International Species Action Plan

Lanner Falcon *Falco biarmicus*

Final Draft, December 1999

Prepared by BirdLife International on behalf of the European Commission

International Action Plan for the Lanner Falcon *Falco biarmicus*

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Time Table
Date of first draft: 31st July 1999
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Reviews
This action plan should be reviewed and updated every five years. An emergency review should be undertaken if sudden major environmental changes liable to affect the population occur within the range of the species.

Geographical scope

This Action Plan needs to be implemented in Italy, Greece, Serbia, Bosnia, Croatia, Macedonia and Turkey (for *Falco biarmicus feldeggii*); Tunisia, Algeria and Morocco (for *F. b. erlangeri*); and Libya, Egypt, Israel, Jordan and Syria (for *F. b. tanypterus*).

Contents

Summary

The Lanner Falcon is classified as Endangered at the European level and is categorised as SPEC 3 (Tucker & Heath 1994). It is also listed in Annex I of the European Union's Wild Birds Directive, Appendix II of the Bonn Convention, Annex II of the Bern Convention, and Appendix II of CITES. The total European population of subspecies *feldeggii* is 328-431 pairs, breeding in 7 countries (56% in Italy). Subspecies *erlangeri* numbers 1350-1400 pairs, breeding in 3 countries (74% in Morocco), while subspecies *tanypterus* totals 75-85 pairs (breeding in 5 countries). However, these estimates should be treated with caution, since information on Lanner Falcon populations in many countries is poor (e.g. Albania, Serbia, Macedonia, Turkey, Morocco, Algeria, Libya, Egypt, Syria and Jordan).

The population has been declining in Europe since the 1950s, because of widespread human persecution and decrease of steppe and arid grassland habitat. Conservation measures must focus on habitat management and maintenance of steppe and arid grassland habitat; wardening of breeding sites accessible to people; and public awareness (specifically targeted at rock-climbers).

Threats and limiting factors

Habitat loss in the breeding and foraging areas and afforestation - high

Direct human persecution (shooting) - high

Theft of eggs and chicks by humans - high

Disturbance at breeding sites (especially rock-climbing and intensive tourism) - high

Open-cast mining - low/medium

Interspecific competition - low

Pesticide toxicity - medium/high

Disturbance and hazards from building operations, electric power-lines and cliff-side stabilisation - high

Climate change - unknown

Conservation priorities

Promotion of appropriate agricultural and forestry policies, including reduction of pesticides, protection of steppe and grassland habitat, and promotion of zoned forestry management – high

Legal protection of key sites, especially breeding sites (e.g. designation of IBAs as SPAs in CEE countries) - high

Promotion of wardening schemes to combat theft of eggs and chicks, and illegal shooting of adults - high

Reduction of human disturbance at breeding sites (e.g. climbing, quarrying, cliff-side restoration, roads, and general building work) - high

Promotion of national action plans for the species - high

Promotion of scientific research, especially in areas where data on breeding seasons and population sizes and trends are unknown - high

Introduction

The Lanner Falcon is composed of five subspecies (*biarmicus*, *abyssinicus*, *erlangeri*, *feldeggii* and *tanypterus*), spread across the Western Palearctic, Arabian Peninsula, and central and southern Africa. In the Mediterranean, the northern limit of the species, numbers have declined dramatically since the 1950's and 1960's (Tucker & Heath 1994). This has been attributed to several factors, but especially human persecution (Ciaccio & Lambertini 1997). Others threats are pesticide pollution, disturbance from rock-climbers, theft off eggs and chicks and possibly also interspecific competition (Mascara 1986).

The species is included in Annex I of the EU Bird's Directive (79/409/CEE), and is classified as SPEC 3 and Endangered in Europe (Tucker & Heath 1994). It is also listed in Annex II of the Bern Convention, Appendix II of the Bonn Convention and Appendix II of CITES. In the Mediterranean Action Plan produced under the Barcelona Convention, the species is considered a priority species for conservation along with 15 other bird species.

