IMPLEMENTATION REVIEW OF THE EU SPECIES ACTION PLAN FOR THE EGYPTIAN VULTURE (NEOPHRON PERCNOPTERUS)

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Introduction

The overall aim of this review is to better understand the successes, challenges and lessons learned from the European Union (EU) Species Action Plan (SAP) for the Egyptian Vulture (Neophron percnopterus) (Iñigo et al. 2008) adopted in 2008, with a view to incorporating this information into an Egyptian Vulture Flyway Action Plan (FAP) covering the Balkans and Central Asia.

The Coordinating Unit of the Convention on Migratory Species (CMS) Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MoU) contracted the Vulture Conservation Foundation to undertake the review of implementation of this EU SAP for the Egyptian Vulture.

Methodology

The methodology of this Species Action Plan review is based on the scoring system developed by BirdLife (Gallo-Orsi, 2001), later also used by Barov & Derhé, 2010, which basically follows three steps.

- Updating of the factual information contained in the descriptive part of the EU Species Action Plan for the Egyptian Vulture, 2008 (preparing an updated species account)
- Assessing the progress towards implementation of the actions and evaluation against the recovery targets set in the plan.
- Estimating the overall effectiveness of the action plan to meet the planned population recovery objectives, using the latest available population estimates and trends.
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The first and the second tasks were implemented with the help of a questionnaire, comprising two sections, as follows:

Section one covering species status to evaluate outcomes: collecting information about the latest population estimates, distribution, trends and threats, evaluation against the population recovery targets set in the action plan and overall change in the species conservation status.

Section two covering implementation: based on the contents of the action plan, where each action was converted into a target statement, to enable measurement of progress in implementation. Here we asked about measures such as coverage of the species population, existence of management plans, implementation of LIFE and other significant projects,

etc. The distance to target was evaluated by assigning an *Implementation Score (0-4)* against each action (target statement); The size of the population affected by the measure was taken in consideration, and also the degree of priority (Priority Score PS) of the respective action, so that an Action Priority Index (API) (representing the need for further action) could be calculated. Additional analysis was carried out to find out the National Implementation Score (NIS) for each country, which combines the urgency of an action with its implementation level. The *Implementation Score* (IS) of each target was multiplied by its *Priority Score* (PS), and the sum of all these scores divided by the sum of the *Priority Scores* (PS).

The questionnaires were produced using the 'Survey Monkey' Internet platform. Two versions were prepared: one in English language – distributed among national experts in the relevant range states, and other in Spanish language for the Spanish contacts.

In total, 70 persons received the questionnaire and 41 (59%) replied.

For some of the countries – those that overlapped with the Flyaway Action Plan, the replies of the FAP questionnaire (previously issued by the Bulgarian Society for Protection of Birds (BSPB)) were considered.

Responses from different experts in the same country were compared. After receiving the answers from individual respondents, all answers were checked, when in doubt, replies were re-checked by consulting the respondents individually.

Significant parts of the returned questionnaires were considered incomplete, so most of the respondents required being contacted again to obtain more complete information.

Once this had been done, the next step was to unify the responses for each country. We merged all the material from each country into a single response. This action required additional effort in contacting and checking with stakeholders.

To facilitate the interpretation of the scoring process, the results are presented in a graphic format.

All recently published scientific papers and official data for the species were checked and relevant data is included into this evaluation report.

The first draft report was presented at the FAP Workshop (Flyway Action Plan for the Conservation of the Balkan and Central Asian Populations of the Egyptian Vulture) held in Sofia, Bulgaria in July 2015. The coordinator (Jovan Andevski) and the supervisor (José Tavares) attended, for validation and discussion. Comments, suggestions and conclusions made during the FAP workshop have been incorporated in this final version of the report.

Background

A. Iñigo (SEO/BirdLife) & B. Barov (BirdLife International) on behalf of the European Commission developed the EU Species Action Plan for the Egyptian Vulture during 2008. Soon after the species was up-listed from Least Concern to Endangered in the IUCN Red List, following recent and extremely rapid population decline in India combined with severe long term declines in Europe (>50% over the last three generations) and West Africa, plus on-going declines through much of the rest of its range, owing to a variety of threats (BirdLife International 2008).

The action plan has not been revised or reviewed until now, as this is normally done after 10 years following the adoption of Species Action Plans. Due to the rapid and continued decline of the Egyptian Vulture in its European geographical range it was considered necessary to undertake this evaluation to guide planning of the future conservation of the species.

The geographical scope of the SAP covers Albania, Armenia, Austria, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, France, Georgia, Greece, Italy, FYR of Macedonia, Moldavia, Montenegro, Portugal, Romania, Russia (Europe only), Spain, Serbia, Turkey and Ukraine.

In this review we also suggest an update of the geographical range of the distribution of the Egyptian Vulture in Europe, to be considered in the next revision of the SAP.

