004, a special protected area was established including the whole ibis breeding area.	Habitat use and diet, human disturbance and threats, breeding cycle, search for undiscovered colonies, surveying felt needs of locals (unpubl. data, Serra *et al.*)

Table 8. Recent conservation action and attitude towards the species.

Country	**National protection plan for the species**	**Is there a national Northern Bald Ibis project / working group?**	**Is there a national survey / monitoring programme?**	**Is there a monitoring programme in protected areas?**	**Routines for informing the responsible authorities regarding nesting areas and nest sites**	**Conservation efforts over the last ten years**	**General attitude towards the species**
Morocco		The project "Ibis chauve" at the PNSM, carried out by the park team, RSPB and SEO since 1994.	Not carried by the national administration, but the project in place covers such a role.	The mentioned project "Ibis chauve" at PNSM.	The PNSM informs the regional authority and the authority in Rabat (central government).	Intense conservation project at the PNSM, including work with local people living near the colonies (by PNSM/SEO).	Government is very willing to conserve the species, while the local people's attitude is improving as a consequence of sustainable development projects.
Syria		Palmyra project staff (MAAR staff and local community of Palmyra) and SSCW.	Daily observation and monitoring take place by the staff of MAAR and SSCW, implementation of this species action plan will be very useful in preparing a monitoring programme.	?		Conservation programme set in place by Palmyra project since the discovery, in April 2002 (by RSPB).	Locally, the people seem to start being aware of the importance of the birds and the potentials for developing eco-tourism. Also, there is an increasing interest at national and high decision-makers' levels.

Current Northern Bald Ibis projects

Austria
1. Since 1997 experiment for keeping a self-sustaining group of NBI (not a reintroduction yet)
2. Teaching NBI a suitable migration route (N7S Alps) www.waldrapteam.at

Spain
Started in 2002 similar to 1 of Austria (study of different release techniques in south-western Spain
Objective: see if a free-flying colony is self-sustaining all year in this area (not a re-introduction)

Morocco (wild population)
1994 NBI Conservation project
Research-monitoring /work with local people
Carried out in Souss-Massa National Park and Tamri area
National Park/BLI/RSPB/SEO

Morocco (captive population)
Mezguitem (site for project)
Proposed reintroduction
Established captive population on site
Birds from Munich Zoo and other zoos (including Rabat)
Another aviary built
Project under implementation

Turkey (semi-wild population)
NBI conservation project:
Birecik
RSPB/DD/Min. of Environment and Forestry
Establish contact with Turkish Zoos
Increasing numbers of NBI
Restart migration
Make the area more suitable for the birds
Husbandry + site
Educate local people, especially children
Semi-wild population

Syria
2002-2003 Palmyra project (FAO/MAAR/Italian Cooperation)
Aimed at developing first operative reserve in the country (Al Talila Reserve), through promotion of rangeland rehabilitation and biodiversity conservation. Discovery of relict ibis colony by Palmyra project in March 2002; the project was flexible enough to conserve and protect this colony during breeding seasons 2002, 2003 and 2004. Ibis colony 50 km outside nearest PA (Al Talila).
BirdLife/RSPB and AEWA have raised funds to continue some aspects of the project (i.e. satellite tagging) in breeding season 2004.

Palmyra project terminated in June 2004. Complete uncertainty about who will continue the work of Palmyra project, and who will financially conservation activities needed for next breeding seasons. Flexible enough to conserve this colony.

SSCW (Syrian Society for Conservation of Wildlife), in cooperation with BirdLife International, RSPB, AEWA and national institutions (Ministry of Agriculture and Agrarian Reform (MAAR), Ministry of Local Administration and Environment MLAE), tried to tag one or two birds with satellite transmitters. Unfortunately this could not be implemented, but hopefully the next attempt will be successful.

Somalia
In 2004 SEO planned a survey for Northern Bald Ibis, funded by AEWA. Cancelled due to political situation in country.
EEP/SSP/Japan

International Research contribution

- Three separately managed captive populations
- Three separate studbooks

- Genetics research project initiated. E & W population first look.

- IAGNBI (International Advisory Group on Northern Bald Ibis) acts as a coordinating mechanism at this point in time. It could serve as a species working group.