This action plan is the result largely of a workshop held during 1st-2nd October at Pollino National Park, Rotonda (PZ), Italy. The meeting was attended by Italian ornithologists who have been involved in the research and conservation of the species in Sicily, Abruzzo, Calabria, Apulia, Lazio, Tuscany, Marche, Campania, Umbria and Molise. In addition, representatives from Greece, Israel, and Tunisia were present.

Background information

Distribution

Breeding
The current breeding range of subspecies *feldeggii* extends north too 45°N in central and eastern Mediterranean, where it occurs from central and southern Italy east too Turkey (Ciaccio & Lambertini 1997). In particular, it breeds in Croatia, Bosnia, Serbia, Macedonia and Greece, while there are probably a few pairs in Armenia, Azerbaijan and Georgia. It is rumoured to have bred in Albania (Cramp & Simmons 1980), although there are no confirmed records (Snow & Perrins 1998). Until the 19th century, the species bred in Spain (McGowan & Massa 1990) and southern France (Cheylan 1981), where it is now a vagrant.

Subspecies *erlangeri* breeds from Morocco too Algeria (including Tunisia), but little information is available on the population. Scant data are also available on subspecies *tanypterus*, which breeds from Libya too Jordan, including Egypt, Israel and possibly Syria (Cramp & Simmons 1980).

The species is a vagrant in France, Spain, Portugal, Czech Republic, Slovakia, Malta, Rumania, Cyprus, Canary and Balearic Islands, Iraq, Kuwait, Sweden and Switzerland, although in the latter two countries individuals seem to have been from captive origin (Snow & Perrins 1998).

Winter and migration
The Lanner Falcon is a sedentary species primarily, although some (poorly understood) movements occur (Snow & Perrins 1998). For example, pairs that breed in mountain areas regularly move to lowland and coastal regions (mainly marshland) for the winter period (Snow & Perrins 1998). Most birds observed distant from established territories are juveniles.

Massa *et al*. (1991) suggest that some Italian regions (e.g. Apulia) were once ideal wintering areas for the species, both for birds breeding in the region and from neighbouring areas (Basilicata, Marche and Abruzzo).

Birds belonging to the *erlangeri* subspecies, inhabiting arid and steppic areas, have been observed long distances from their breeding sites (Bergier 1987, Massa *et al*. 1991, Snow & Perrins 1998).

Population
In the early 1990's, Massa *et al*. (1991) estimated the European population of subspecies *feldeggii* to be 250-300 pairs, 70% of which bred in Italy (and 60 % of these in Sicily). Tucker & Heath (1994) and Ciaccio & Lambertini (1997) estimate this population to number 140-360 pairs, of which 50-80% are present in Italy. More recent information suggests a larger population, totalling 328-431 pairs (Table 1). There seems to have been a steep decline in numbers in Europe, although there is a lack of accurate census data and results from different methodologies are difficult to compare. The population of subspecies *erlangeri* is considered to total 1350-1400 pairs, while the *tanypterus* subspecies is estimated in 75-80 pairs.

The Palearctic population of *Falco biarmicus* is therefore estimated to total 1753-1921 pairs (Table 1), although this remains provisional since data for many range countries are based on historic information or are missing. In particular, information for Morocco (which supports over 50% of the Palearctic population) is very incomplete. Also, data for Turkey is poor, where about 30% of the *feldeggii* population is thought to occur (Guven Eken pers. comm.).

Table 1 - Breeding population estimates of the Lanner Falcon in the Palearctic (based on Tucker & Heath 1994; Massa *et al.* 1991, and data gathered during the action plan workshop in 1999). Accuracy is assessed on a scale from 0 (a guess) to 3 (a census accurate to 10% of the true number) (for method, see Crockford *et al.* 1996).