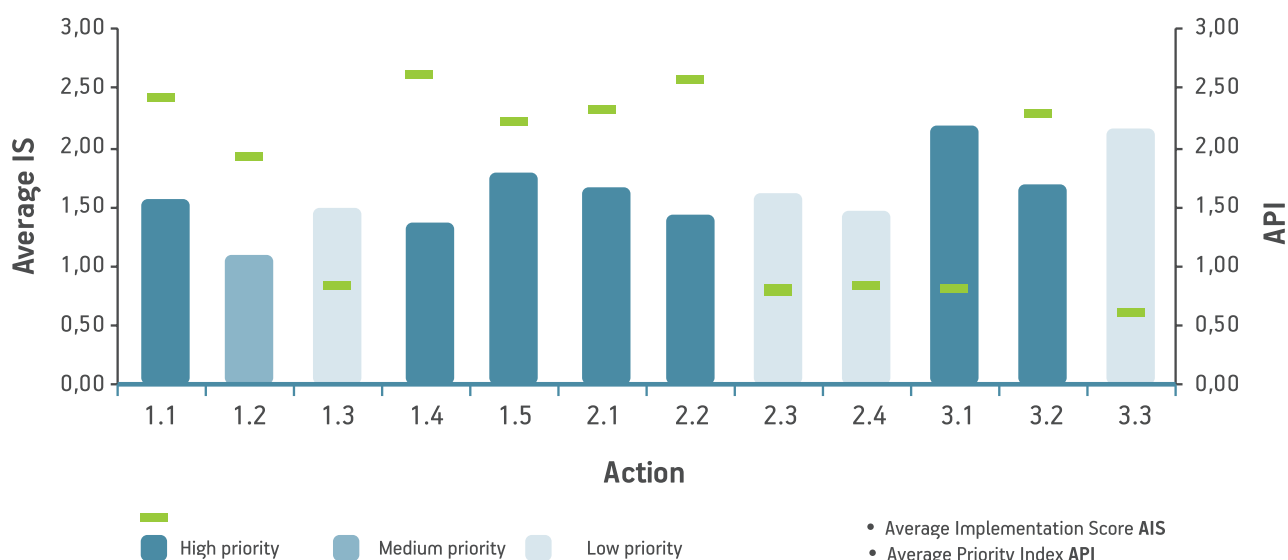**Table 1: Status of the Egyptian Vulture in 2008 and 2015**

Range states	From the SAP 2008		Current data 2015	
	Breeding	Wintering	Breeding	Wintering
Albania	yes	no	yes	no
Armenia	yes	no	yes	no
Austria	yes	no	extinct	no
Azerbaijan	yes	no	yes	no
Bosnia and Herzegovina	possibly	no	extinct	no
Bulgaria	yes	no	yes	no
Croatia	yes	no	extinct	no
Cyprus	yes	no	no[1]	no
France	yes	no	yes	no
Georgia	yes	no	yes	no
Greece	yes	occasionally	yes	occasionally
Italy	yes	occasionally	yes	occasionally
Macedonia, FYR	yes	no	yes	no
Moldova	yes	no	extinct	no
Montenegro	possibly	no	extinct	no
Portugal	yes	no	yes	no
Romania	extinct	no	yes	no
Russia (European)	yes	no	yes	no
Serbia	possibly	no	possibly	no
Spain	yes	occasionally	yes	yes[2]
Turkey	yes	no	yes	no
Ukraine	yes	no	yes	no

[1] The species had never bred in Cyprus but occurs on passage in very small numbers every year.

[2] In general the Spanish population of Egyptian Vulture is migratory, except: the island population on Menorca (Balearic Islands) estimated at 51 breeding pairs; the island population of the Egyptian Vulture (N.p. majorensis) on Canary Islands limited to the eastern islands, Lanzarote, Fuerteventura and Alegranza estimated to 42 breeding pairs; and, a population of about 100 individuals is wintering in Extremadura.

General overview

Figure 1: Average Implementation Score (IS) and Action Priority Index (API) for each Action listed in the Egyptian Vulture Species Action Plan.

In general, the SAP has not been fully implemented (with relatively low **AIS=1.64**)[3] across the entire geographic range, see **Figure 1**. The SAP implementation was better in countries within the European Union (**AIS=1.9**) compared to non-EU countries (**AIS=1.2**). However, the species has continued to decrease following the adoption of the SAP, with large decreases in Central and Eastern Europe, while in several areas in Western Europe it is stable or increasing.

Significant conservation efforts (active conservation actions on the ground) have been implemented in Spain, mainly in the context of the wider activities aimed at combatting the illegal use of poison bait in the environment, but less so in Central and Eastern Europe (with some exceptions). Nonetheless, poisoning remains a critical threat to address across Europe.

The monitoring of Egyptian Vultures in Europe has improved since the SAP was developed with more accurate data now available on the status of the species. As a result of this improved knowledge, the species is now classified as extinct in several countries (although this doesn't necessarily mean that the species became extinct in the last 7-8 years), see **Map 1** (difference in formal-strips and current distribution-green). In general, recent surveys and status assessments have been more intensive and productive in the whole distribution range of the species.

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[3] Good SAP implementation considered when API is greater than 2.

Status review

The European population has declined by 50% in the last 50 years, including a steeper decline in the Balkans (over 80% in the last 30 years (Velevski et al. 2015)). The current review confirms that the species continues its decline in Europe.

Map 1: Distribution range of the Egyptian Vulture in Europe

Egyptian Vulture distribution presented in the SAP – 2008 –BirdLife International

Current distribution – data collected from the contributors during this review process 2015

– – Mostly positive trend

– – Mostly negative trend

The Western European population appears to be stable (**Map 1**, green circle), but the populations in Central and Eastern parts of Europe are still in decline (**Map 1**, red ellipse). The species therefore still qualifies as Globally Endangered (IUCN Red List / BirdLife 2008), and as Endangered at European and EU levels (BirdLife International 2008). Continuous decline suggests that its status category is the same, in spite of the (partial) implementation of the SAP.

