International Workshop on Vultures & Veterinary Drugs
19th & 20th of February, 2019 – Dadia, Greece Bulgaria

Workshop Report

March, 2019
Organized by:
Vulture Conservation Foundation (VCF)
WWF Greece
Dadia-Lefkimi-Soufli Forest National Park
Bulgarian Society for Protection of Birds – BSPB

Project:
“Conservation of Griffon and Black Vultures in the Cross-border Rhodopes Mountains”
RE-Vultures LIFE14 NAT/NL/000901
Action E13: Organization of International workshop on threats posed by NSAIDs/Antibiotics

Date and place of the Workshop:
February 19th & 20th 2019 – Visitors Center Dadia-Lefkimi-Soufli Forest National Park, Greece

Photos used in the report provided by:
VCF & WWF Greece

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Conservation of Black and Griffon vultures in the cross-border Rhodopes mountains
# TABLE OF CONTENT

- **Introduction**  
  - Page 4
- **Background**  
  - Page 4
- **Workshop objectives**  
  - Page 5
- **Target audience**  
  - Page 5
- **Workshop venue and logistics**  
  - Page 5
- **Workshop participants**  
  - Page 5
- **Workshop Agenda**  
  - Page 7
- **Opening Ceremony**  
  - Page 7
- **Session I – Background and Context**  
  - Page 8
- **Session II – National Screening Programmes**  
  - Page 10
- **Session III – Actions and Results from LIFE and Other Projects**  
  - Page 13
- **Conclusions Day 1**  
  - Page 17
- **Necropsy training**  
  - Page 19
- **Field visit to Dadia**  
  - Page 21
- **Cultural activities**  
  - Page 22

## ANNEXES

- **Annex I:** Workshop Agenda
- **Annex II:** Vulture conservation activities in Thrace, NE Greece
- **Annex III:** Taking up the baton of vulture monitoring and conservation in the Dadia National Park and adjacent SPAs
- **Annex IV:** Literature review on known impacts of vet medicines and vultures
- **Annex V:** Diclofenac in Europe. Where are we?
- **Annex VI:** Toxicity to vultures from veterinary drugs used in farm animals, the overview from France
- **Annex VII:** The use of veterinary drugs and their potential toxicity to vultures and avian scavengers in Spain, an update from research projects
- **Annex VIII:** The situation in Bulgaria
- **Annex IX:** The situation in Greece
- **Annex X:** Screening vet medicines within LIFE Re-Vultures
- **Annex XI:** Screening vet medicines within Vultures Back To Life
- **Annex XII:** Screening vet medicines within Life Return of the Neophron and New Egyptian Vulture Life
- **Annex XIII:** Screening vet medicines within LIFE Under Griffon Vulture Wings – Sardinia
- **Annex XIV:** Screening vet medicines within LIFE Rupis
- **Annex XV:** European Raptor Biomonitoring – Sampling Protocols
- **Annex XVI:** Baseline methodology and recommendations for development of research projects for the screening of veterinary drug residues in avian scavengers
Annex XVII: Conclusions Day 1
Annex XVII: Workshop notes
Annex XIX: Autopsy Report Black Vulture
Introduction

This Workshop is organized within the Life Project: RE-Vultures (LIFE14 NAT/NL/000901), Action E13 by the Vulture Conservation Foundation, VCF in close collaboration with WWF Greece, and the rest of the project partners.

Background

The negative impact of toxic products and contaminants (wildlife poisoning) is the main threat facing the conservation of vultures and other scavenger species all over the world, but this is a complex issue.

The VCF and its partners are working through various projects on fighting the illegal and direct poisoning of wildlife. But others form of secondary poisoning also occur, notably through veterinary products used to treat livestock and domestic animals.