Country	No. of pairs estimated	Year	Accuracy code	Reference
Italy	172-191	1999	2-3	Action Plan Workshop 1999
Croatia	10-20	1989	1	Massa *et al*. 1991
Bosnia	?			
Serbia	5-10	1989	1	Massa *et al*. 1991
Macedonia	?			
Albania	?			Bino pers. comm.
Greece	38-53	1999	2	Alivizatos pers. comm.
Turkey	100-150	1998	1	Eken pers. comm.
Georgia Armenia Azerbaijan	5	1998	0	Snow & Perrins 1998
Total *feldeggii*	**330-429**			
Morocco	1000	1980s	0	Snow & Perrins 1998
Tunisia	350-400	1999	1-2	Azafzaf 1999
Algeria	?			
Total *erlangeri*	**1350-1400**			
Libya	?			
Egypt	?			
Israel	25-30	1980s	2	Snow & Perrins 1998
Jordan	?			
Syria	50	1980s	0	Snow & Perrins 1998
Total *tanypterus*	**75-80**			
Total Palearctic	**1755-1919**			

Life history

Breeding

The ecology of the species is poorly known (Tucker & Heath 1994) and most of the available information originates from Italy (Bonora & Chiavetta 1975, Chiavetta 1981a, Bassi & Brunelli 1989, Ciaccio *et al.* 1987, Massa *et al.* 1991). The Lanner Falcon breeds in isolated pairs, using rocky cliffs as nest sites (Sanctis pers. comm., Azafzaf pers. comm., Corso ined., Massa *et al.* 1991). The African subspecies breeds also in trees and on electricity pylons. The eggs are laid in cavities or holes, deserted nests of Corvids and other raptors, and (rarely) on ledges. Cliffs used for breeding is commonly composed of calcareous, tufaceous and sandstone rock.

The species is monogamous and the mating period begins in December-January in southern areas (Bonora & Chiavetta 1975, Mascara 1986). The clutch (usually 3-4 eggs, sometimes 2 eggs) is laid between the end of February and mid-March, and is incubated by both sexes. Hatching takes place usually in mid-April, and the chicks are fed mainly by the female. Fledging occurs usually in mid-

May, but extremes are early April too early June (Massa *et al.* 1991). In Sicily the fledging-rate is 2.3 juv./pair (Massa *et al.* 1991), while in Emilia-Romagna (Italy), the northern range limit, it is 1.7 juv./pair (Chiavetta 1981b). In central Italy, productivity appears to be low (at 1.1 juv./pair [Petretti 1987]).

Feeding
Feeding territories are often co-inhabited by other raptors, such as the Little Owl, Barn Owl, Scops Owl, Kestrel, Lesser Kestrel, Red-footed Falcon and Montagu's Harrier (Mebs 1959, Mirabelli 1981, Ciaccio & Dimarca 1985, Massa *et al.* 1991). Prey species vary with location, but are mostly small and medium-sized birds (thrushes, pigeons and corvids), weighing on average 100-150 g (Mascara 1986, Siracusa *et al.* 1988, Massa *et al.* 1991). Reptiles, insects and, more rarely, small mammals (e.g. bats and mice) are also consumed. For example, in Sicily only 4% of 1219 prey items were mammals, while birds represented 67.5% (chiefly *Pica pica* [16.5%], *Columba livia* [16.3%], *Passer hispaniolensis* [12.5%], *Sturnus vulgaris* and *S. unicolor* [8.5%]) (Massa *et al.* 1991). Reptiles constitute only 2.3% of the diet of the Lanner in Sicily, Egypt and Sudan (Goodman & Haynes 1989), although in western and southern Africa they seem to be taken more frequently (Bergier 1987; Cade 1982).

Insects constitute up to 30% of the diet, for example in Sicily 28.2% of prey items belong to this group (e.g. *Camponotus* sp. [Massa *et al.* 1991]) but Mascara (1986) found only 13.3% of Coleoptera. In Tunisia, the falcon feeds on the chicks of the ground dwelling bird *Alectoris barbara* during the breeding season. But in the south it often hunts small mammals (e.g. *Psammomyses obesus*) and sometimes lizards (Heim de Balsac 1962), while at Chebika Oasis it specialises in hunting bats as they leave their day-time roost (Azafzaf 1999). At a breeding site in Lazio, central Italy, Squirrels (*Sciurus vulgaris*) are often preyed upon (Corso ined.).