5. Framework for Action

Goal
Increase the number of Northern Bald Ibis colonies

Purpose
To conserve the Northern Bald Ibis by securing the wild colonies, increasing the number of birds and improving our understanding of their needs

Results									
Result 1 Breeding success, inter- and intra-specific competition, and predation monitored at all existing breeding colonies. ***	**Result 2** Provision of uncontaminated fresh water sources close to breeding sites maintained and improved. Managing existing reservoirs in accordance with ibis needs (Syria) ***	**Result 3** The impact of the introduction of new birds to existing breeding colonies studied in captivity during the breeding season. *	**Result 4** The level of genetic variation within the captive, semi-wild and wild populations assessed. **	**Result 5** A comprehensive health screening conducted on all birds prior to reintroduction. ***	**Result 6** Discarded fishing line and other potentially dangerous debris to be collected and disposed of safely. *	**Result 7** A captive population maintained with health, inbreeding and age structure managed. ***	**Result 8** The conservation of the Northern Bald Ibis through international coordination and cooperation promoted by the International Advisory Group for the Northern Bald Ibis (IAGNBI). ****	**Result 9** Techniques for the establishment of new colonies by reintroduction investigated. **	**Result 10** Risk of infectious disease reduced. ***

Objectively Verifiable Indicators (OVI)									
OVI 1 Number of chicks fledged successfully / breeding pairs.	OVI 2 Availability of freshwater and amphibian preys is ensured during every breeding season.	OVI 3	OVI 4	OVI 5	OVI 6	OVI 7	OVI 8 Easier access to funding needed for conservation of the Syrian ibises; Medium-term project approved and funded aimed at conservation of the Syrian ibises.	OVI 9	OVI 10

Means of Verification (MOV)									
MOV 1 Monitoring breeding.	MOV 2 Surveying and monitoring occurrence of freshwater and status of reservoirs at different stages of each breeding season.	MOV 3	MOV 4	MOV 5	MOV 6	MOV 7	MOV 8 Surveying level of funding and support in Syria annually.	MOV 9	MOV 10

Results cont. 1									
Result 11 Risk of intoxication reduced. ****	**Result 12** Reduce impact of predators. *	**Result 13** Hunting stopped. ****	**Result 14** Risks reduced related to electric wires and collision. *	**Result 15** Building on or near to NBI breeding and feeding sites restricted. ****	**Result 16** Reservoir construction affecting feeding and breeding sites controlled. *	**Result 17** Agriculture and grazing regimes maintained or reformed in order to achieve sustainable exploitation of rangelands and halt advance of desertification process. (SYR to provide suitable feeding areas). **** (MOR, SYR, TUR).	**Result 18** Collection of firewood controlled to prevent destruction or degradation of NBI feeding areas. **** (MOR & SYR)	**Result 19** Socio-economic factors driving land use changes investigated and addressed in partnership with local communities and stakeholders. Promotion of alternative sustainable grazing regimes and energy use, coupled with promotion of socio-economic development of local community. ****	**Result 20** Habitat requirements, food availability and foraging ecology in the current range and release trial sites researched and compared. ***

Objectively Verifiable Indicators (OVI) cont. 1									
OVI 11	OVI 12	OVI 13 Number of birds shot down per breeding season. Number of attempts of ibis killing per breeding season. Number of hunters stopped per breeding season.	OVI 14	OVI 15	OVI 16	OVI 17 Vegetation coverage increased or number of species of shrubs increased.	OVI 18 Vegetation coverage increased or number of species of shrubs increased or number of locals using alternative source of energy increased.	OVI 19 Present land use regulation is reformed in order to attain sustainability by traditional users at ibis breeding grounds.	OVI 20 Preparation of sound articles to be submitted to scientific and conservation journals.

Means of Verification (MOV) cont. 1									
MOV 11	MOV 12	MOV 13 Data collected in the field by rangers and guards.	MOV 14	MOV 15	MOV 16	MOV 17 Surveying and monitoring scheme of rangeland species and relative abundance.	MOV 18 Surveying and monitoring scheme of rangeland species and their relative abundance and of energy use by locals.	MOV 19 Surveying and monitoring the process of reform.	MOV 20 Data publication.