Table 2: Breeding population estimates by country

Country	SAP data (2008)					Current data (2015)				
	Breeding pairs	Q[3]	Year(s) of estimate	Breeding Population trend in the last 10 years	Q	Breeding pairs	Q	Year(s) of estimate	Breeding Population trend in the last 10 years	Q
Albania	14	M	2007	Large decline	M	10	G	2014	Large decline	G
Armenia	30-40	M	2002-2007	Large decline	M	35-60	M	2013	Stable	M
Austria	0		2007	Extinct		0	G		Extinct	M
Azerbaijan	50-100	M	2006-2008	Large decline	M	80	G	2011	Stable	M
Bosnia and Herzegovina	0		2007	Extinct		0	M		Extinct	M
Bulgaria	40-45	G	2007	Large decline	G	24	G	2014	Large decline	G
Croatia	0			Extinct		0	G		Extinct	G
France	87	G	2007	Large increase	M	88	G	2014	Stable	G
Georgia	30-50	M	2006	Unknown		50-60	G	2014	Large decline	M
Greece	30-50	M	2008	Large decline	G	9	G	2014	Large decline	G
Italy	8-oct	G	2006-2007	Large decline	M	6-9	G	2014	Large decline	G
Macedonia, FYR	30-35	G	2008	Large decline	M	20-21	G	2014	Large decline	G
Moldova	0-2	P	2004	Possibly extinct	P	0	M		Extinct	M
Montenegro	0	M	2007	Extinct		0	M		Extinct	M
Portugal	90	G	1995-2008	Stable	M	90	G	2008	Stable	M
Romania	0	M	2007	Extinct		0	M		Extinct	M
Russia (European)	70-120	M	2004	Unknown	U	70-120	M	2004	Unknown	U
Serbia	0	M	2007	Extinct	M	0-1	G	2014	Large decline	G
Spain	1,270-1,350	G	2008	Stable	G	1556	G	2008	Stable	G
Canary Islands	42	G	2008	Increasing	G	51	G	2008	Increasing	G
Turkey	1,500-3,000	P	1995-2005	Large decline	M	1500	M	2014	Decline	M
Ukraine	20	M	2008	Unknown	M	20	M	2008	Unknown	M
Total	3,300-5,050	M		Decreasing		3609-3699	G		(Large) decline	

[1]Q - data quality
- o **Good Estimated (G)** = Reliable quantitative or representative data are available through sampling or interpolation for the whole period and country.
- o **Medium Estimated (M)** = Only incomplete quantitative data are available through sampling or interpolation.
- o **Poor (P)** = Poorly known with no quantitative data are available and with guesses derived from circumstantial evidence.
- o **Unknown (U)** = information on quality not available.

Population estimates were updated for all range counties except Ukraine, Moldavia and Russia. Unfortunately, no questionnaires were received from these three states.

Table 3: Breeding population estimates in Spain

Autonomous Regions	Breeding pairs	Q	Year(s) of estimate	Breeding Population trend in the last 10 years	Q
Castilla y León	422	G	2008	Stable/Increase	G
Aragon	267	G	2008	Decline	M
Extremadura	170	G	2014	Stable	G
Castilla-La Mancha	163	G	2008	Stable/Increase	G
Navarra	127	G	2008	/	G
Cataluña	85	G	2009	Large Increase	G
Asturias	66	G	2008	Stable	G
Cantabria	51	G	2008	Stable	G
Islas Baleares (Menorca)	51	G	2008	Increase	G
Basque Country	48	G	2008	Stable	G
Canarias	42	G	2008	Increase	G
Andalusia	23	G	2015	Large decline	G
La Rioja	20	G	2008	Stable/Increase	G
Valencia	14	G	2008	Large Increase	G
Galicia	3	G	2014	Increase	G
Total	1 552	G		Stable	G

In Spain, efforts were made to contact both national and regional experts. For most regions the information provided was relatively up to date due to a major Egyptian Vulture census that was published shortly after the adoption of the Species Action Plan (2008, SEO/BirdLife Spain). Nevertheless, most of the Spanish regional governments undertake regular monitoring of the species, but unfortunately these data are not centralized and readily accessible.

Goal and objectives

The Overall Goal of the EU Species Action Plan was to improve the conservation status of the Egyptian Vulture globally and in Europe, leading to the down-listing from current threat classification category in the Red List (Endangered) to Least Concern, and eventually achieving a favourable conservation status of the species across its European range.

The Objective of the SAP was to achieve down-listing of the European population to Vulnerable at European level by 2018, following a predicted population increase after 2015.

Evaluation

Indicators for the SAP Objective

Objective 1: The trend of the breeding population size stabilizes or becomes positive by 2015 as evidenced by national and regional monitoring programmes.

- According to the latest figures available for the European Egyptian Vulture population (**Table 2**) it appears that the minimum estimate has increased by 10% but the maximum estimate has decreased by nearly 30%. Essentially this does not reflect a real population increase but is due to the improved monitoring data from the main stronghold countries (Spain and Turkey). In 2008 (shortly after the preparation of the SAP) Spain implemented and published results from a detailed national monitoring survey (SEO/BirdLife 2008), which provided more accurate estimates. On the other hand, Turkey provided more precise estimates for their Egyptian Vulture population, based on several small monitoring programmes implemented in recent years.

- The French population was presented in the SAP as having a large increasing trend, but now appears to be stable (**Table 2**).

- Positive or stable population trends have been maintained in Spain (according to national data), and in some regions the Egyptian Vulture population is increasing, manly in the North and North-West part of the country (Galicia, Aragon, Cataluña, Valencia). The Canary Islands population (of the subsp. *N.p. majorensis*) has also continued to increase.

- The population trends in Armenia and Azerbaijan is positive, from previously decreasing to now stable.

- Positive trends are also recorded in some Spanish regions: Cataluña, Galicia, Valencia and Canary Islands, see **Table 3**.

- In Portugal the population trend continues to be stable after large declines and local extinctions in the 90s and early 2000s.

Overall assessment, indicator not attained.

Objective 2: Growth rates of key national populations, as evidenced by local and national monitoring programmes, are positive and above the mean annual rate of 3% at least in the following countries: Portugal, Spain, France, Bulgaria, Greece and FYR of Macedonia.

- Only the Spanish national population appears to have increased, but total figures for Spain may only reflect better monitoring resulting in more accurate data. However, there is some evidence for increases in at least some Spanish regions with increasing trends (Galicia, Cataluña, Valencia and Canary Islands) and with stable trends (Extremadura and Basque County) see **Table 3**.