Habitat requirements
The Lanner Falcon breeds at 50-1150 m in Sicily, but most often around 500m (Massa *et al.* 1991). In other continental areas it may breed at higher altitude (Mirabelli 1981), but always in places with an arid climate and preferably a southern aspect (Chiavetta 1992). It rarely breeds on sea cliffs (Salvo 1984). In Sicily, the typical habitat is arid valleys dominated by rocky cliffs of moderate height (70-80 m), with sparse uncultivated land, pastures, and non-irrigated arable land. Nests are located generally at 30-35 m height. Typical hunting habitat is expansive rocky terrain and inland steppes, while forested areas are avoided generally.

Threats and limiting factors

Habitat loss and degradation in the breeding areas
Habitat loss is due mainly to urbanisation, modification of agricultural practices, construction of roads, and agricultural expansion into steppe and grassland habitat. This has caused reduction of hunting areas and prey species, and a contraction of the range of the falcon, for example it's disappearance from the northern Appennines (Italy) in the mid-1980's (Tucker & Heath 1994). Consequently, Gensbol (1992) considered it to be the most endangered European raptor.

Importance: High

Forestry
Extensive afforestation during the 1970's and 1980's in steppe areas of southern Italy and other Mediterranean countries (e.g. Greece and Turkey) caused a substantial landscape changes. In recent

years this was often funded through CEE Regulation 2080/92. It is not yet completely clear the impact on Lanner populations, but at least locally is has been negative.

Importance: unknown, locally high

Human persecution
Persecution of the falcon probably remains high in areas where skylarks are hunted for sport (e.g. Italy, Greece, Tunisia and Morocco) (LIPU 1991). During winter, when skylarks are hunted, Lanner Falcons often hunt in open terrain, where they are easily persecuted by lark-hunters. In the years 1995-98 at least 5 Lanner Falcons, mainly juveniles, were recovered shot in two areas of southern Italy (Sigismondi pers. comm.; Corso ined.).

Also, the control of corvids by shooting may locally affect the falcon in two ways:
1) Reduction of prey, since some corvids are important in the diet of the falcon (e.g. the Magpie in Sicily and Apulia) (Siracusa *et al.* 1988, Massa *et al.* 1991, Chiavetta 1992).
2) Direct mortality, since hunters might shoot falcons while controlling corvids.

Importance: high

Theft of eggs and chicks
In the Mediterranean basin, in particular Tunisia, Italy, Israel, Turkey and Greece, the theft of Lanner Falcon eggs and chicks from the wild for sale to zoos, collectors and tourists remains a serious problem, at least locally. For example, in Lazio (Italy) there have been 3 known nest robberies in the past 12 years (Brunelli pers. comm.).

Importance: high

Disturbance by rock-climbers and tourists
In some regions (e.g. Apulia in Italy), disturbance by rock-climbers and tourists has been responsible for the abandonment of several breeding sites (Chiavetta 1981b), despite a preference for nesting on cliffs of moderate height. Where tourism is intensive and uncontrolled, this is a particular problem.

Importance: high

Mining
Open-cast mining is responsible for the loss of nesting habitat in several areas, although disused quarries can subsequently offer suitable nesting areas (Morimando pers. comm.).

Importance: medium

Interspecific interference
Peregrine Falcon and Lanner Falcon has been recorded using in different years the same breeding sites (e.g. Italy [Corso e Ciaccio ined., De Sanctis pers. comm.] and Israel [Hatzofe pers. comm.]). In such cases, the Peregrine Falcon seems dominant (Chiavetta 1981b, Mirabelli 1981) and considering the continued range expansion of this species (e.g. a 100% increase in Sicily during the

last 10 years [Corso ined.]), it may cause local declines of the Lanner Falcon. However, there are areas where the two species breed within a few hundreds metres one each other without interference, and often the Lanner Falcon nests on lower cliffs than the Peregrine Falcon (Massa *et al*. 1991). Food competition between the species may also be low, since Lanner Falcons feed mainly on medium/large, sedentary birds, while 35% of the biomass of the diet of the Peregrine Falcon is migratory species (Massa 1981, Falcone & Seminara 1981).

Importance: Low

Pesticides
The use of pesticides can be a significant problem for the Lanner Falcon, by reducing prey abundance and breeding success. This seems to be a particular problem in Tunisia, where the analysis of 21 eggs in the north of the country showed high levels of contamination by pesticides (Mahmoud 1983).

