



**ERB Facility**

**EUROPEAN RAPTOR BIOMONITORING FACILITY**

**COST ACTION 16224**

**REPORT OF  
THE THIRD GENERAL MEETING (GM3) &  
Cross-Working Group Meeting**

**Hall of Biodiversity, Casa Andresen**

Jardim Botânico do Porto, Rua do Campo Alegre, 1191, 4150-181 Porto, Portugal

**Tuesday 4<sup>th</sup> to Thursday 6<sup>th</sup> February 2020**



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Guy Duke, Chair ERBFacility  
Al Vrezec, Vice-Chair ERBFacility  
Richard Shore, Chair WG1  
Antonio Garcia-Fernandez, Chair WG2  
Paola Movalli, Chair WG3  
Chris Wernham, Chair WG4  
Madis Laevits, Communications Lead  
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## 1. INTRODUCTION

This is a report from the Third General Meeting (GM3) and Cross-Working Group Meeting of the COST Action *European Raptor Biomonitoring Facility* ([ERBFacility, CA 16224](#)).

The Fourth Management Committee Meeting (MC4) took place back-to-back with the General Meeting. The Minutes of the Management Committee Meeting are published separately.

GM3 brought together the ERBFacility community of Management Committee (MC) members, STSM holders and additional key resource persons active in the analysis, collections and field arenas in relation to the monitoring of contaminants in raptors.

55 participants attended GM3 from 24 COST Member Countries, of which 43 MC members and substitutes who also attended the Fourth Management Committee Meeting (MC4). This includes a multidisciplinary community of field ornithologists and ecologists, curators (from natural history museums, environmental specimen banks and others) and ecotoxicologists (Fig. 1). Around 30 participants attended the Cross-Working Group meeting. The full list of participants is annexed to this report.

On Day 1, Tuesday 4<sup>th</sup> February, the morning session provided a recap of the objectives and rationale for the Action, an overview of the state of play from the three Working Groups in the Analysis, Collections and Field Arenas and presentations from mission holders. This was followed by an outline of plans for the remainder of the current Grant Period (GP3, to end April 2020) and for GP4 (1/5/20-30/4/21) and through to end of Action (October 2021).

This was followed by break-out discussion on key cross-Arena issues for the remainder of the Action focussing on three topics: the ERBFacility proof of concept study (led by Rafael Mateo, Rui Lourenço), capacity building and training schools (led by Chris Wernham, Paola Movalli), and action communication and dissemination (led by Guy Duke, Chris Wernham, Al Vrezec).

## Meeting programme

Date/time	Session	Speaker
<b>Tuesday 4<sup>th</sup> February</b>		
09:00-09:30	<i>Registration</i>	
<b>ERBFacility GENERAL MEETING 2 (GM2)</b>		
<b>SESSION 1: Open Plenary</b>		
09:30-10:00	<b>Welcome</b> <b>Overview of ERBFacility and progress since GM2</b>	<b>Nuno Ferrand</b> , Director MHNC-UP <b>Guy Duke</b> , Chair ERBFacility
<b>SESSION 2: WG1&amp;2 (Analysis Arena)</b>		
10:00-11:00	<b>1. State of play, overview of progress</b> <b>2. STSM presentations</b> <b>(a) Pharmaceuticals in avian scavengers</b> (Host: Mark Taggart, ERI, UK) <b>(b) Priority species for pan-European monitoring</b> (Host: Richard Shore, CEH, UK) <b>(c) Developing a network of analytical labs and government institutions</b> (Host: Philip Berny, ENVL, France) <b>(d) Assessment of existing capacity and knowledge to detect pan-European spatial and temporal trends in the exposure of raptors to legacy organochlorines</b> (Host: Igor Eualers, Aarhus University, Denmark) <b>3. WG1&amp;2 Plans to end GP4 (30/4/21)</b>	<b>Richard Shore</b> , Lead WG1 & <b>Antonio Garcia-Fernandez</b> , Lead WG2  <b>Marta Herrero Villar</b> (PhD student, Institute for Game and Wildlife Research, Ciudad Real, Spain)  <b>Alexander Badry</b> (PhD student, Leibniz Institute for Zoo and Wildlife Research, Germany) [ <i>presented by Richard Shore</i> ]  <b>Irene Valverde Dominguez</b> (PhD student, University of Murcia, Spain)  <b>Dora Bjedov</b> (MSc graduate, Josip Juraj Strossmayer University of Osijek, Croatia)  <b>Richard Shore</b> , Lead WG1 & <b>Antonio Garcia-Fernandez</b> , Lead WG2
11:00-11:30	<i>Refreshments</i>	
<b>SESSION 3: WG3 (Collections Arena)</b>		
11:30-12:10	<b>1. State of play, overview of progress</b> <b>2. STSM presentations</b> <b>(a) Addressing constraints to shipping of raptor samples</b> (Host: Peter Hosner, Natural History Museum of Denmark) <b>(b) Scoping a database for the European Raptor Specimen Bank</b> (Host: Paola Movalli & Rene Dekker, Naturalis Biodiversity Center, NL) <b>3. WG3 Plans to end GP4 (30/4/21)</b>	<b>Paola Movalli</b> , Lead WG3  <b>Georgios Smpokos</b> (Lawyer and Associate, Natural History Museum of Crete, Greece) ( <i>Video</i> )  <b>Konstantinos Vlachopoulos</b> (PhD student, University of Thessaloniki, Greece)  <b>Paola Movalli</b> , Lead WG3
<b>SESSION 4: WG4 (Field Arena)</b>		
12:10-12:45	<b>1. State of play, overview of progress</b> <b>2. STSM presentations</b> <b>Review of raptor ringing in Europe:</b>	<b>Chris Wernham</b> , Lead WG4  <b>Abigail Maiden</b> (Northern Ireland Raptor