6. Activities by Country

Cost: * : <5,000 US$,
** : 5000.1 – 15,000 US$,
*** : 15,001 – 30,000 US$
**** : >30,000$

Priority (for results): * : low importance
** : medium importance
*** : high importance
**** : critical importance

6.1. Morocco

Result	Activity	Agencies	Timescale	Cost
1. Breeding success, inter- and intra-specific competition, and predation monitored at all exiting breeding colonies. ***				
	1.1 To establish and train a network of wardens to monitor breeding colonies.			
		PNSM, SEO, RSPB	Ongoing	**
	1.2 To provide monitoring equipment, e.g. binoculars, telescopes, vehicles etc. for use by wardens.			
		RSPB, SEO	October 2005	*
	1.3 To establish a uniform scientific protocol for monitoring breeding colonies.			
		PNSM, RSPB	Ongoing	-
2. Provision of uncontaminated fresh water sources close to breeding sites maintained and improved ***				
	2.1 To create new water points where required.			
		RSPB, PNSM	Ongoing	-
	2.2 To ensure regular maintenance and cleaning of water points.			
		RSPB, PNSM	Ongoing	-
3. The impact of the introduction of new birds to existing breeding colonies researched in captivity during the breeding season. *				
	3.1 To identify suitable institutions and research partners to manipulate captive colonies.			
		EAZA, IAGNBI	March 2006	***
	3.2 To carry out the research required investigating the impact.			
		EAZA, IAGNBI, zoos, research institutions	March 2006	***
4. The level of genetic variation within the captive, semi-wild and wild populations assessed. **				
	4.1 To develop a protocol for assessing genetic variation in the Northern Bald Ibis.			
		IAGNBI	March 2006	
	4.2 To identify suitable institutions and collect appropriate samples.			
		IAGNBI	October 2006	
	4.3 To evaluate any existing data on colony interference by introduced birds e.g. Birecik.			
		IAGNBI, EAZA, research institutions	March 2006	

Result	Activity	Agencies	Timescale	Cost
5. A comprehensive health screening conducted on all birds prior to reintroduction. ***				
	5.1 To establish a protocol of health screening for the Northern Bald Ibis prior to reintroduction.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	*
	5.2 To conduct a disease risk analysis as part of a feasibility study prior to reintroduction.			
		IUCN SSC Reintroduction SG, IAGNBI	May 2006	**
	5.3 To build capacity in Turkey and Morocco on health screening techniques.			
		PNSM, RSPB, IOZ, veterinary institutions	March 2006	**
	5.4 To provide equipment and materials to conduct health assessment of the birds.			
		PNSM, RSPB, veterinary institutions	March 2006	***
6. Discarded fishing line and other potentially dangerous debris to be collected and disposed of safely. *				
	6.1 To ensure wardens include fishing line and debris removal as part of their daily activities.			
		PNSM	Ongoing	*
	6.2 To educate fishermen by informal meetings of the hazards posed by lost and discarded fishing debris.			
		PNSM, RSPB, local NGOs	March 2006	*
7. A captive population maintained with health, inbreeding and age structure managed. ***				
	7.1 To develop and maintain separate captive Eastern and Western populations until further research clarifies their relationship.			
		EAZA, IAGNBI, zoos	Ongoing	*
	7.2 Conduct genetic research to clarify the relationships between the Eastern and Western populations.			
		EAZA, IAGNBI, zoos, research institutions	October 2006	*
	7.3 Increase the number of the captive Eastern population to 200 – 250 birds.			
		EAZA, IAGNBI, zoos	March 2006	**
	7.4 Investigate other Northern Bald Ibis holders for the Eastern population.			
		EAZA, IAGNBI, zoos	March 2006	**
	7.5 Investigate the origin of all Eastern population birds held in captivity.			
		EAZA, IAGNBI, research institutions	March 2006	**

Result	Activity	Agencies	Timescale	Cost
8. The conservation of the Northern Bald Ibis through international coordination and cooperation promoted by the International Advisory Group for the Northern Bald Ibis (IAGNBI). ****				
	8.1 To obtain the endorsement of AEWA and other appropriate bodies for IAGNBI as the designated lead coordinating body.			
		IAGNBI, AEWA, IUCN SSC, BirdLife, RSPB	Ongoing	*
	8.2 To maintain IAGNBI as both a group of technical experts and governmental representatives from all current and future range states of the Northern Bald Ibis.			
		IAGNBI	Ongoing	*
	8.3 IAGNBI to promote the development of National Northern Bald Ibis action plans where appropriate.			
		IAGNBI	March 2006	**
	8.4 IAGNBI to maintain cooperation and information exchange with the Southern Bald Ibis Working Group (SBIWG).			
		IAGNBI, SBIWG	Ongoing	**
9. Techniques for the establishment of new colonies by reintroduction investigated. **				
	9.1 To establish protocols for creating both sedentary and migratory Northern Bald Ibis populations in suitable habitat.			
		IAGNBI, IUCN SSC Reintroduction SG, conservation & research institutions	Ongoing	****
	9.2 To develop techniques (model) for assessing suitable release sites.			
		IAGNBI, research institutions	February 2006 - 2007	***
	9.3 To investigate captive colony splitting as a potential technique.			
		IAGNBI, zoos, research institutions	February 2006	***
	9.4 To ensure that no reintroductions take place without full consultation with IAGNBI and the IUCN SSC Reintroduction Specialist Group.			
		IAGNBI, IUCN SSC Reintroduction SG	Ongoing	*
10. Risk of infection disease reduced ***				
	10.1 Veterinary / post-mortem protocol assured for any sick or dead bird.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	**