There is ample evidence that contaminants and products such as NSAIDs (Non Steroidal Anti Inflammatory Drugs), antibiotics, antiparasitics and anthelmintics, euthanasia drugs, esp. barbiturates represent an increasingly serious threat to the health of vultures and other scavenger species that feed on domestic animals. Veterinary diclofenac (a NSAID) has been proved to cause a +95% decline in the Indian vulture populations in India, and it is now, quite surprisingly, marketed legally in Spain and Italy (the VCF and others are leading a campaign to ban it in the EU). Recently, the first case of a lethal poisoning of a griffon vulture by flunixin (another NSAID) has come to light. Today many farm animals receive small/large doses of antibiotics and other veterinary drugs. The EU sanitary regulations enacted to prevent disease transmission have actually led to a scarcity in the number of animal carcasses originating from extensive animal husbandry (with less chemicals) in some feeding stations, and a parallel increase in the use by avian scavengers of animals originated in industrial operations – mostly intensive farmed pigs. This is a potential source of exposure to harmful toxins for vultures that needs to be monitored. From the food safety perspective, parameters that ensure human safety relative to animal carcasses but do not apply to scavengers.

Veterinarians, researchers and even governmental authorities on the ground may be unaware that certain veterinary products can be toxic to wildlife.

All these veterinary products can cause acute or chronic intoxication, dependent of the product and the exposure. It is well known that exposure to NSAIDs and euthanasia drugs can be acutely toxic to vultures and other scavengers, long-term exposure to other compounds like antibiotics can have sublethal effects (e.g., development of antibiotic resistant strains). In some cases, veterinary drugs can act similar as pesticides or heavy metals, some veterinary products have a pesticide as the active ingredient and lead poisoning and exposure to barbiturates can cause with similar symptoms, something that need to be taken in account for investigation of illegal poisoning incidents.
Workshop objectives

- To inform about current research projects and recent findings on negative effects to vultures of veterinary products (current Life Projects and best practice experience form Spain and France).
- To identify widely used veterinary products with potentially harmful effects to vultures across the project area (Bulgaria and Greece). Name of products and uses.
- To review the current sampling and analyses protocols, guidance, practice and resources, identify gaps and make recommendations for improvements.
- To inform LIFE Re-Vultures After-Life plan about this subject and include recommendations and action to wider vulture conservation plans and policies

Target audience

International experts from this field and staff from the different LIFE projects implementing closely related activities on this subject, representatives from the veterinary service from Bulgaria and Greece. The total number of expected participants was 30, but due to a lot of interest especially from Greece and Bulgaria finally there were over 60 attendees at the Workshop.

Workshop venue and logistics

The Workshop took place in the Visitor's Center of the Dadia National Park in the village of Dadia, Greece from the 19th until the 20th of February 2019. The Workshop venue was offered for free of change by the Dadia-Lefkimi-Soufli Forest National Park. Accommodation for the participants coming from abroad was secured in the nearby hotel Forest-In. Lunch was organized by a local catering service and for dinner participants were able to enjoy in local food in the village restaurants. Most of the participants arrived on the 18th in the evening and left after the excursion on the 20th. A total of 61 participants attended the Workshop.

Workshop participants

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<th>NAME</th>
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<td>Andreana Dicheva</td>
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Workshop Agenda

The Workshop agenda was produced in English previously circulated by email to all participants (Annex I). At the first day during the registration all participants received printed version of the agenda together with the workshop materials (folder, notebook and pen) provided by the WWF Greece and the Dadia-Lefkimi-Soufli Forest National Park.

The 1st Workshop day (February 19th) included three sessions of presentations and the 2nd Workshop day (February 20th) was dedicated to discussion divided in two sessions.

