Screening pesticides and vet medicines within Life Return of the Neophron and New Egyptian Vulture Life
Toxicological analyses of Egyptian Vultures from Bulgaria and Greece

- Blood samples from 36 Egyptian Vultures from Bulgaria and Greece were analysed for antibiotics, pesticides, NSAID and heavy metals (PB, Cd, Zn)
- All sampled vultures were juveniles
- Samples were collected in 2012-2013
All individuals resulted negative to pesticides detection analyses in blood samples in heparin.

All individuals resulted negative to antibiotics detection analyses in blood samples in heparin.

No significant lead or cadmium intoxication was detected. For Pb concentrations ranging from $<2,5 \, \mu g/dL$ to $7,51 \, \mu g/dL$ (no pathological background). For Cd concentrations were lower than the detection limit ($<0,10 \, \mu g/dL$).
Aspirin (acetylsalicylic acid) was detected in samples from central Greece with a concentration of 0.067 mg/kg.

Aspirin was found to be commonly used for treatment of turkeys and chickens in central Greece.

Regarding the toxicity of acetylsalicylic acid, it is classified with harmful ecotoxicological value. No data on toxicity to wild birds was found, although it has previously been detected in Griffon Vultures, Egyptian Vultures and owls.
NEW PROJECT: Egyptian Vulture New LIFE

Geographic scope: 14 countries in the Balkans, Middle East & Africa

Budget: 5,848,458 € (75% contribution of EU)

Duration: 5,5 years (01/07/2017 - 31/12/2022)

Project’s implementors: 20 (most of them BirdLife partners)

Coordinating Beneficiary: BSPB / BL Bulgaria

Associated Beneficiaries: HOS / BL Greece, WWF Greece, RSPB / BL UK, CMS, BL Middle East, BL Africa, DD / BL Turkey, APLORI, Green Balkans

Partners/Subcontractors: BirdLife partners in Ethiopia, Nigeria, FYR Macedonia, Jordan, Syria, Lebanon, Egypt, SCF, PPNEA, AOS, etc.
Methodology for survey on use of VMPs and agriculture chemicals

- **Desk research**
  - Review on national legislation (laws and regulations)
  - Review of publically available information (internet)
  - Requests for information to governmental institutions (in particularly the one, which is not publically available)

- **Field study**
  - Car transects for searching for carcasses, chemicals and waste on field
  - Searching by drone
  - Searching by anti-poison dog team
  - Interviews with farmers and veterinary doctors

- **Data analysis** - database and GIS
Agriculture chemicals

Legislation - eight laws, 53 Regulations and 2 Statutes regulate the agriculture activities in Bulgaria, where the main law, related to chemical use is the Law on the Protection of Agricultural Land.

Substances in the officially registered chemical products for agriculture (rodenticides, herbicides, insecticides, fertilizers)

We reviewed all 761 pesticides that are allowed for sale on the bulgarian markets (fungicides – 305; herbicides – 294; insecticides – 159; rodnticides – 3), and they have more than 300 different substances inside.
**RESULTS**

**VMPs**

**Legislation** – In Bulgaria 7 laws and 21 Regulations regulate all the activities related to livestock breeding, veterinary control, production, use and trade of VMPs. The Law on Veterinary Medical Activity is the main Law in this respect and the Bulgarian Food Safety Agency is the leading competent authority.

**Licensed NSAIDs according to the official BG register** – The official register of the licensed VMPs in Bulgaria include 34 NSAIDs, which contain one of the active substances: Ketoprofen, Carprofen, Metamizole sodium, Paracetamol or Flunixin meglumine.