Result	Activity	Agencies	Timescale	Cost
	10.2 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		PNSM, RSPB, IOZ, veterinary institutions	Ongoing	**
	10.3 To provide equipment and materials to conduct veterinary / post-mortem work.			
		PNSM, RSPB, IOZ, veterinary institutions	Ongoing	**
	10.4 Standardised assessment of risks made in each country (domestic and wildlife).			
		RSPB, LAS.VET, PNSM	October 2006	**
	10.5 Appropriate waste protocol at intensive poultry units it is assured in all known feeding areas.			
		PNSM	December 2006	*
	10.6 Douira poultry unit relocated.			
		PNSM	2006	**
11. Risk of intoxication reduced ****				
	11.1 Local farmers questioned about use of pesticides.			
		PNSM, RSPB	2006	*
	11.2 Meetings with farmers, teachers, etc .to raise awareness of risks of pesticides used.			
		PNSM, RSPB	2006	
	11.3 To identify key foraging areas.			
		PNSM, RSPB	March 2006	*
	11.5 Maintain water-provisioning points near colonies (Morocco).			
		Ongoing		
	11.6 Veterinary / post-mortem protocol assured for any sick or dead bird.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2005	**
	11.7 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		PNSM, RSPB, IOZ, veterinary institutions	Ongoing	**
	11.8 To provide equipment and materials to conduct veterinary / post-mortem work.			
		PNSM, RSPB, IOZ, veterinary institutions	Ongoing	**

Result	Activity	Agencies	Timescale	Cost
13. Hunting stopped ****				
	13.1 Signboards placed in all feeding areas (Syria & Turkey), maintained (Morocco).			
14. Risks reduced related to electric wires and collision *				
	14.1 Poles are low-risk of electrocution design (Morocco & Turkey).			
		Min. Env. and For.	2006	**
	14.2 Increasing visibility of electric wires in feeding areas (Tamri & Birecik).			
		Municipality, Min. of Energy	2006	***
15. Building on or near to NBI breeding and feeding sites restricted. ****				
	15.1 Stop the illegal construction of grottoes at or near breeding and roosting sites.			
	15.2 Protected area status for all breeding and feeding areas (best designation to be determined) in partnership with local communities. (Tamri & Tifnit – MOR, Palmyra –SYR, + ?TUR)			
	15.3 Develop a management plan for Tamri and Palmyra in partnership with local communities.			
	15.4 Initiate training and provide equipment for staff to implement management plans.			
16. Reservoir construction affecting feeding and breeding sites controlled. *				
17. Agriculture and grazing regimes maintained/altered to provide suitable feeding areas. ****				
18. Collection of firewood controlled to prevent destruction or degradation of NBI feeding areas. ****				
19. Socio-economic factors driving land use changes investigated and addressed in partnership with local communities and stakeholders. ****				
20. Habitat requirements, food availability and foraging ecology in the current range and release trial sites researched and compared. ***				
21. Disturbance by military firing range reduced (suggested for MOR – Souss-Massa*)				