- Populations in Portugal and France have not increased since 2008, and are stable.

- The populations in Bulgaria, Greece and FYR of Macedonia are definitely not growing; on the contrary these population have decreased from 30-60% since publication of the SAP.
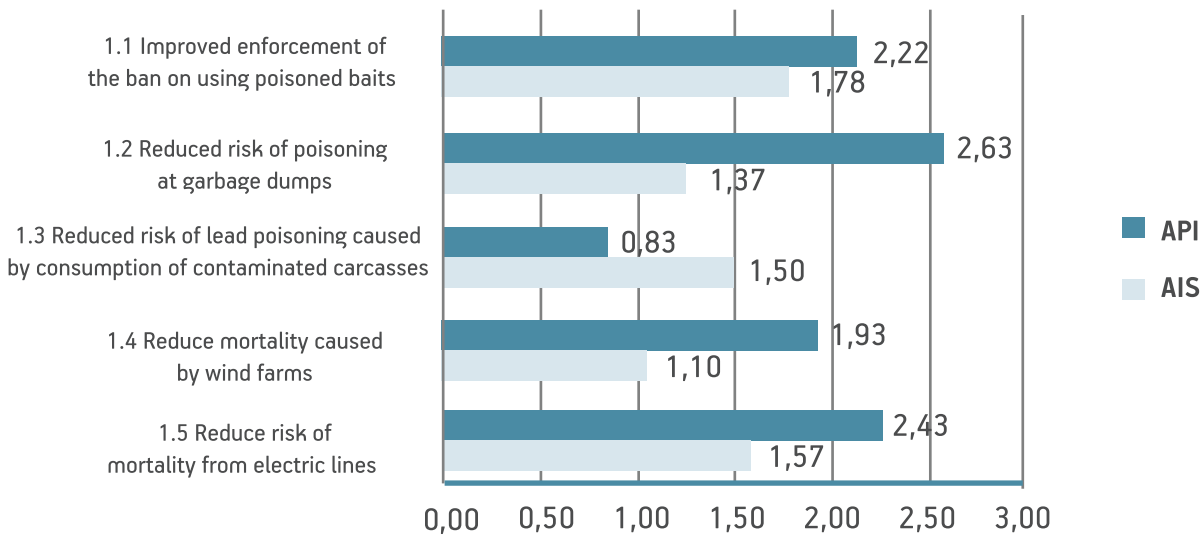
Overall assessment, indicator not attained.

Expected Results

There were three Expected Results related to a group of actions proposed by the SAP.

1. **Reduced Egyptian Vulture mortality in Europe to levels that will allow population growth.**
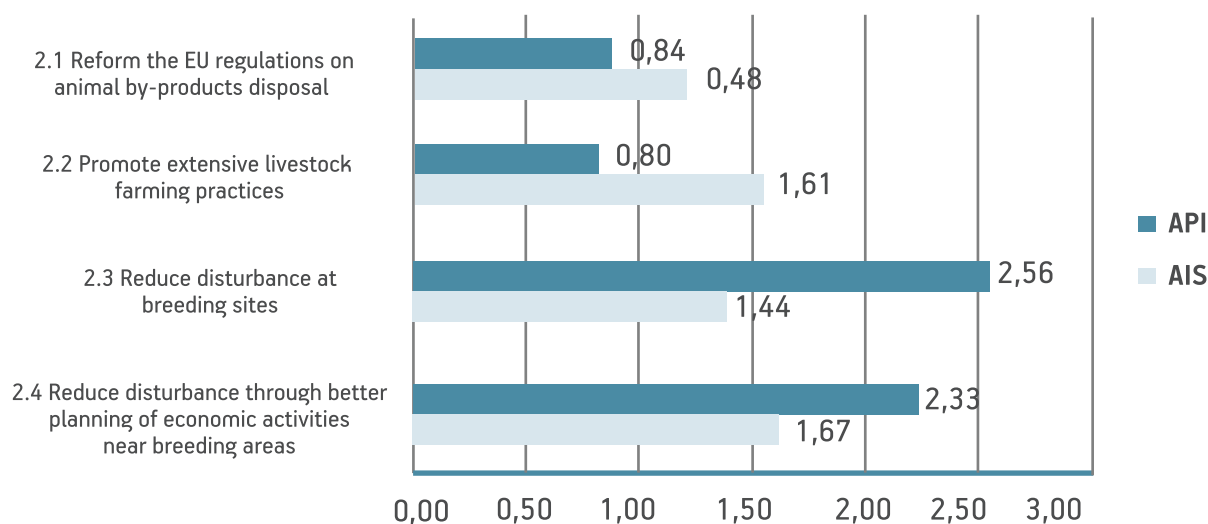
Figure 2: Average Implementation Score (AIS) and Action Priority Index (API) for each Action listed in the Egyptian Vulture Species Action Plan concerning Expected Result 1

Overall, this Expected Result has not been achieved. The Average Implementation Score (AIS) of the five Actions is >2, but certainly shows that some progress has been made in Actions 1.1, 1.3 and 1.5. The Action Priority Index (API) presents the distance to the target - fully implemented action, in this case is presenting the current priority for this action (higher API – higher propriety and lower API – lower priority). For example Action 1.2 has higher priority (API – 2,63) and the AIS is only 1,37, the distance between the API and AIS is what has to be done in order to have this action fully implemented. In the case with Action 1.3 is the opposite, we have low priority (API – 0,83), but higher AIS (1,50) – so this can sometimes indicate that significant effort has been taken for actions that are less important compare to others (with higher API).