**WS Day 1**
- Session I – Background and Context
- Session II – National Screening Programmes
- Session III – Actions and Results from LIFE and other projects

**WS Day 2**
- Session IV – Discussions
- Session V – Conclusions

**Opening Ceremony**
The Workshop started with slight delay of about 30 min due to the large number participants arriving the same morning. We started with an opening ceremony in which representatives from the VCF (José Tavares), WWF (Theodora Skartsi) and the host: the management Body of the Dadia-Lefkimi-Soufli Forest National Park (Anna Konstantinidou) give welcoming and introductory talk (Photo 1).
Session I – Background and Context

Within the first working session four presentations were given. Theodora Skartsi (WWF Greece) presented the vulture conservation activities in Thrace and Sylvia Zakkak (Management Body of National Park of the Dadia-Lefkimi-Soufli Forest) gave an overview of the vulture monitoring activities, monitoring and conservation in the Dadia National Park and adjacent SPAs.

Presentation 1 outcomes: Vulture conservation activities in Thrace, NE Greece - Skartsi Theodora, WWF Greece (Photo 2).

- Maximum 35 incubating pairs of Cinereous Vultures, 2014-2017
- Poisoning incidents have slowed population increase
- Griffons: 0-1 pairs in Dadia; several pairs in other SPAs
- Increasing numbers recorded at feeding site
- 3 pairs Egyptian vultures in Dadia; rapid decline since 2011
- Anti-poisoning: detection dogs; networks of shepherd dogs
- Mitigation of pylons against electrocution
● Vulture data used to inform suitable placement of wind farms
● Supplementary feeding since 1987, weekly operation; 2018: small scale sites
● Support to extensive livestock farming is required

Presentation available as Annex II.

Presentation 2 outcomes: Taking up the baton of vulture monitoring and conservation in the Dadia National Park and adjacent SPAs - Sylvia Zakkak, Management Body of National Park of the Dadia-Lefkimi-Soufli Forest (Photo 3).

● Management body: government body; functioning properly since 2015
● Many different activities with multiple stakeholders
● Dadia NP + 4 SPAs: >2000 km²
● Monitoring all species and habitats of conservation importance, especially black vultures: 30-35 breeding pairs, 10-20 fledglings; tagging of nestlings;
● Satellite tracking: identify feeding, roosting sites and movement corridors > informs placement of wind farms; tool to detect poisoning incidents
● Published in annual reports – available on request
● Supplementary feeding is funded by Regional Unit of Evros (public funding)
● Key point: coordinated, cross-border actions

Presentation available as Annex III.

Louis Phipps (VCF) presented a literature review on known impacts of vet medicines and vultures (Annex IV) and José Tavares (VCF) presented the situation in Europe with the veterinary drug Diclofenac.
Presentation 3 outcomes: Scene setting – literature review on known impacts of vet medicines and vultures - Louis Phipps – VCF (Photo 4).

- Pathways of pharmaceuticals in aquatic environment
- Discovering NSAIDs as threats 90s-2000s – massive decline of Asian vultures.
- Meloxicam – safe alternative.
- Ketoprofen - toxic as the diclofenac.
- Antiparasitics – possible negative effects to bearded Vultures. More research needed.
- Antibiotics related to oral lesions in vultures.
- Mortality cases of euthanasia drugs.
- Need of standardized research and pharmacovigilance.

Presentation available as Annex IV.

Presentation 4 outcomes: Diclofenac in Europe. Where are we? – José Tavares – VCF (Photo 5).

- Small number of treated carcasses can cause high numbers of vulture deaths, even at low doses
- Authorised in Italy since 1993, and Estonia, Czech, Latvia since 2009
- 2013 – authorized in Spain (pending in Portugal)
● 9,460-27,700 animals estimated to have been treated with diclofenac in Spain
● Potential mortality of 683-4792 griffons/year (Green & Margalida (2014))
● 2014: FATRO refused voluntary withdrawal of diclofenac
● Campaign to ban diclofenac: >50,000 signatures
● 2014: European Medicine Agency confirm risk to vultures and other species
● EMA did not directly recommend banning diclofenac
● EU position: until evidence supplied, existing legislation is sufficient
● Variation in status and action plans / measures between countries
● 2017-18: organisations researching evidence of exposure to diclofenac
● 2018: renewal for diclofenac in Spain and request for sale in Portugal
● 2017-2018: new campaign to remove diclofenac
● Still legally sold in Spain, Italy (and some others) and probably will be sold in Portugal
● In principal legislation prevents diclofenac exposure, but the risk remains
● Continued vigilance and monitoring: increase testing for presence of diclofenac and other vet drugs

Presentation available as Annex V.