Importance: locally high

Electrical power-lines
Electrocution from power-lines has been noted as a problem for several raptors species (Penteriani 1996), and is known to have affected the Lanner Falcon in Abruzzo (Italy) and Israel (De Sanctis and Hatzofe pers.comm.). Also, in some areas of Sicily the disappearance of the falcon coincided with the erection of power-lines across valleys. Presently, however, this does not seem to be a widespread threat for the species.

Importance: Medium/locally high

Cliff-side stabilisation
Rock faces in close proximity to roads and buildings are often stabilised for human safety, through for example the use of steel netting. These operations are known to have caused the abandonment of at least two breeding sites in Abruzzo (Italy).

Importance: medium/locally high

Climate change
Climate change does not seem to be a key factor responsible for the decline of this species, even where climate conditions influence breeding success negatively.

Importance: unknown

Conservation status and recent conservation measures

Albania
Protected by national legislation and included in the Red Data Book as Data Deficient. Some potential breeding areas are part of IBAs. There are no known conservation efforts specifically aimed at the falcon.

Observations of the species in Albania are very scarce. Ticehurst & Whistler (1932), based upon the information obtained by Lodge (1912) and Fuhrer (1900-1901), note that the species is commoner than the Peregrine Falcon in the Northern Albanian mountains during the summer. Zeko (1962), in an inventory of Albanian avifauna, considers the species to be a very rare breeder of the coastal region. Nowak (1989), based upon information obtained by Albanian ornithologists, mentions the species as breeding, migrating and wintering. Duguet & Pitrou (pers. comm.) observed one individual in the vicinity of Valamara Mountain (south-east Albania) in the summer of 1993, while Bino (ined.) recorded the species in the Thethi area (northern Albania) in 1999.

Croatia
Legally protected by the Pravilnik o Zastiti Pgedinih Vrsta Ptica (Aves) 1995. Two IBAs where the species is present are national parks: Nacionalni park Kornati (IBA 019, Mediterranean Specially Protected Area; one possible pair in 3,617 ha); and Nacionalni park Krka (IBA 021, Mediterranean Specially Protected Area; 1-2 pairs in 14,200 ha) (Grimmett & Jones 1989). The estimated population in these two areas may represent about 20% of the national population. No specific conservation programme has been conducted for the species.

Greece
Protected under Ministerial Decree 414985/85. The status of the falcon is poorly known in Greece, with its population estimated at 36-55 pairs (Table 1). Of these, most are concentrated in central Greece (including the Ionian Islands) and the Aegean islands (including Crete) (16-22 pairs and 13-20 pairs, respectively), with smaller populations in the north (7-11 pairs) and Peloponnese (0-2 pairs).

Although the above estimates are somewhat higher than previous ones (Hallmann 1985, Tucker & Heath 1994, Handrinos & Akriotis 1997, Ciaccio & Lambertini 1997), this is probably due to better information rather than a population increase. In fact, the population is considered to be relatively stable and may even have declined locally.

Over 90% of the population in Greece occurs in IBAs (Hellenic Ornithological Society 1999), but less than 20% of IBAs are designated SPAs. The species is classified as Vulnerable in the Red Data Book of Greece (Handrinos 1992), but as yet no specific conservation measures have been taken for the species, although it has probably benefited from the few SPAs that have been created.

Israel
Protected by the Wild Animal Protection Law 1995.

Italy
Legally protected since 1977 and subject to special protection since 1992 (Hunting Law 157/92). Included in the New Red List of Italian Breeding Birds as Endangered (LIPU & WWF 1999).

About 40% of the population occur in IBAs (LIPU *in press*). Thirty-seven percent of IBAs that host pairs of Lanner Falcons are completely protected, while only 17% are completely unprotected. The population is monitored regularly in most regions (Umbria, Marche, Tuscany, Abruzzo, Apulia, Basilicata, Campania and Calabria).

Lebanon
The species is fully protected. The species is scarce and limited to the on the Southern Rift Margins, Aqaba Mountains and Rum Desert, although birds do wander into the interior desert.
egal status: fully protected. Habitat degradation caused by overgrazing and pesticide use are the main threats; Theft of eggs and chicks and the trapping of adults for falconry probably occurs locally. The establishment of the Wadi Rum Nature Reserve will provide protection to part of the population.