2. Improved food availability and habitat quality for the species in its European range.
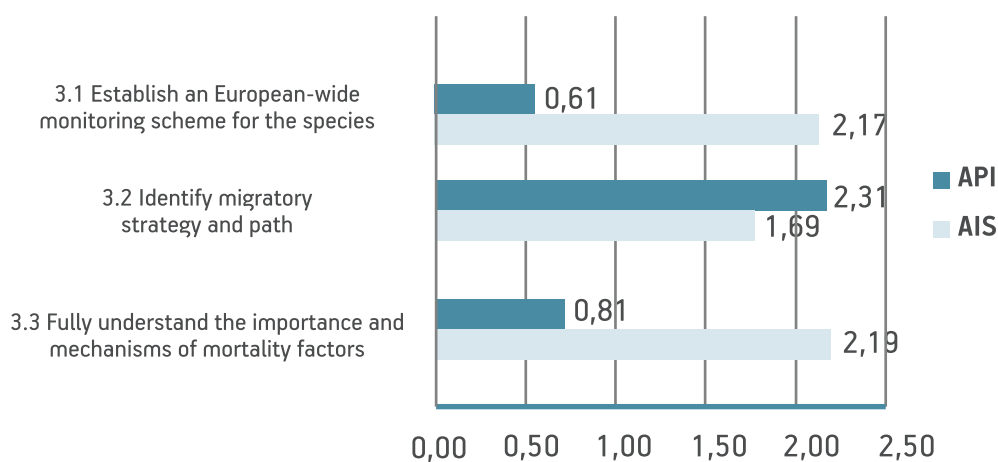
Figure 3: Average Implementation Score (AIS) and Action Priority Index (API) for each Action listed in the Egyptian Vulture Species Action Plan concerning Expected Result 2

Overall, this Expected Result has not been achieved. The AIS shows only small progress on this group of actions.

2. Up to date and precise knowledge about the population numbers and trends are available from all countries with breeding populations in Europe.

Figure 4: Average Implementation Score (AIS) and Action Priority Index (API) for each Action listed in the Egyptian Vulture Species Action Plan concerning Expected Result 3

Overall, this group of actions has been implemented well and the Expected Result has been achieved across almost the entire SAP range. The AIS of Action 3.1 shows the monitoring improvement in most of the SAP range countries, which actually resulted in better populations estimates presented in Tables 2 and 3, but the API shows that still some significant improvements are needed.
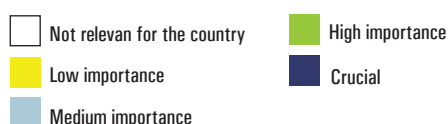
Conservation and Legal Status

The Egyptian Vulture was up listed from Least Concern to Endangered in the IUCN Red List just before the adoption of the EU SAP, following recent and extremely rapid population decline in India combined with severe long term declines in Europe (>50% over the last three generations) and West Africa, plus on-going declines through much of the rest of its range, owing to a variety of threats (BirdLife International 2008).

The species is included in Annex I of the EU Wild Birds Directive and in Appendix II of the Bern, Bonn and CITES Conventions. As a result of the important decline in Europe the species was classified as Endangered at European and EU levels.

Overview of past and current threats

Table 4: Threats – current importance in selected countries

Threats	Albania	Armenia	Bulgaria	France	Georgia	Greece	Italy	Macedonia	Serbia	Turkey	Spain
Poisoning	Low	Low	Crucial	High	Crucial	Crucial	Crucial	Crucial	High	Medium	Crucial
Decline of extensively livestock farming	Low	High	Crucial	Medium	—	High	Low	Low	Medium	High	High
Habitat loss / Degradation	Medium	Medium	High	Medium	—	High	Low	Medium	Medium	Crucial	—
Stricter sanitary and veterinary regulations	High	Low	Medium	Medium	Low	Medium	Medium	Medium	Low	—	—
Collisions with wind turbines	—	—	Medium	Low	—	Medium	Medium	Medium	Medium	—	High
Disturbance from human activities	Low	Medium	Low	Medium	—	Medium	High	Medium	Low	Medium	Medium

Legend:
- □ Not relevan for the country
- Low importance
- Medium importance
- High importance
- Crucial

Poisoning

A large number of Egyptian Vulture deaths are still attributed to poisoning. In the majority of the cases, this is caused by the illegal use of poison baits targeted at terrestrial predators as a means of protecting livestock and game.

The Egyptian Vulture is highly sensitive to small meat baits frequently used illegally by mainly livestock breeders and hunters. These are readily detected because of the vultures innate ability to find corpses and remains of small animals, therefore placing poisoned bait in an Egyptian Vulture territory leads to very high probability of death for the species. Significant mortality of adult birds can create a critical impact at the population level, because this species' population can only remain stable or increase adult mortality is low.

Although the use of poison baits is prohibited in Europe by the Bern Convention, and in the EU by both the Birds and the Habi-

tat Directives, incuding via national laws in most of the SAP range countries, it is still widely used over the species' distribution range.

Often the poison products used (pesticides, herbicides and rodenticides) for preparing the baits are also banned by the EU. Therefore this threat is closely related to illegal trade and the use of prohibited substances.

According to results of the questionnaire, a few countries are giving low or medium priority to this threat (Albania, Armenia, France, Serbia and Turkey). The reason for this is unclear but is perhaps simply due to a lack of investigative work regarding this threat. Curiously, countries that have the most experience in tackling illegal poisoning are the ones which have recorded the highest number of poisoning incidents. Poison is a threat that is only really detected when someone is actively looking for it.

Assessment of the implementation

National legal protection and national Species Action Plans

Vultures in general are legally protected in all European countries from killing, destruction of the nests and disturbance. The Egyptian Vulture (Neophron percnopterus) is a migratory bird of prey classified as Globally Endangered by IUCN and listed in Category 1 of the CMS Raptors MoU.