Discussion after Session I followed where participants from Greece stressed that have recorded use of human Diclofenac to treat livestock. In Israel cases have been recorded of incorrect use of Flunixin in sheep instead of horses. Also, in Israel the price for Meloxicam decreased due to negotiation with suppliers. In Spain there is a concern that Diclofenac might be use as poison to kill vultures.

Session II – National Screening Programmes

Next session of presentation was aiming to present the different situation in several European countries: France, Spain, Greece and Bulgaria. Four presentation were presented in this session.
Presentation 5 outcomes: Toxicity to vultures from veterinary drugs used in farm animals, the overview from France - Florence Roque – CNITV (National Information Center of Veterinary Toxicology)

- Since early 2000s, different programs to monitor toxic substances
- e.g. “Vigilance Poison” > all raptors in France with national action plan
Monitoring protocol established
Currently delay between analysis, results and report > difficult to respond
3 different laboratories with different specializations; + other partnerships
Since 2005, 41/399 autopsied birds were poisoned (excluding lead)
No analysis possible in some cases e.g. degradation / lack of funding
Euthanizing products: long persistence in carcasses
No diclofenac used in France
Systematic recording of drug use in breeding register
Mandatory reporting of wildlife mortalities with evidence of veterinary drugs
Vultures mainly in extensive livestock farming areas
Some supplementary feeding sites are managed by farmers, feeding small ruminants with limited vet med treatments
Not all dead birds are collected and analysed
Aim: to focus on raptor species covered by National Action Plans e.g. LIFE
Set up specialized analytical centre to detect illegal activity
Consolidate toxic threat surveillance network
Toxic threat mainly from pesticides, not veterinary medicines
Necessary to investigate sublethal effects
400 Euros to test each bird for all veterinary products > expensive

Presentation available as Annex VI.

Presentation 6 outcomes: The use of veterinary drugs and their potential toxicity to vultures and avian scavengers in Spain, an update from research projects - Ignasi Marco Sánchez – UAB (Autonomous University of Barcelona) (Photo 6).

- Supplementary feeding is important conservation strategy, but no/very few regulations regarding control or monitoring of veterinary drugs in carcasses
- 2013: diclofenac authorized in Spain for veterinary use
- Many drugs, but limited evidence for toxicity to vultures
- Flunixin case: Maria-Mojica et al. 2018, Alicante
- Ketoprofen and meloxicam detected in infertile BV eggs in captive breeding centre – Zorilla et al. 2018, most likely through feeding
- No national monitoring program in Spain > MAF grant to investigate NSAIDs in vultures in Spain:
  - 160 griffon vultures, 8 cinereous, 8 bearded, 7 Egyptian tested
  - No diclofenac but 4.4% with other NSAID residues; acute flunixin in 1 case
  - Most causes of death are trauma, electrocution etc
  - Kidney lesions do not always indicate visceral gout caused by vet drugs
  - 183 livestock carcasses analysed, only 5 with NSAID residues
  - Flunixin (2), diclofenac, meloxicam, ketoprofen, all only low levels
  - Diclofenac only found at the injection site in one pig
  - Antibiotics detected but at low levels. Exposure confirmed, unknown effects
  - Nestlings potentially good sentinels of exposure
  - Euthanasia drugs (pentobarbital) in Spain > Aldeguar et al, 2009; Mojica et al, 2017 > 5 griffons poisoned by pentobarbital from goat at feeding site

15
Very limited legislation about veterinary drugs and reducing exposure for vultures / scavengers
Presentation available as Annex VII.