Macedonia
Legal status unknown. The three IBAs where the species has been reported are unprotected or only partially so: Korab Mountain and Radika Gorge (IBA 049, partially protected by Mavrovo National Park; 1 pair); Babuna Gorge, Topolka Gorge and Black Rock (IBA 050, proposed Ornithological Reserve; 1 pair); and River Crna Gorge (IBA 052; 1-2 pairs) (Grimmett & Jones 1989). No specific conservation programmes have been conducted for the species.

Morocco
Legally protected since 1980. It seems most of the population of the subspecies *erlangeri* breeds in Morocco, but figures and trends are based on data from the 1980s.

Serbia
Legally protected and included in the Red Data Book of the former Yugoslavia. Current status is unknown. No specific conservation programme has been conducted for the species.

Tunisia
Legally protected. In 1978, Les Amis des Oiseaux lead a public awareness campaign for raptors conducted over several days, aimed at the general public, schools, customs and police officers. Another campaign was aimed at the protection of raptor nests by forest wardens.

The Lanner Falcon completely replaces the Peregrine Falcon south of the 34th Parallel. The former is present in higher densities and more widely than the latter and is very common in all mountainous regions. Since the 1980s a pair has bred on the Roman aqueduct of Mohammedia, 10 km from Tunis, which they share with a colony of Lesser Kestrels. This site is one of 45 IBAs in Tunisia.

Turkey
Legally protected and included in the Draft Red List of Threatened Animals prepared by the Ministry of Environment**. T**he species is recorded in a few IBAs, but is absent from those in the Black Sea region and Thrace. The falcon seems to breed in all suitable parts of the country, although they are very scarce and only limited information is available (Eken pers. comm.).

Aims and objectives

Aims
In the short term, to halt the decline of the species, and in the long term, to promote population increase and expansion.

Objectives

1. Policy and legislation

1.1. Agricultural policy

1.1.1. To promote agricultural policies which maintain and enhance Lanner Falcon habitat.

Agri-environmental Regulations 2078/92 should be promoted in the EU and member States should develop and implement specific measures that could benefit the Lanner Falcon. In countries outside the EU, particularly in North Africa and Turkey, funds for agri-environment measures should be sought, either through the EU or elsewhere.

Priority: High
Time-scale: Medium

1.1.2 To encourage the protection of steppe and grassland habitat, and promote implementation of the Bird and Habitat Directives.

The Lanner Falcon is dependent on habitats that are priorities for conservation on a European scale (e.g. semi-natural dry grassland and pseudo-steppe). Many IBAs that include these habitats also support the Lanner Falcon.

Priority: Essential
Time-scale: Medium

1.1.3 To regulate the use of agro-chemicals

The use of agro-chemicals, particularly pesticides, in Lanner Falcon feeding areas should be strictly regulated.

Priority: Medium/high
Time-scale: Ongoing

1.1.4 To promote forestry practices which do not conflict with the Lanner Falcon.

In the European Union, afforestation under Regulation 2080/92 should be zoned so that sites important for the falcon are avoided. Forestry programmes in Lanner Falcon habitat should be subject to Environmental Impact Assessment (EIAs). Enhanced co-ordination of the implementation of forestry and agriculture regulations (2080/92 and 2078/92, respectively) is needed.

Priority: Low
Time-scale: Medium

1.2. *Mining and rock faces*

1.2.1 To avoid re-use of abandoned quarries used by breeding Lanner Falcons.

The re-opening of abandoned quarries used by breeding Lanner Falcons should be avoided where possible.

Priority: Medium, locally high
Time-scale: Medium

1.2.2 To encourage cliff stabilisation measures compatible with the Lanner Falcon.

Cliff stabilisation measures should be undertaken outside the breeding season and allow the birds subsequent access to nest sites.

Priority: Medium, locally high
Time-scale: Medium

1.3. International co-operation

1.3.1. To promote the signing and ratification of international conservation legislation.

The signing and ratification of the Bern, Bonn, Biodiversity and CITES Conventions by countries within the range of the Lanner Falcon should be encouraged.