**Other public information** – The competent authority keep very limited amount of information about the use of VMPs on a national and regional level.
RESULTS

The study area, defined by the 30 km buffer around the 10 project SPAs, cover 1666 settlements in 16 districts with total area of 28 120 km²

Car transects

- Car transects were defined on a base of preliminary information by satellite tracking data and these are made in area of “Lomovete” SPA.
- The aim of the study was to identify on the ground areas which could provide food for the vultures and could create potential risk for vulture in case of deposition of animals treated by NSAID.
- By using this method one waste depot, used frequently by vultures long years was found, as well as illegal deposition of chicken remnants from a nearby poultry farm. In addition through this method a number of cases of illegal deposition of wrapping of agriculture chemicals were found;
Field studies in Bulgaria in 2018

RESULTS

Conducting patrols with the anti-poison dog unit to investigate the impact of agricultural chemicals as poisoning agents

*Study area and period – SPA Lomovete, 3 -6 May 2018*
Conducting patrols with the anti-poison dog unit to investigate the impact of agricultural chemicals as poisoning agents

- Test new methods of detecting poisoned animals and assessing the magnitude of the usage of chemicals in the agriculture as poisoning agents and possible effects on birds and biodiversity
- 8 transects were conducted in the SPA Lomovete. During 2 of the transects empty containers and packages from different nutrients and nitrates were found
- The study area consists of vast monoculture blocks and in many cases packages, containers and envelopes from different fertilizers can be found aside.
- The anti-poison dog unit could be very effective when searching in a small areas but turns out to be not very appropriate in the big blocks due to their large size
Using an alternative method to find poisoned animals in the field – flying with a drone

*Study area and period – SPA Provadiysko – Royaksko plateau, 9-10 June 2018*
Using an alternative method to find poisoned animals in the field – flying with a drone

- Drone was used to investigate agricultural fields in SPA Provadiysko – Royaksko plateau around 5 active Egyptian vulture nests. The drone was used to detect objects in the agricultural fields when flying above with a speed of approximately 10 km/h.

- 8 flights with the drone over 10 crop fields of maze, wheat, barley, sunflower.

- No dead animals were found.

- Flying slowly between 10 and 15 meter over the crop field allows to scan the area for dead animals.
Field studies in Bulgaria in 2018

RESULTS

Interviews on agriculture chemical use

- Interviews were taken with 15 farmers-owners, 14 managers of farm companies or cooperatives, 3 agronomists and 3 persons, who did not defined their positions in the farm.

- Chemical pollution in agriculture and the use of chemicals cannot be easily directly connected with the risks for Egyptian vulture, nevertheless that there are evidence about impacts on its prey.
Field studies in Bulgaria in 2018

RESULTS

Interviews on VMPS

- Interviews were made with 44 farmers, 22 veterinary doctors, 5 managers of farms

- Out of 34 licensed NSAIDs, officially listed in the Bulgarian register 9 are reported as frequently used, where ANALGIN 30% solution is the most frequently used (in 73 settlements), and then Ketoprofen (31 settlements)

- The following NSAIDs were reported to be used – Ainil (Ketoprofen), Loxicom, Spasmalgon, Benalgin

- Diclofenac was reported to be used in 20 settlements. In all the cases it is used rarely by farmers without veterinary control as a self-treatment practice. Meloxicam is also reported to be used

- Self-treatment practice (by farmers without veterinary control) is registered in all the target areas under the study
Desk studies in Greece in 2018

RESULTS

Greece: National legislation about VMPs

- **Law 2538/1997**
  “Amendment of current legislation on agricultural and veterinary medicines...”
  (GG 242/v. A/01.12.1997)

- **Joint Ministerial Decision 282371/2006**
  (GG 731/v. B/16.06.2006)

- **Law 3698/2008**
  “Animal husbandry issues and other layouts” (GG 198/v. A /02.10.2008)
RESULTS

Greece: Relevant/responsible authorities

- **Ministry of Rural Development and Food / Directorate of Animal Protection and Veterinary Drugs.**
  Range: National

- **National Organisation for Medicines**
  Range: National

- **Directorates of Veterinary**
  Range: Regional (Regions of Epirus, Thessaly and East Macedonia - Thrace)
Field studies in Greece in 2018

RESULTS

Interviews on VMPs

- 3 areas in Greece (Epirus, Central Greece, Thrace)
- 10 SPAs
- 22 private vets
- 41 livestock keepers
Field studies in Greece in 2018