6.2. Syria

Result	Activity	Agencies	Timescale	Cost
1. Breeding success, inter and intra specific competition, and predation monitored at all exiting breeding colonies. ***				
	1.1 To establish and train a network of wardens to monitor breeding colonies.			
		MLAE, MAAR, SSCW, BLI / BLME	Ongoing	*
	1.2 To provide monitoring equipment e.g. binoculars, telescopes, vehicles etc. for use by wardens.			
		MLAE, MAAR, SSCW, RSPB, BLI / BLME, donors	October 2006	*
	1.3 To establish a uniform scientific protocol for monitoring breeding colonies.			
		RSPB	Ongoing	-
2. Provision of uncontaminated fresh water sources close to breeding sites maintained and improved ***				
	2.1 To investigate the hydrology of key available sources of water.			
		MLAE, MAAR, SSCW, ACSAD, BLI / BLME	October 2006	*
	2.2 To make recommendations to local authorities on best practices for managing key available water sources.			
		ACSAD, BLI / BLME	March 2006	*
3. The impact of the introduction of new birds on existing breeding colonies researched in captivity during the breeding season. *				
	3.1 To identify suitable institutions and research partners to manipulate captive colonies.			
		EAZA, IAGNBI	March 2006	***
	3.2 To carry out the research required to investigate the impact			
		EAZA, IAGNBI, zoos, research institutions	March 2006	***
4. The level of genetic variation within the captive, semi-wild and wild populations assessed. **				
	4.1 To develop a protocol for assessing genetic variation in the Northern Bald Ibis.			
		IAGNBI	March 2006	
	4.2 To identify suitable institutions and collect appropriate samples.			
		IAGNBI	March 2006	
	4.3 To evaluate any existing data on colony interference by introduced birds, e.g. Birecik.			
		IAGNBI, EAZA, research institutions	March 2006	

Result	Activity	Agencies	Timescale	Cost
5. A comprehensive health screening conducted on all birds prior to reintroduction. ***				
	5.1 To establish a protocol of health screening for Northern Bald Ibis prior to reintroduction.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	*
	5.2 To conduct a disease risk analysis as part of a feasibility study prior to reintroduction.			
		IUCN SSC Reintroduction SG, IAGNBI	March 2006	**
	5.3 To provide equipment and materials to conduct health assessment of the birds.			
		Min. of Environment, veterinary institutions	March 2006	***
7. A captive population maintained with health, inbreeding and age structure managed. ***				
	7.1 To develop and maintain separate captive Eastern and Western populations until further research clarifies their relationship.			
		EAZA, IAGNBI, zoos	Ongoing	*
	7.2 Conduct genetic research to clarify the relationships between the Eastern and Western populations.			
		EAZA, IAGNBI, zoos, research institutions	March 2006	*
	7.3 Increase the number of the captive Eastern population to 200 – 250 birds.			
		EAZA, IAGNBI, zoos	March 2006	**
	7.4 Investigate other Northern Bald Ibis holders for the Eastern population.			
		EAZA, IAGNBI, SOS	March 2006	**
	7.5 Investigate the origin of all Eastern population birds held in captivity.			
		EAZA, IAGNBI, research institutions	March 2006	**
8. The conservation of the Northern Bald Ibis through international coordination and cooperation promoted by the International Advisory Group for the Northern Bald Ibis (IAGNBI). ****				
	8.1 To obtain the endorsement of AEWA and other appropriate bodies for IAGNBI as the designated lead coordinating body.			
		IAGNBI, AEWA, IUCN SSC, BirdLife, RSPB	Ongoing	*
	8.2 To maintain IAGNBI as both a group of technical experts and governmental representatives from all current and future range states of the Northern Bald Ibis.			
		IAGNBI	Ongoing	*

Result	Activity	Agencies	Timescale	Cost
		IAGNBI	Ongoing	*
	8.3 IAGNBI to promote the development of National Northern Bald Ibis action plans where appropriate.			
		IUCN SSC, BLI / BLME, IAGNBI	March 2006	**
	8.4 IAGNBI to maintain cooperation and information exchange with the Southern Bald Ibis Working Group (SBIWG).			
		IAGNBI, SBIWG	Ongoing	**
9. Techniques for the establishment of new colonies by reintroduction investigated. **				
	9.1 To establish protocols for creating both sedentary and migratory Northern Bald Ibis populations in suitable habitat.			
		IAGNBI, IUCN SSC Reintroduction SG, conservation & research institutions	Ongoing	****
	9.2 To develop techniques (model) for assessing suitable release sites.			
		IAGNBI, research institutions	February 2006 - 2007	***
	9.3 To investigate captive colony splitting as a potential technique.			
		IAGNBI, zoos, research institutions	February 2006	***
	9.4 To ensure that no reintroductions take place without full consultation with IAGNBI and the IUCN SSC Reintroduction Specialist Group.			
		IAGNBI, IUCN SSC Reintroduction SG	Ongoing	*
10. Risk of infectious disease reduced ***				
	10.1 Veterinary / post-mortem protocol assured for any sick or dead bird.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	**
	10.2 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		Min. of Env., IOZ, veterinary institutions	March 2006	**
	10.3 To provide equipment and materials to conduct veterinary / post-mortem work.			
		Min. of Env., IOZ, veterinary institutions	March 2006	**