The main threats to these species are related to human induced mortality such as (illegal) poisoning, electrocutions on power poles, collisions with power lines and at wind farms and low breeding success caused by disturbance during the nesting period (e.g. by forestry, sporting activities and unregulated public access). Additional threats occur due to loss or degradation of habitats due to infrastructure development, lead poisoning, antibiotics and anti-inflammatory veterinary drugs, e.g. Diclofenac. In the medium and long terms, these threats can have important negative effects on Egyptian Vulture populations, and also to those of other scavenger birds.

Deliberate killing is not considered as an important threat in most of the countries, except Georgia and Turkey.

Table 5: National legal protection and nationals species action plans

Counties	National legal protection	National SAPs
Albania	partly	no
Armenia	no	no
Azerbaijan	/	no
Bosnia and Herzegovina	yes	no
Bulgaria	yes	yes
Croatia	yes	no
Cyprus	yes	no
France	yes	yes
Georgia	no	no
Greece	yes	In preparation
Italy	yes	yes
Macedonia, FYR	partly	no
Moldova	/	no
Montenegro	/	no
Portugal	yes	no
Romania	/	no
Russia (European)	/	/
Serbia	yes	no
Spain	yes	no, covered by regional SAP[4]
Turkey	partly	no
Ukraine	/	/

[4]According to Spanish legislation the Species Action Plans are delegated to the regional governments

Community financial support

Numerous conservation projects for Egyptian Vultures have been implemented in Europe during the past 30 years. Most of these were co-funded by the European Commission (EC) through the Life Nature Programme. A total of 21 Life Nature projects were approved (**Table 6**) by the European Commission, with an overall total budget of 33,856,100 € (in which the EU contribution was 18,801,346 €). Twelve of these projects were approved before the adoption of the SAP (2008), totalling 13,727,199 € and nine after the SAP, totalling 20,128,901 €.

We estimate that appoximately 26 million Euros were invested in Egyptian Vulture conservation through the Life Nature projects after the adoption of the SAP (noting that some projects approved before 2008 were implemented in subsequent years). An estimated 6 million Euros of this were used for specific Egyptian Vulture projects (comprising 3 Life Nature projects), 11 million Euros for anti-poisoning actions and the rest was mainly used for habitat restoration and other conservation actions. Approximately 46 % of this funding was approved in Spain, 27% in France, 15% in Italy and 12% in Bulgaria.

Table 6: Life Nature projects financed before and after the EU SAP

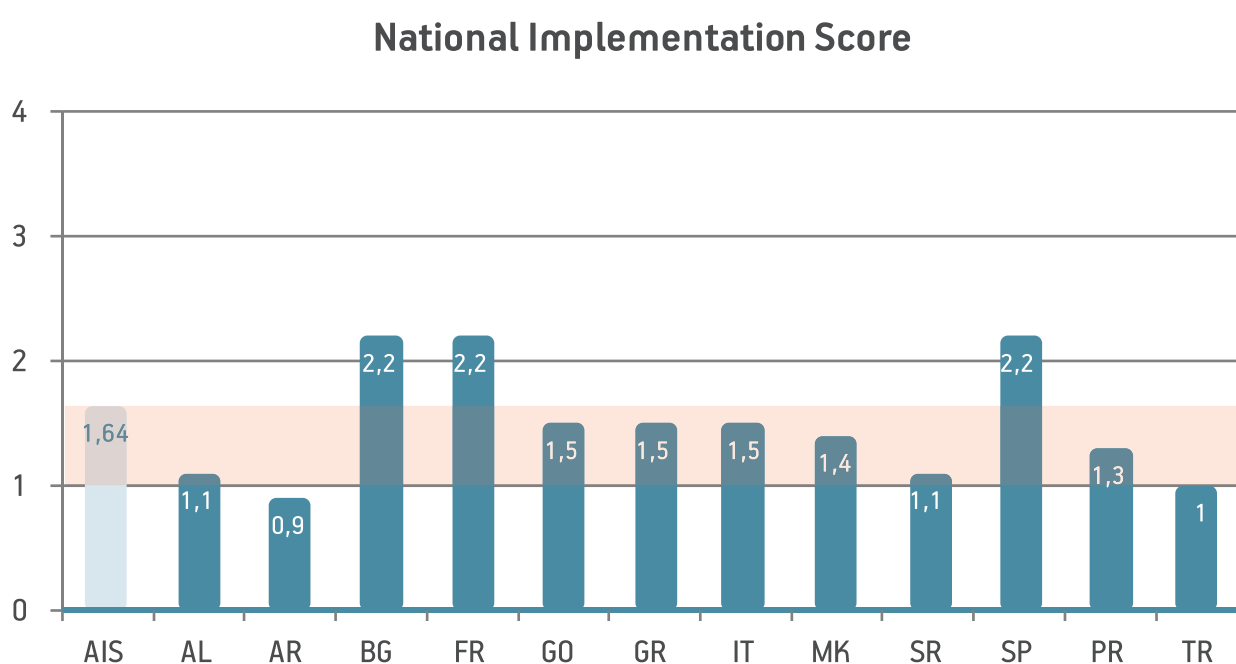| Project N°	Year of finance	Type of beneficiary	Country
LIFE13 NAT/ES/001130	2013	NGO-Foundation	Spain
LIFE13 NAT/IT/000311	2013	Park-Reserve authority	Italia
LIFE12 NAT/ES/000595	2012	NGO-Foundation	Spain
LIFE12 NAT/FR/000107	2012	Park-Reserve authority	France
LIFE11 NAT/BG/000363	2011	NGO-Foundation	Bulgaria
LIFE11 NAT/FR/000734	2011	Park-Reserve authority	France
LIFE10 NAT/BG/000152	2010	NGO-Foundation	Bulgaria
LIFE09 NAT/ES/000533	2009	NGO-Foundation	Spain
LIFE08 NAT/E/000062	2008	NGO-Foundation	Spain
LIFE07 NAT/IT/000436	2007	Park-Reserve authority	Italia
LIFE06 NAT/IT/000026	2006	Local authority	Italia
LIFE05 NAT/IT/000009	2005	Local authority	Italia
LIFE04 NAT/ES/000067	2004	Research institution	Spain
LIFE03 NAT/F/000103	2003	NGO-Foundation	France
LIFE00 NAT/E/007348	2000	Local authority	Spain
LIFE99 NAT/E/006392	1999	Local authority	Spain
LIFE98 NAT/E/005361	1998	NGO-Foundation	Spain
LIFE98 NAT/E/005308	1998	Regional authority	Spain
LIFE97 NAT/GR/004243	1997	Research institution	Greece
LIFE97 NAT/F/004120	1997	NGO-Foundation	France
LIFE95 NAT/IT/000703	1995	Park-Reserve authority	Italy