**Presentation 7 outcomes:** The situation in Bulgaria – brief testimony: Ivanka Asenova Lazarova & Georgana Nikolova Balieva – Veterinary Faculty Stara Zagora, Bulgaria (Photo 8)

- Procedures for authorisation of vet medicines: National > Mutual Recognition > Decentralized > EU
- Four-part registration dossier, including safety data, at national level > takes up to 210 days, once granted it lasts 5 years
- Wholesale of veterinary drugs must be authorized by veterinarian
- Retail only available at veterinary pharmacies, under prescription by a registered veterinary practitioner (kept in duplicate at farm and pharmacy)
- BFSA implements pharmacovigilance system and cooperates in EU program > mainly for information exchange e.g. safety data
- National laboratories have difficulties to analyse pesticides, antibiotics etc. Do not have accredited matrices for animal products. Private laboratories exist
- Increase public awareness, including veterinary practitioners > many unaware of the problems discussed previously i.e. sensitivity of vultures
- Establish maximum residue levels, withdrawal periods etc to inform proper legislation
- Currently would need to send a dead vulture to a private laboratory for analysis of dead animals
Presentation available as Annex VIII.

**Presentation 8 outcomes:** The situation in Greece – brief testimony: Erini Kastellanou, Directorate of Animal Protection and Veterinary Drugs, MRDF, Greece (Photo 7)

- Several national laws related to veterinary medicines
- Total number of vet med packages sold (includes pets):
  - 2016 = 1,203,235 packages
  - 2017 = 993,850 packages [n.b. measured in packages not weight]
- Surveillance and control plan drawn up and implemented annually
- Group A (anabolic) and Group B (antibiotics and other drugs)
- Network of state laboratories to analyse NSAID etc residues in livestock
- Very low number of non-compliance samples e.g. 12/3860 (0.3%) in 2017
- Diclofenac is not authorized but was detected in milk in 2015 > due to use of human diclofenac on a single animal
- All VPs under veterinary prescription
Presentation available as Annex IX.

**Discussion after Session II** followed focused on comparison of the situation between countries. Was stated, that there is a difference in screening programs for vet medicaments and differences in the source of data/information. Was also concluded that not all laboratories
testing these substances in human food products are able to analyze samples from dead wild animals.

Session III – Actions and Results from LIFE and Other Projects

This session included six presentations aiming to inform about the current anti-poisoning activities, recent findings and activities related in particular to veterinary drugs implemented through different Life projects.
Presentation 9 outcomes: Screening vet medicines within LIFE Re-Vultures, Dobromir Dobrev, BSPB

- Study health status of large vultures
- Blood samples from 33 *G. fulvus*, 2016-17 [compared to tissue samples]
- Dadia – 45 cinereous vultures sampled
- Samples sent to Spanish laboratory (Rafa Mateo and colleagues)
- Liquid chromatography “time-of-flight” mass spectrometry
- Heavy metals, antibiotics and anti-inflammatory drugs and other substances
- No presence of antibiotics or anti-inflammatory drugs
- Organochlorine compounds present in low levels, accumulate with age
- Lead levels present but lower than reference value for lethal dose; higher in *G. fulvus* than cinereous
- [VPs remain for less time in blood than tissues in live birds]

Presentation available as Annex X.

Presentation 10 outcomes: Screening vet medicines within Vultures Back To Life, Andreana Dicheva, Green Balkans & Kiril Dimitrov, Trakia University – Bulgaria (Photo 9).
22 samples from *G. fulvus* and 16 from other species: need to send for full analysis, but currently no registered cases of vet meds intoxication

Since 2003 toxicological analysis introduced by national poison working group

No current evidence for poisoning by veterinary drugs in Bulgaria

But other types of poisoning (carbamates, organophosphates, rodenticides) continue e.g. Kresna Gorge, 2017, 18 vultures poisoned

Illegal dumping of livestock carcasses is quite common > potential source of exposure to contaminants (including euthanized dogs from shelters)

Presentation available as **Annex XI**.