Result	Activity	Agencies	Timescale	Cost
	10.4 Standardised assessment of risks made in each country (domestic and wildlife).			
		MLAE	2006	**
11. Risk of intoxication reduced ****				
	11.1 Local farmers questioned about use of pesticides.			
		MLAE, SSWC, ICARDA	July 2006	**
	11.2 Meetings with farmers, teachers etc to raise awareness of risks of pesticides used.			
		MLAE, SSWC	July 2006	**
	11.3 To identify key foraging areas.			
		MLAE, SSCW, BLI / BLME	Ongoing	**
	11.4 Quality of water sources monitored each year (Morocco).			
		MAAR, MLAE MIM, IVRIG, ACSAD	2006	*
	11.5 Veterinary / post-mortem protocol assured for any sick or dead bird			
		MLAE, MAAR, IOZ, veterinary institutions	March 2006	**
	11.6 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		Min. of Env., IOZ, veterinary institutions	March 2006	**
	11.7 To provide equipment and materials to conduct veterinary / post-mortem work.			
		MLAE, MAAR, IOZ, veterinary institutions	March 2006	**
12. Reduce impact of predators *				
	12.1 Surveillance of any predation events.			
		MLAE, SSWC, BLI / BLME	Ongoing	**
	12.2 Control measures taken (for special cases).			
13. Hunting stopped ****				
	13.1. Surveillance of any potential hunting and define all feeding areas.			
		MLAE, MAAR, SSWC	Ongoing	**
	13.2. Meetings (sensitisation) with hunters and schools.			
		MLAE, MAAR SSWC	2005 and 2006	*

Result	Activity	Agencies	Timescale	Cost
	13.3 Preparation of an official statement by enforcement Syrian authorities stating the strict forbiddance of hunting in the ibis breeding area.			
		MLAE, MAAR, SSWC		
	13.4 Signboards placed in all feeding areas (Syria & Turkey), maintained (Morocco).			
	13.5 Media campaign (TV, etc.) promoting importance of NBI and hunting laws (Syria & Morocco) and produce posters/calendars (Turkey).			
		MLAESSWC	2005 and 2006	***
	13.6 Identify and close all trophy shops (Syria).			
		MLAE, SSWC, MAAR	2005	
	13.7 Improved hunting law enforcement			
		MLAE, SSWC, MAAR	2005 and 2006	***
	13.8 Involve and train local hunters in wardening, ecotourism etc.			
		MLAE, SSWC, BLI / BLME	2006	**
14. Risks reduced related to electric wires and collision *				
	14.1 NBI considered during any new construction of wind generators and roads in feeding zones.			
		MLAE, SSWC, Min. Transportation		
15. Building on or near to NBI breeding and feeding sites restricted. ****				
	15.1 Protected area status for all breeding and feeding areas (best designation to be determined) in partnership with local communities. (Tamri & Tifnit – MOR, Palmyra –SYR, + ?TUR)			
		MAAR, MLAE, SSCW, BLI / BLME, FIRDOS	2006	*
	15.2 Develop a management plan for Tamri and Palmyra in partnership with local communities.			
		MAAR, MLAE, SSCW, BLI / BLME, FIRDOS	2006	**
	15.3 Initiate training and provide equipment for staff to implement management plans.			
		MAAR, MLAE, SSCW, BLI / BLME	2006	***

Result	Activity		Agencies	Timescale	Cost
17. Agriculture and grazing regimes reformed in order to achieve sustainable exploitation of rangelands and stop desertification**** maintained/altered to provide suitable feeding areas. ****					
	17.1 Following up the exception to the open access rule (i.e., pioneering attempt of land reform in Syria), promoted by Palmyra project, and in the process of being applied in the buffer zone of Al Talila reserve (Palmyra).				
	17.2. Applying the reform of land tenure attempted in Palmyra to all protected areas of Syria.				
	17.3. Extending the reform of land tenure attempted in Palmyra to all steppe regions of Syria.				
18. Collection of firewood controlled to prevent destruction or degradation of NBI feeding areas. ****					
19. Socio-economic factors driving land use changes investigated and addressed in partnership with local communities and stakeholders. ****					
20. Habitat requirements, food availability and foraging ecology in the current range and release trial sites researched and compared. ***					