Date/time	Session	Speaker
	<p><b>preliminary results</b> (Host: Jari Valkama, Finnish Museum of Natural History, University of Helsinki, Finland)</p> <p><b>Review of constraints on raptor sample gathering and sharing</b> (Host: Rui Lourenço, University of Évora, Portugal)</p> <p><b>3. WG4 Plans to end GP4 (30/4/21)</b></p>	<p>Study Group, UK)</p> <p><b>Maria Dulsat Masvidal</b> (IDAEA-CSIC, Girona, Spain)</p> <p><b>Chris Wernham</b>, Lead WG4</p>
12:45-13:45	<i>Lunch</i>	
<b>SESSION 5: ERBFacility proof of concept</b>		
13:45-14:30	<p><b>1. Overview of proof of concept plans</b></p> <p><b>2. STSM presentations</b></p> <p><b>Compilation of a meta-database to inform ERBFacility proof of concept</b> (Host: Rafael Mateo, IREC-CSIC, Ciudad Real, Spain)</p> <p><b>Coordination of sample collection and analysis for ERBFacility proof of concept</b> (Host: Rafael Mateo, IREC-CSIC, Ciudad Real, Spain)</p> <p><b>3. Introduction to breakout session</b></p>	<p><b>Rafael Mateo</b>, Proof of Concept Coordinator &amp; <b>Rui Lourenço</b>, Proof of Concept Deputy Coordinator</p> <p><b>Dragana Bošković</b> (PhD Student, University of Novi Sad, Serbia)</p> <p><b>Ana Lopez Antia</b> (Post-doc researcher, Antwerp University, Belgium)</p> <p><b>Rafael Mateo</b>, Proof of Concept Coordinator</p>
14:30-15:30	<b>Breakout on Proof of Concept</b>	
15:30-16:00	<i>Refreshments</i>	
16:00-17:00	<b>Breakout on Proof of Concept</b>	
<b>SESSION 6: Closing Plenary</b>		
17:00-17:30	<p><b>Final plenary – feedback from breakout, next steps</b></p> <p><b>Wrap-up</b></p> <p><b>ERBFacility video</b></p>	<p><b>Rafael Mateo, Rui Lourenço</b></p> <p><b>Guy Duke</b>, ERBFacility Chair</p> <p><b>Al Vrezec</b>, ERBFacility Vice-Chair</p>
19:30-	<i>Social Dinner</i>	
<b>Wednesday 5<sup>th</sup> February</b>		
<b>ERBFacility Fourth Management Committee Meeting (MC4) (Invited MC Members / Substitutes only)</b>		
09:00-09:30	<i>Registration</i>	
09:30-12:30	<b>Fourth ERBFacility Management Committee Meeting (MC4)</b>	
12:30-14:00	<i>Lunch</i>	
<b>ERBFacility Cross-WG Meeting (invited participants only)</b>		
<b>SESSION 1: Proof of Concept</b>		
14:00-17:30	<p><b>More detailed discussions on Proof of Concept including on:</b></p> <p><b>1. PoC scientific considerations</b></p> <p><b>2. PoC practicalities</b></p> <p><b>3. PoC communication and dissemination</b></p>	<p><b>Session Organisers:</b> Rafael Mateo, PoC Coordinator, Richard Shore, WG1 Lead, Chris Wernham, WG4 Lead</p>