Priority: Medium
Time-scale: Medium

1.3.2. To develop a regional Agreement on the conservation of Palearctic dry grassland birds under the Bonn Convention

Under the Bonn Convention (CMS), a multilateral agreement for the conservation of Paleartic dry grassland birds should be created to facilitate international co-operation. The area in which co-operation is most needed for the Lanner Falcon is Turkey and the Middle East.

Priority: High
Time-scale: Medium

1.3.3. To promote bilateral Agreements among countries that support the Lanner Falcon.

Priority: Medium
Time-scale: Medium

1.4. To promote the production of national action plans for the Lanner Falcon.

Using this Action Plan as a basis, each range state should be encouraged to prepare national plans. These should set national targets and identify responsibilities between Government and NGOs with regard to implementation.

Priority: High
Time-scale: Short

2. Species and habitat protection

2.1. To encourage protection of the Lanner Falcon and its habitat

More protected areas, such as SPAs, should be created, together with site management plans. In particular, steppe and dry grassland habitats are in need of attention. The falcon should be legally protected in all range states.

Priority: High
Time-scale: Medium

2.2 To manage human disturbance at breeding sites.

2.2.1 To prevent human disturbance.

Human access to breeding sites needs to be strictly controlled, particularly with regard to rock-climbing. All human activities carried out within 1 km of a nest should be limited to July to November.

Priority: High
Time-scale: Ongoing

2.2.2. To warden nests at high risk from persecution.

Increased wardening of nests is needed, particularly those at high risk from persecution.

Priority: Medium
Time-scale: Ongoing

3. Monitoring and research

3.1. To conduct surveys

Surveys of breeding areas should be undertaken to improve information on population status and important sites. In large countries (e.g. Turkey, Algeria and Egypt), sample surveys of random plots should be used to calculate national population levels. Also, a standard survey method for the Lanner Falcon should be developed.

Priority:	ssp *feldeggii* (west Europe, Italy, Greece, Albania and Yugoslavia):	High
	ssp *feldeggii* (east Europe: Turkey and Russian federation):	Essential
	ssp. *erlangeri*:	Essential
	ssp. *tanypterus* (Middle East):	High
Time-scale:	Short/ongoing	

3.2. To promote conservation research of the Lanner Falcon
More research is necessary to investigate factors that limit populations of the Lanner Falcon, especially regarding habitat management, human disturbance, and interspecific competition.

Priority: High
Time- scale: Short/ongoing

3.2.1. To investigate the biology of the Lanner Falcon

Research is necessary to investigate variation in diet at breeding sites, habitat use in the post-breeding period and breeding productivity.

Priority: High
Time-scale: Short/ongoing

3.3. To promote research co-ordination
Exchange of information and expertise, and base-line surveys of areas from where there is little information on the species (e.g. Turkey and North Africa), should be encouraged through international collaboration, co-ordinated through a specialist network.

Priority: Medium-high
Time-scale: Medium

3.4. To investigate pesticide contamination
Research on pesticide and heavy metal contamination in Lanner Falcon eggs and tissue should be conducted.

Priority: Medium-high
Time-scale: Ongoing

4. Public awareness

4.1 To promote awareness amongst key people
An increase in the awareness of the needs of the Lanner Falcon among decision-makers and governmental bodies is needed, particularly those dealing with land-use issues, such as open-cast mining and cliff stabilisation. Public awareness campaigns targeted at local authorities, landowners and shepherds are also needed.

Priority: High

Time-scale Short

4.2 To promote public awareness

The production of leaflets, posters and videos highlighting the importance of agricultural practices and the threats to the Lanner Falcon should be promoted.

Priority: Medium
Time-scale: Medium

4.3 To promote international co-ordination of conservation activities

Priority: High
Time-scale: Ongoing

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Annex - Recommended conservation actions by country

Albania
1.1.1. Promote agricultural policies that maintain and enhance Lanner Falcon habitat.
1.1.2. Promote the protection of the species and designate IBAs as SPAs (or at least Wildlife Refuges).
3.1.1. Conduct surveys to locate breeding areas and assess population size, particularly within IBAs.
4.4. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Algeria
3.1. Conduct status surveys of the Lanner Falcon and identify key areas.