6.3. Turkey

Result	Activity	Agencies	Timescale	Cost
1. Breeding success, inter- and intra-specific competition, and predation monitored at all exiting breeding colonies. ***				
	1.1 To establish and train a network of wardens to monitor breeding colonies.			
		Min. of Environment & Forestry, DD	March 2005	*
	1.2 To provide monitoring equipment e.g. binoculars, telescopes, vehicles etc. for use by wardens.			
		Min. of Environment & Forestry, DD, RSPB	March 2005	*
	1.3 To establish a uniform scientific protocol for monitoring breeding colonies.			
		Min. of Environment & Forestry, DD	Ongoing	-
3. The impact of the introduction of new birds to existing breeding colonies researched in captivity during the breeding season. *				
	3.1 To identify suitable institutions and research partners to manipulate captive colonies.			
		EAZA, IAGNBI	March 2006	***
	3.2 To carry out the research required to investigate the impact.			
		EAZA, IAGNBI, zoos, research institutions	March 2006	***
4. The level of genetic variation within the captive, semi-wild and wild populations assessed. **				
	4.1 To develop a protocol for assessing genetic variation in the Northern Bald Ibis.			
		IAGNBI	March 2006	
	4.2 To identify suitable institutions and collect appropriate samples.			
		IAGNBI	March 2006	
	4.3 To evaluate any existing data on colony interference by introduced birds, e.g. Birecik.			
		IAGNBI, EAZA, research institutions	March 2006	
5. A comprehensive health screening conducted on all birds prior to reintroduction. ***				
	5.1 To establish a protocol of health screening for the Northern Bald Ibis prior to reintroduction.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	*
	5.2 To conduct a disease risk analysis as part of a feasibility study prior to reintroduction.			
		IUCN SSC Reintroduction SG, IAGNBI	March 2006	**

Result	Activity	Agencies	Timescale	Cost
	5.3 To build capacity in Turkey and Morocco on Health screening techniques.			
		Min. of Environment & Forestry, IOZ, veterinary institutions	March 2006	**
	5.4 To provide equipment and materials to conduct health assessment of the birds.			
		Min. of Environment & Forestry, veterinary institutions	March 2006	***
7. A captive population maintained with health, inbreeding and age structure managed. ***				
	7.1 To develop and maintain separate captive Eastern and Western populations until further research clarifies their relationship.			
		EAZA, IAGNBI, zoos	Ongoing	*
	7.2 Conduct genetic research to clarify the relationships between the Eastern and Western populations.			
		EAZA, IAGNBI, zoos, research institutions	March 2006	*
	7.3 Increase the number of the captive Eastern population to 200 – 250 birds.			
		EAZA, IAGNBI, zoos	March 2006	**
	7.4 Investigate other Northern Bald Ibis holders for the Eastern population.			
		EAZA, IAGNBI, zoos	March 2006	**
	7.5 Investigate the origin of all Eastern population birds held in captivity.			
		EAZA, IAGNBI, research institutions	March 2006	**
	7.6 Build the capacity at Birecik to support and increase their population to 150 birds (e.g. removing trees, expanding cages and promoting good husbandry).			
		Min. of Environment & Forestry, DD, RSPB, EAZA.	Ongoing	***
8. The conservation of the Northern Bald Ibis through international coordination and cooperation promoted by the International Advisory Group for the Northern Bald Ibis (IAGNBI). ****				
	8.1 To obtain the endorsement of AEWA and other appropriate bodies for IAGNBI as the designated lead coordinating body.			
		IAGNBI, AEWA, IUCN SSC, BirdLife, RSPB	Ongoing	*

Result	Activity	RSPB Agencies	Timescale	Cost
	8.2 To maintain IAGNBI as both a group of technical experts and governmental representatives from all current and future range states of the Northern Bald Ibis.			
		IAGNBI	Ongoing	*
	8.3 IAGNBI to promote the development of National Northern Bald Ibis action plans where appropriate.			
		IAGNBI	March 2006	**
	8.4 IAGNBI to maintain cooperation and information exchange with the Southern Bald Ibis Working Group (SBIWG).			
		IAGNBI, SBIWG	Ongoing	**
9. Techniques for the establishment of new colonies by reintroduction investigated. **				
	9.1 To establish protocols for creating both sedentary and migratory Northern Bald Ibis populations in suitable habitat.			
		IAGNBI, IUCN SSC Reintroduction SG, conservation & research institutions	Ongoing	****
	9.2 To develop techniques (model) for assessing suitable release sites.			
		IAGNBI, research institutions	February 2006 - 2007	***
	9.3 To investigate captive colony splitting as a potential technique.			
		IAGNBI, zoos, research institutions	February 2006	***
	9.4 To ensure that no reintroductions take place without full consultation with IAGNBI and the IUCN SSC Reintroduction Specialist Group.			
		IAGNBI, IUCN SSC Reintroduction SG.	Ongoing	*
10. Risk of infectious disease reduced ***				
	10.1 Veterinary / post-mortem protocol assured for any sick or dead bird.			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	**
	10.2 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		Min. of Environment & Forestry, IOZ, veterinary institutions	Ongoing	**