Other than these Life Nature projects, only a few projects were implemented utilising a total budget of not more then a half a million Euros.

It is evident that most of the Egyptian Vulture conservation projects implemented in the last 10 years were co-funded by the EC trough the Life Nature programme.

This is clearly reflected into the implementation of the SAP. The AIS for the EU countries (listed in **Table 6**) is 1.9 – which is just below good implementation of the SAP. For non-EU countries the AIS is significantly lower at 1.2.

Conclusions

Figure 5: Progress in the implementation of the Species Action Plan, by country

National Implementation Score

*AIS – Action Implementation Score
*AL- Albania; AR – Armenia; BG – Bulgaria; FR – France; GO – Georgia; GR – Greece; IT – Italy; MK – Macedonia; SR – Serbia; PR – Portugal & TR – Turkey.

Table 7: Implementation of the SAP in the European range states.

PS = Priority Score; Ave. IS = Average Implementation Score; API = Action Priority Index; National IS = National Implementation Score.

Action	Measure	PS	AL	AR	BG	FR	GO	GR	IT	MK	SR	SP	TR	AIS	API
1.1	Improved enforcement of the ban on using poisoned baits	3	1,3	1,0	1,7	2,0	0,0	1,1	2,0	1,3	1,3	2,7	1,4	1,59	2,41
1.2	Reduced risk of poisoning at garbage dumps	2	1,0	1,0	0,0	1,5	1,0	1,0	1,0	1,0	1,5	1,0	1,0	1,10	1,93
1.3	Reduced risk of lead poisoning caused by consumption of contaminated carcasses	1	1,0	1,0	0,0	1,5	0,0	2,5	2,5	1,0	1,0	2,0	1,0	1,50	0,83
1.4	Reduce mortality caused by wind farms	3	0,0	0,0	3,0	1,0	0,0	1,3	1,0	1,0	1,0	1,3	1,7	1,42	2,58
1.5	Reduce risk of mortality from electric lines	3	1,0	1,0	2,8	3,0	2,3	1,8	1,3	1,0	0,0	2,5	1,0	1,76	2,24
2.1	Reform the EU regulations on animal by products disposal	3	1,0	1,0	0,0	2,7	2,0	1,2	1,0	1,0	1,3	3,3	0,0	1,61	2,39
2.2	Promote extensive livestock farming practices	3	1,2	1,0	3,0	2,3	2,0	1,0	1,0	1,2	1,0	1,6	1,0	1,48	2,52
2.3	Reduce disturbance at breeding sites	1	1,4	1,0	2,2	2,4	1,8	1,0	1,8	1,0	2,0	2,0	1,4	1,63	0,79
2.4	Reduce disturbance through better planning of economic activities near breeding areas	1	1,0	1,0	1,5	2,5	2,5	1,3	1,5	1,0	0,0	1,8	1,0	1,50	0,83
3.1	Establish an European wide monitoring scheme for the species	3	2,3	1,3	4,0	3,0	2,7	1,7	2,3	3,0	1,7	2,3	1,0	2,30	1,70
3.2	Identify migratory strategy and path	3	1,0	1,0	3,0	2,3	1,7	2,0	2,0	1,3	1,0	3,0	1,0	1,76	2,24
3.3	Fully understand the importance and mechanisms of mortality factors	1	2,0	1,0	3,0	3,0	3,0	3,0	2,0	3,0	1,0	2,0	1,0	2,18	0,61
	National Implementation Score NIS and Average IS		1,1	0,9	2,2	2,2	1,5	1,5	1,5	1,4	1,1	2,2	1,0	1,67	

Three countries, Bulgaria, France and Spain, made very good progress implementing the SAP (AIS = 2.2). Whereas overall imple-

mentation of the SAP throughout the range countries has been less effective (AIS = 1.67)

In Bulgaria: Mostly due to very good implementation of the group 3 actions (3.1,3.2 & 3.3). There has been major achievements in monitoring and investigation of the general status and ecology of the species, but also on the reduction of certain mortality factors (Actions 1.4 & 1.5) and food availability (Action 2.2). Less effective implementation is noted in the actions related to poisoning (Action 1.1).

In France: the SAP has been implemented more or less equally for all actions.

In Spain: Major implementation of anti-poison actions (Action 1.1) and reduction of mortality factors in general (Action 1.5), food availability (Action 2.1), but also in investigation work related to the wintering sites (Action 3.2).

The positive population trend of the Egyptian Vulture in Spain and France had probably been supported and promoted by the good implementation of the SAP. The countries with negative population trends have low (or very low) Implementation Scores = / > 1.5, except Bulgaria where good implementation of the SAP (AIS 2.2) has been achieved but the population has continued to decline rapidly.