Armenia, Azerbaijan, Georgia
3.1. Conduct status surveys of the Lanner Falcon and identify key areas.

Bosnia
1.1.4. Prevent habitat degradation and afforestation.
3.3. Encourage research of the Lanner Falcon by the creation of an international network of ornithologists.
4.4. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Croatia
1.1.3. Prevent habitat degradation and afforestation.
2.1. Promote a network of protected areas and legal protection of the falcon.
3.1.1. Conduct status surveys of the Lanner Falcon and identify key areas.
3.3. Encourage research of the Lanner Falcon by the creation of an international network of ornithologists.
4.4. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Egypt
2.1. Promote legal protection of the falcon.
3.3. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Greece
1.1.3. Promote the protection of the species and designate IBAs as SPAs (or at least Wildlife Refuges).
1.1.4. Prevent habitat degradation and afforestation.
2.1. Warden vulnerable nests and enforce hunting legislation.
2.2.1. Control disturbance from rock-climbers.
3.2. Encourage research into breeding, breeding success, ecological requirements (e.g. diet, and nesting and foraging habitat requirements) and threats.
4.3. Produce educational material for raptors in general, especially regarding anti-poaching.

Israel
1.1.2. Prevent disturbance and habitat degradation, especially within military zones.
1.1.2. Encourage the control and reduction of pesticide use.

1.1.3. Prevent habitat degradation and afforestation.
2.2.1. Control disturbance from rock-climbers.
2.2.2. Prevent persecution and the use of wild birds in falconry by visiting Saudi Arabians.
3.2. Encourage research on competition between the Peregrine Falcon and Barbary Falcon.

Italy
1.1.1. Promote agricultural policies that maintain and enhance Lanner Falcon habitat.
1.1.2. Encourage steppe and dry grassland habitat protection, promote application of the Bird and Habitat Directives, and designate IBAs as SPAs.
1.2.1. Conserve nesting habitat by preventing the re-opening of quarries and controlling the stabilisation of cliff-sides used by breeding Lanner Falcons (e.g. Umbria, Abruzzo and Marche), and by preventing the development of built infrastructures close to breeding pairs, such as the re-opening of public roads (e.g. Puglia and Lucania).
2.2.1. Prevent human disturbance (especially climbing) at breeding sites and the theft of eggs and chicks, particularly in Lazio, Campania and Calabria.
3.1. Conduct a regional survey to assess population status and distribution (firstly in Sicily and then Puglia and Calabria).
4.2. Promote the Lanner Falcon as a flagship for the conservation of rocky slopes and steppe habitat.

Jordan
2.1. Promote the legal protection of the Lanner Falcon.
2.2.3. Prevent direct persecution and the use of wild birds in falconry by visiting Saudi Arabians.

Libya
2.1. Promote legal protection of the Lanner Falcon.
3.1.1. Conduct surveys to locate the main breeding areas and assess population size.
3.3. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Macedonia
3.1.1. Conduct surveys to locate the main breeding areas and assess population size.
3.3. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Morocco
3.1.1. Conduct surveys to locate the main breeding areas and assess population size.
3.3. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Serbia
1.1.4. Prevent habitat degradation and afforestation.
2.1. Promote a network of protected areas and legal protection of the species.
3.1.1. Conduct surveys to establish the status of the species and identify key areas.
3.3. Encourage research of the Lanner Falcon by the creation of an international network of ornithologists.
3.3. Encourage exchange of information about the species' biology, distribution and threats in order to update this Action Plan every 5 years.

Syria
3.1.1. Conduct surveys to locate the main breeding areas and assess population size.

Tunisia

1.1.3. Reduce pesticide use.
2.2.2. Establish a nest-wardening scheme for accessible nests.
3.3. Encourage research of the Lanner Falcon by the creation of an international network of ornithologists.
4.1. Promote public awareness.

Turkey

1.1.4.- 2.2.1. Gather information on key factors likely to limit the population (e.g. poisoning, theft of eggs and chicks. Poaching and habitat alteration).
3.1.1. Conduct surveys to locate the main breeding areas and assess population size.