**Presentation 11 outcomes:** Screening vet medicines within Life Return of the Neophron and New Egyptian Vulture Life, Volen Arkumarev, BSPB & Eleftherios Kapsalis, WWF Greece (**Photo 10**).

- 36 EVs sampled from Bulgaria and Greece, 2012-13; blood samples
- Samples analysed in Spain
- Negative for pesticides, antibiotics; no sig lead intoxication
- Aspirin was detected in one sample from Greece > possibly from turkeys/chickens. No toxicity documented for wild birds
- NEW LIFE: survey on use of VPs and agriculture chemicals throughout flyway
- Harmful NSAIDS such as ketoprofen and flunixin are registered for use
- 44 farmers, 22 vets, 5 farm managers interviewed: 9/34 licensed NSAIDS frequently used (Analgin 30% solution most frequent), then ketoprofen
- Diclofenac reported used in 20 settlements, likely human diclofenac
- Treatment without vet consultation is common

In Greece:
- Interviews with 22 vets and 41 livestock keepers, covering 10 SPAs
- Anti-inflammatory drugs rarely used; antibiotics when applicable; antiparasitics preventative once or twice per year
- NSAIDs: carprofen, flunixin, ketoprofen, meloxicam

Presentation available as **Annex XII**.

**Presentation 12 outcomes:** Screening vet medicines within LIFE Under Griffon Vulture Wings – Sardinia, Dionigi Secci - Forestas (Forestry Service) (**Photo 11**).

- Food shortage is a critical factor > activation of two centralized feeding stations and 40 farm feeding stations
- ~35 tonnes livestock biomass provided in 2.5 years
- Livestock carcasses were tested and analysed for multiple substances
- 9% of (54?) samples contained VP residues
- Oxytetracycline and ivermectin detected
- Informal questioning of vets suggest diclofenac is rarely used (despite being legal in Italy)

Presentation available as **Annex XIII**.
Presentation 13 outcomes: Screening vet medicines within LIFE Rupis, Jovan Andevski, VCF

- Produced protocols for taking biological samples from live + dead birds
- Live birds:
  - blood, serum, feathers etc
  - how to conserve and store the samples
  - Dead birds: forensic collection of evidence
- Human safety is prioritized
- Necropsy must be completed fully to inform toxicological analysis
- Five EVs captured for tracking were tested, no residues detected (but does not mean no exposure)
- Forensic investigations processes rely on national regulations

Presentation available as [Annex XIV](#).

Presentation 14 outcomes: COST – European Raptor Biomonitoring – Sampling Protocols, Jovan Andevski, VCF

- All environmental contaminants monitored in raptors as indicators of threats to human health > early warning system
- 27 national partners across Europe
- Raptors as sentinel species e.g. detect emerging contaminant problems
- [https://erbfacility.eu/](https://erbfacility.eu/)
- Jovan involved in establishing sampling protocols (live and dead animals)
- Also see Eurapmon protocols

Presentation available as [Annex XV](#).

Presentation 15 outcomes: Baseline methodology and recommendations for development of research projects for the screening of veterinary drug residues in avian scavengers, Ignasi Marco Sánchez - UAB (Autonomous University of Barcelona) *(Photo 12).*