Table 8: Subjective responses on effective and ineffective actions and lessons learned by countries

Country	Most effective actions	Ineffective actions	Lessons learned
Albania	• Monitoring of the whole territory and investigate deeply the causes of Egyptian Vulture decline in Albania	• Implement monitoring activities in the whole territory of the country.	• Based on monitoring so far, the results show that poisoning is not a cause for the decline of the EV population in Albania, however further investigation is needed.
Armenia	• Carry out country-wide research to provide an accurate population estimate and distribution of Egyptian Vulture in Armenia • Monitor feeding behaviour and food diet at dump sites, near nesting grounds • Define mortality factors (if any) and other threats • Satellite telemetry to monitor the migration movements and pattern of the species	• General awareness raising of the public • General awareness raising among local stakeholders	• None
Bulgaria	• Establishment of large and permanent feeding sites network (supplied with slaughter offal on/or chicken products) to cover 100 % of the Egyptian Vulture actual and potential breeding sites. • Introduction of brood management and maturation in captivity and delayed release (up to 2-3 cy) in groups of second siblings from broods of two, or having in mind that this action was delayed it should be applied to all offspring. This way the drowning into the Mediterranean will be avoided, as well as creation of summer gatherings of non-breeders will be supported. • Concentration of breeding pairs in protected areas to ensure survival of nucleus in effectively manageable areas (where the full range of conservation measures should be applied). • Anti-poison work • Work with local communities (enforcement of agro-environmental measures, awareness campaigns, direct involvement in projects)	• It is ineffective action to go and to try to support individual pairs. As a large complex of conservation measures should be applied - this could be only possible in a site-based action. If the pairs are not in well established nucleus the conservation effort is not rewarding. • The inclusion of the Egyptian Vulture as a target species in the Rural Development programme is good public awareness tool, but the measure is ineffective. • The satellite tracking of birds, as well as releases of rehabilitated birds or captive bred ones should always be in purpose and to look for eventual practical outcome, more information is needed. • Reintroduction programs before minimizing the threats in situ (ineffective) • Improvement of nest sites • Inability to recruit all dead birds with tags in some areas along the flyway (Egypt, Southern part of Sudan, Eritrea, etc.)	• Poisoning is impossible to avoid in areas with permanent wolf presence. It could be lowered and/or buffered through a number of actions - the permanent large feeding sites being the most effective tool. • We should strictly follow the evidences when building conservation strategy • Very good coordination and communication on a national level when planning and implementing actions (including data sharing) • Conservation of the species along the flyway is as important as the conservation in the breeding grounds
France	• Improvement of the availability and the accessibility of the food resources • Limitation of the threats • Limitation of the disturbances	• Poison threat, because of the difficulties with the prosecution procedures of poisoning cases. • Risk on the disturbance • Prevention of wind farm risks	• None

Country	Most effective actions	Ineffective actions	Lessons learned
Georgia	• Addressing deaths by shooting, law enforcement and locals awareness • Implementation of new policies of poison use in garbage dumps and carcasses and law enforcement • Assessment of local threats in the breeding spots	• None	• None
Greece	• Work against the illegal use of poison, supplementary feeding and increase of awareness	• Enforcement of laws against poison • Authority engagement	• No actions will be effective as long as there is no commitment from the authorities
Italy	• To restore the small population with captive-born young. • Activation of feeding stations next to the nesting sites and in the bottle-necks where migrant birds congregate during the autumn migration. • Nest surveillance.	• Reduction of chemicals in agriculture. • Improvement of traditional farming practices. Mitigation of the wind farms impact.	• The release of captive-bred young through the hacking method is effective. Avoid direct nest disturbance to collect scientific data, especially in areas with few breeding pairs.
Macedonia	• Prevent distribution of concentrated chemicals/poisons, enforce investigations in poisoning cases, improve EIA quality preparation and enforcement of mitigation measures	• None	• None
Spain	• It is essential that the competent administrations implement measures to reduce the mortality of the species, to increase the availability of food resources, to reduce disturbances and to conserve their habitat, to improve tracking and study of populations, and to carry out management actions. • Anti-poisoning (including lead poisoning) work • Protection of specific and critical sites during migration (outside protected areas) • Decrease Wind farms impact • Regular population updates that may contribute to the Action Plan. It is unbelievable to review an action Plan when the main stronghold of the EV population has not been reviewed since the last Action Plan. • Implementation of feeding programs through the authorization of cattle carcasses disposal in areas of extensive use and maintenance of traditional "muladares", especially during important breeding and migratory concentration • Encourage the presence of carcasses from extensive livestock • Investigation that is applicable in conservation of the species	• Changing the place where there are wind farms and electric lines it is very difficult. It is better to focus the effort in improving food resources and supporting extensive livestock farming, and land planning to avoid future threats • Lack of transparency of Local governments. • Local monitoring results sometimes not available. • Repair of dangerous power lines (is not a determining factor for this species)	• The bird is affected by different threats, and we need to work before is too late • The poison it is still a mayor theat. • Feeding programs are very useful for establishment of new pairs • Study local populations (monitoring and satellite tracking of breeding populations) and then migration, not the reverse • Need to promote the (mainly sheep and goats) extensive livestock and be well managed • Authorization of carcases disposal from the extensive farming • Improving monitoring of population parameters of the species and its ecology in wintering areas
Turkey	• Determination and implementation of vulture friendly land-use practices. • Preparation and mainstreaming of sensitivity maps	• None	• Building a network of local shepherds or villagers is very important for further monitoring of the species and threats

Discussion

Based on the results presented in **Table 8,** the effective actions in most counties are related to monitoring of the species, food availability and anti-poisoning actions. Ineffective actions are considered to be those related to awareness rising among stock-holders, work with authorities and the impacts of wind farms. Importance is given to international coordination, networking and implementation of regional or international actions.

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