Date/time	Session	Speaker
<b>Thursday 6<sup>th</sup> February</b>		
<b>ERBFacility Cross-WG Meeting (cont.) (invited participants only)</b>		
<b>SESSION 2: Planning for ERBFacility legacy</b>		
09:00-12:30	<b>Parallel break-outs:</b> <b>1. Capacity-building in the Field and Collections arenas (including possibly Summer School)</b> <b>2. Capacity-building in the Analysis Arena (including possible Summer School)</b> <b>3. Action communication and dissemination</b>	<b>Chris Wernham &amp; Paola Movalli</b>  <b>Richard Shore &amp; Antonio Garcia-Fernandez</b>  <b>Guy Duke &amp; Chris Wernham</b>
12:30-14:00	<i>Lunch</i>	



**Figure 1:** Group photo of participants of the Third General Meeting of the COST Action ERBFacility in Porto (Portugal), 4-6 February 2020. (photo: Andras Kovacs)



## 2. OVERVIEW OF THE THIRD GENERAL MEETING (GM3)

### Session 1 – Plenary

The General Meeting opened with a welcome speech by **Nuno Ferrand**, Director, Natural History and Science Museum of the University of Porto (the host institution). This was followed by introduction and overview of achievements of the European Raptor Biomonitoring Facility (ERBFacility) COST Action by **Guy Duke** (ERBFacility Chair).

The following sessions presented the progress of the Action in relation to the 3 Arenas (Analysis, Collections, Field) and in relation to the ERBFacility Proof of Concept study.

### Session 2 – Analysis Arena

**Richard Shore** (Lead WG1) and **Antonio Garcia-Fernandez** (Lead WG2) gave an overview of progress in developing the *European Raptor Biomonitoring Scheme* (ERBioMS). This was elaborated through presentations of the results of short-term scientific missions (STSMs) that had taken place since the previous General Meeting (Florence, February 2019), namely STSMs on: (a) *Priority species for pan-European monitoring* (presented by Richard Shore, mission host, on behalf of mission-holder **Alexander Badry**); (b) *Pharmaceuticals in avian scavengers* (**Marta Herrero Villar**); (c) *Developing a network of analytical labs and government institutions* (**Irene Valverde Dominguez**); (d) *Assessment of existing capacity and knowledge to detect pan-European spatial and temporal trends in the exposure of raptors to legacy organochlorines* (**Dora Bjedov**). Richard Shore then presented planned WG1 & WG2 activities for Grant Period 4 (GP4, ending 30/04/2021).

### Session 3 – Collections Arena

**Paola Movalli** (Lead WG3) gave an overview of progress in developing the *European Raptor Specimen Bank* (ERSpeB). This was elaborated through presentations of the results of STSMs that had taken place since the previous GM, namely STSMs on: (a) *Constraints to shipping of raptor samples* (**Georgios Smpokos**); (b) *Scoping a database for the ERSpeB* (**Konstantinos Vlachopoulos**). Paola Movalli then presented plans for a WG3 workshop in Leiden (Netherlands) in April 2020 and planned WG3 activities for GP4.

### Session 4 – Field Arena

**Chris Wernham** (Lead WG4) gave an overview of progress in developing the *European Raptor Sampling Programme* (ERSamP). This was elaborated through presentations of the results of STSMs that had taken place since the previous GM, namely STSMs on: (a) *A review of raptor ringing in Europe* (**Abigail Maiden**); (b) *A review of constraints on raptor sample gathering and sharing* (**Maria Dulsat Masvidal**). Chris Wernham then presented planned WG4 activities for GP4.