- Survey of livestock vets and vulture feeding station managers to estimate diclofenac and NSAIDs use, and evaluate knowledge levels of risk to scavengers
  - Most vets unaware of risk
  - Feeding station managers are aware
  - Low use of diclofenac by veterinarians
- Evaluate diclofenac and other NSAID residues in dead vultures
  - Liver/kidney/brain/stomach content from dead vultures + necropsy + multi-organ histopathological evaluation
  - Necropsy and histology can inform toxicological analysis
- Evaluate residues in livestock carcasses at vulture feeding stations
  - Kidney, liver and skeletal muscle samples
- Investigating detection of drug residues in blood samples from vultures
- New project proposal: Integration of livestock farming practices into conservation of avian scavengers.
  - Compare high and low intensity farming areas with drug residues and diet
Evaluate prevalence of pathogens in scavengers and effects on condition and disease
- Analysis of vet drugs in carrion and scavengers, esp NSAIDs
- Study existing gaps in mechanisms of toxicity and metabolism of drugs in vivo and in vitro e.g. using partridges as models
- Monitoring drug residues, overall approach:
  - Assess farming practices and feeding sites
  - Analysis of carrion from different areas
  - Exposure of scavengers: dead, live etc.

Presentation available as Annex XVI.

Discussion after Session III

Constructive discussion of practical issues that come to several agreements and statements.
- Upon request form Florence, Ignasi agreed to analyze samples for histopathology and toxicology from France or elsewhere.
  - For histology samples needs to be fresh and conserved in formalin.
  - Only small pieces required for histology
- Volen: lab in SA can analyse for lead after fixing in formalin
  - New technique to perform toxicological analyses (stomach contain washed with acetone on filter paper) USA labs.

What gaps, concerns, priorities etc. in Bulgaria and Greece?
- Need good connection with vets at local level > mutual benefit
- Need to improve capacity for good necropsy and good toxicology labs
- Funding: who pays? State or NGOs? Depends on who requests analysis?
- Need improved protocols for sample collection, storage and analysis.
- Dora: in Greece the necropsies are rarely completed properly, so causes remain unknown. Due to lack of capacity, funding etc.
- Dora: We have identified the same gaps over the years, how do we move forward?
- Can we use dogs to detect and prevent poisoning before the fact?

2nd day of the Workshop started as planned, with presentation of the conclusions and outcomes from Day 1. José Tavares, VCF presented the conclusions and also used the opportunity to make announcements on future VCF events and promote the VCF mortality database (Photo 13). After brief discussion on the presented conclusions the Workshop programme continued according the agenda.
Conclusions Day 1

General

- Not the most urgent and important threat to vultures in Europe
- Nevertheless, an issue, for which we have relatively limited information (may be more important than what we know)
- Need more research, monitoring, analysis, data, etc
- In order of priority and importance
  - NSAIDs mortality cases
  - Euthanasia agents
  - Antibiotics
  - Antiparasitics

Essential

- Collaboration and information exchange between vets and vulture conservationists.
  - Training of vets on impacts of vet drugs on wildlife
- Protocols on how to sample, store and analyse dead vultures and carcasses.
  - Existing protocols: VCF, Cost project, etc
- Dead Vultures give more data and potential for research (Liver/kidney/brain/stomach content for toxicology, vet drugs, heavy metals, histology). Necropsy/post mortem essential step, can direct and inform analysis
- Live animals provide less - blood samples and swabs, more immediate but less comprehensive picture
Animal carcasses in supplementary feeding sites and/or wider countryside: Kidney, liver and skeletal muscle samples. Type of management of carcasses important in terms of relative risk.

Lab analysis – Need to include funding for analysis in projects. Gap in the Balkans, lack of labs for many of the analysis – developing this priority. Private labs, reference labs, research labs etc.

Assessment of farming practices, usage of vet drugs, supplementary feeding sites operations - very useful to inform potential analysis (questionnaires, etc)

Need to keep vulture corpses/samples/organs for future sampling + more analysis. Properly stored - Need freezers.