RESULTS

Interviews on VMPs – Private vets and livestock keepers

<table>
<thead>
<tr>
<th>Main Veterinary Medicines</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-inflammatory</td>
<td>Rarely supplied</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>Treatment – where applicable</td>
</tr>
<tr>
<td>Antiparasitics</td>
<td>Preventive (once or twice per year)</td>
</tr>
</tbody>
</table>

Self-treatment practice by livestock keepers is registered in all the target areas
Field studies in Greece in 2018

RESULTS

Interviews on VMPs: Private vets and livestock keepers

Anti-inflammatory

• Rarely supplied – mainly to cattle and horses (Inflammations, Bites, births, e.t.c.)
• Cattle and racing horses
• Method: injection

Anti-inflammatory substances

• Butylscopolamine
• Carprofen (NSAID)
• Cortisones
• Dexamethanose
• Ketoprofen (NSAID)
• Flunixin (NSAID)
• Meloxicam (NSAID)
Field studies in Greece in 2018

RESULTS

Interviews on VMPs: Private vets

<table>
<thead>
<tr>
<th>NSAIDs confirmed or potentially dangerous to vultures</th>
<th>NSAIDs: possible safe alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substance</strong></td>
<td><strong>Substance</strong></td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td><strong>Administration</strong></td>
</tr>
<tr>
<td>1 Aceclofenac</td>
<td>1 Meloxicam</td>
</tr>
<tr>
<td>0 %</td>
<td>64.7 %</td>
</tr>
<tr>
<td>2 Carprofen</td>
<td></td>
</tr>
<tr>
<td>23.5 %</td>
<td></td>
</tr>
<tr>
<td>3 Diclofenac</td>
<td></td>
</tr>
<tr>
<td>0 %</td>
<td></td>
</tr>
<tr>
<td>4 <strong>Flunixin</strong></td>
<td></td>
</tr>
<tr>
<td>70.6 %</td>
<td></td>
</tr>
<tr>
<td>5 Ketoprofen</td>
<td></td>
</tr>
<tr>
<td>23.5 %</td>
<td></td>
</tr>
<tr>
<td>6 Phenylbutazone</td>
<td></td>
</tr>
<tr>
<td>0 %</td>
<td></td>
</tr>
</tbody>
</table>

Flunixin and Meloxicam administrated in all of the three areas in Greece
Field studies in Greece in 2018

RESULTS

Interviews on VMPs: Private vets and livestock keepers

Antibiotics

• Supplied for treatment where applicable (pneumonia, mastitis, diarrhea, e.t.c.)
• Cattle, goats, sheep, racing horses
• Method: injection

Antibiotics substances

• Amoxicillin
• Ceftiofur
• Cefquinome
• Cloxacillin
• Enrofloxacin
• Florfenicol
• Gentamicin
• Lincomycin Hcl
• Marbofloxacin
• Penicillin
• Oxytetracyclin
• Sulfaclozine
• Streptomycin
• Sulphadimidin
• Tetracyclin LA
• Tiamulin
• Toltrazuril
• Tulathromycin
• Tylosin
Field studies in Greece in 2018

RESULTS

Interviews on VMPS: Private vets and livestock keepers

Antiparasitics

- Preventive use: once or twice a year (endoparasites & ectoparasites)
- Cattle, goats, sheep
- Method: oral / injection

Antiparasitics substances

- Albentazole
- Chlortetracycline
- Deltamethrin
- Doramectin
- Eprinomectin
- Ecomectin
- Febantel
- Fenbendazole
- Ivermectin
- Levamisole
- Moxidectin
- Oxfendazole
- Rafoxanide
### NSAIDs in Bulgaria and Greece

<table>
<thead>
<tr>
<th>Substance / Country</th>
<th>Bulgaria (74 quest.)</th>
<th>Greece (63 quest.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diclofenac</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Metamizole</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Carprofen</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Flunixin</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ketoprofen</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Meloxicam</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Aceclofenac</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenylbuntazole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your attention!