Result	Activity	Agencies	Timescale	Cost
	10.3 To provide equipment and materials to conduct veterinary / post-mortem work.			
		Min. of Environment & Forestry, IOZ, veterinary institutions	Ongoing	**
	10.4 Standardised assessment of risks made in each country (domestic and wildlife).			
		Min. of Environment, DD	2005 – 2006	**
11. Risk of intoxication reduced ****				
	11.1 Local farmers questioned about use of pesticides.			
		Min. of Environment & Forestry, DD, RSPB	2006	
	11.2 Meetings with farmers, teachers etc to raise awareness of risks of pesticides used.			
		Min. of Environment & Forestry, DD, Min. of Agriculture, MIN, EAV, FOR, DD, AGR	2006	**
	11.3 To identify key foraging areas.			
		Min. of Environment & Forestry DD, RSPB	Ongoing	*
	11.4 Veterinary / post-mortem protocol assured for any sick or dead bird			
		IAGNBI, IOZ, Jerez Zoo, veterinary institutions	March 2006	**
	11.5 To build veterinary capacity in Morocco, Syria and Turkey for post-mortem work.			
		Min. of Environment & Forestry, IOZ, veterinary institutions	Ongoing	**
	11.6 To provide equipment and materials to conduct veterinary / post-mortem work.			
		Min. of Environment & Forestry, IOZ, veterinary institutions	Ongoing	**

Result	Activity		Agencies	Timescale	Cost
12. Reduce impact of predators *					
	12.1 Surveillance of any predation events.				
			Min. of Environment & Forestry, DD, RSPB, DD	Ongoing	**
13. Hunting stopped ****					
	13.1 Meetings (sensitisation) with hunters and schools.				
			DD, Municipality	Ongoing	*
	13.2 Signboards placed in all feeding areas (Syria & Turkey), maintained (Morocco).				
			Min. of Environment & Forestry, DD		**
	13.3 Improved hunting law enforcement.				
			Min. of Environment & Forestry		
14. Risks reduced related to electric wires and collision *					
	14.1. Poles are low-risk of electrocution design (Morocco & Turkey).				
			Min. of Environment & Forestry	2006	**
	14.2. Increasing visibility of electric wires in feeding areas (Tamri & Birecik).				
			Municipality, Min. of Energy	2006	***
	14.3. NBI considered during any new construction of wind generators and roads in feeding zones.				
			Min. of Energy, Min. of Environment & Forestry, Municipality	2006	**
15. Building on or near to NBI breeding and feeding sites restricted. ****					
	15.1 Protected area status for all breeding and feeding areas (best designation to be determined) in partnership with local communities. (Tamri & Tifnit – MOR, Palmyra –SYR, + ?TUR)				
	15.2 Initiate training and provide equipment for staff to implement management plans.				
16. Reservoir construction affecting feeding and breeding sites controlled. *					
	16.1 Ensure consultation with IAGNBI at early planning stage of all future developments potentially effecting NBI.				

Result	Activity		Agencies	Timescale	Cost
17. Agriculture and grazing regimes maintained/altered to provide suitable feeding areas. ****					
19. Socio-economic factors driving land use changes investigated and addressed in partnership with local communities and stakeholders. **** Promotion of alternative sustainable grazing regimes and energy use, coupled with promotion of socio-economic development of local community.					
20. Habitat requirements, food availability and foraging ecology in the current range and release trial sites researched and compared. ***					

7. Implementation

The International Advisory Group on the Northern Bald Ibis (IAGNBI) could act as Species Working Group and monitor the implementation of the actions mentioned in the tables if funding is available.

Since 1998, regular monitoring committee meetings have been held in Souss-Massa National Park to monitor the activities carried out in the Northern Bald Ibis conservation project. A similar arrangement could be established in Syria and Turkey.

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