In the Balkan region

- Lots of progress in the last few years
- Samples collected in (mostly) live (blood) and dead birds, Egyptian, Griffon & Cinereous vultures
- Analysis done – mostly in Spain. For PCBs, DDE, heavy metals, antibiotics, NSAIDS, West Nile, Chlamydia. Mostly negative so far, except for lead (Euthanasian agents mostly ignored so far)
- State reference labs mostly focussed on residues for human consumption on vegetables, meat and milk. Limited capacity-accreditation-engagement for analysis of wildlife samples
- Need to develop screening capacity in the Balkans, engage with state labs, explore private and research labs

Overall

- Improve and develop risk assessment of existing and new drugs, toxicity tests, more analysis
- Need to feed wildlife data into the pharmacovigilance databases
- Check for oral lesions in vultures handled. At the most basic, presence/absence and photo, if possible swabs in appropriate medium
- Be vigilant about use of human diclofenac by some farmers (cases in Bulgaria and Greece)
- Promote collaboration with captive-breeding/wildlife rehabilitation facilities – send unfertilized eggs-samples for analysis (easier logistics, ...), monitor
- Vetagro (France) – offering free research on anticoagulants
- Univ. Barcelona – offering collaboration on histological analysis

Presentation available as Annex XVII.

Session IV included two discussion points:

- List of target vet drugs dangerous or presumably dangerous to vultures
As future step, all participants agreed that we should compile a list of approved veterinary drugs from all countries from the Balkan region.

- List for approved veterinary drugs for Bulgaria and North Macedonia have been already provided.

- Screening methods and existing capacities in Bulgaria and Greece (labs, toxicologist and funding)
  - Main constrain for the toxicological analyses to be performed in labs from Bulgaria, Greece and North Macedonia is the origin of the sample – most of these labs are authorized for food safety analyses therefore cannot receive a sample from wild dead animal.
  - Several state labs from Greece to be approached to double check if they have capacities to perform these analyses.
  - In Bulgaria a privet lab has been identified that can apparently do most of the toxicological analyses. Methods and prices to be compared with Spanish labs.
  - Transport costs and administrative procedures for permits to be foreseen if samples are analyzed in foreign countries (e.g. Spain).

Session V – Conclusions and next steps

- Lists of approved drugs / substances from each country > inform analysis
- Use existing project activities to do additional monitoring e.g. oral lesions
- Need to process large numbers of samples in the Balkans. Possibility for analysis to be done in Bulgaria or for Spanish colleagues to travel there to do analysis
- Need to develop official collaborations between state labs and/or local veterinary labs to conduct the analysis
- Need to collect information from all labs in each country: which labs do which analysis
- Full analysis needs to be done to reduce number of “unknown” mortalities
- It would be useful to know the withdrawal period for certain drugs to inform deposition of carcasses at feeding sites
- Must communicate about treatments with farmers and vets before carcasses are provided at feeding sites

Detailed Workshop notes available as Annex XVIII.

Necropsy training

Lack of capacities for performing a proper necropsy was mentioned several times over the Workshop. Good necropsy report can be extremely valuable step in confirming the poisoning incident. Cannot confirm poisoning as cause of death, but can defiantly help to select the suitable samples for toxicological analyses and direct into a specific group of contaminates to be analysed - something that can safe effort, time and costs.

As Florence Roque was present at the Workshop, counting with great experience in avian necropsy, out of the Workshop agenda we decided to organize a two hours of necropsy training demonstration using dead Cinereous Vulture recently found in the area (Photo 14).
This short training session appeared to be very helpful for the workshop participants, particularly for the local vets from Dadia.

Necropsy report available as Annex XIX. More information about this training can be found at VCF web site, direct link.
Field visit to Dadia

During the afternoon of the 2nd Workshop day, the WWF team and the Management Body of the Dadia-Lefkimi-Soufli Forest National Park organized several activities for the workshop participants, such as: visit to a Cinereous Vulture nest, birdwatching at the observatory facing the vulture feeding site, walk through the wonderful Dadia forest, etc.
Cultural activities

Thanks to Elzbieta Kret (WWF Greece) Workshop participants enjoyed a wonderful traditional music and dance at the first Workshop dinner.