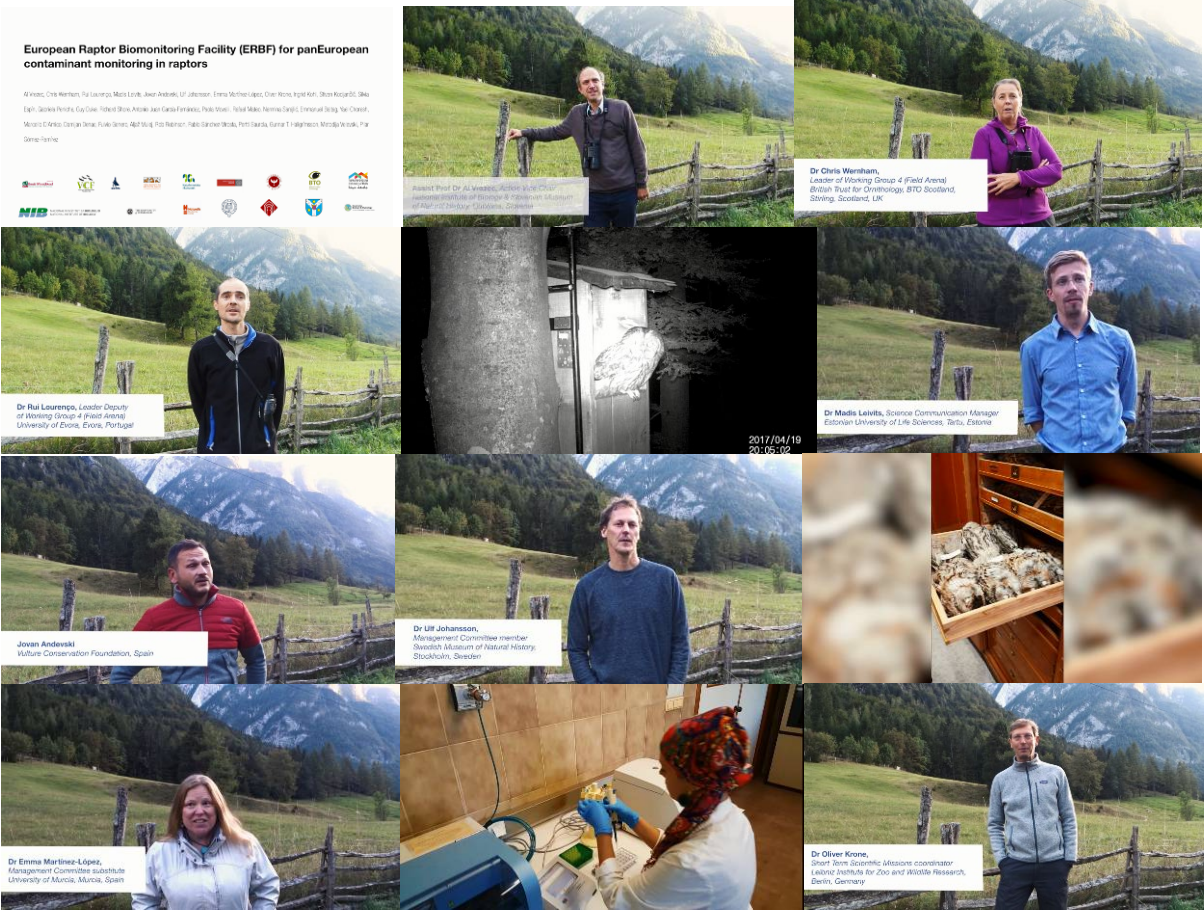
All presentations are available on the ERBFacility website ([www.erbfacility.eu](http://www.erbfacility.eu)).

### Session 5 – Proof of Concept study

on the *Proof of Concept* study was lead by **Rafael Mateo** and included presentations on two STSMs related to the Proof of Concept (**Dragana Bošković**, **Ana Lopez Antia**) and a breakout session co-led by **Rui Lourenço**. The output of this session is presented in a separate section of this report.

**Session 6 Closing Plenary**

The Third General Meeting concluded with a wrap-up by **Guy Duke** and a presentation of an ERBFacility video directed by **Al Vrezec** (ERBFacility Vice-Chair) (Fig. 2).



**Figure 2:** Excerpts from the ERBFacility presentation video that was filmed at capacity building workshop in Trenta (Slovenia) in September 2019.

### 3. REPORT OF THE CROSS-WG MEETING

#### ***SESSION 1: The ERB Facility Proof of Concept study***

Rafael Mateo, Dragana Bošković and Ana López-Antia first explained progress made on organization of the Proof of Concept (PoC) in two phases:

- Compilation of a meta-database to inform the PoC.
- Coordination of the collection of data on available raptor specimens and analysis of this data.

Discussion included coordination of the data collections with LIFE APEX, which is similarly interested in availability of raptor specimens (notably buzzard).

Participants discussed also the appointment of National Coordinators (NCs) and their role in supporting the PoC study. A list of potential NC candidates was elaborated for all European countries.

The session then discussed methodological aspects of specimen data collection and analysis, the plans for data analysis subsequent to data collection, and the schedule and management framework for PoC implementation.

#### **1. Identification of labs, methodologies for lab analyses (report by Silvia Espín)**

- It is likely that we can't raise funds for lab analyses, so we must check which labs can cover the costs – labs should have the analytical methodologies already established.
- If we only go for a small number of labs we will lose people from the network – it is better to use the opportunity provided by the PoC to increase capacities in Europe.
- The best option is to have a lab in each country (or almost), in order to limit difficulties in shipping samples between countries and all the paperwork related to this – sample providers can send samples direct to the lab in their country. Where there are no labs available, samples can be sent to another country with a lab.
- Who is taking care of shipping costs? It is cheap for some countries, but we are not sure about others. National Coordinators could help coordinate shipping.
- We need one person per county as a representative (National Coordinator - NC), coordinating the sampling and lab analyses in each country. We can send a list of potential labs to these NCs so that they can contact labs in their countries to check which can be involved.
- For Pb and Hg, quality control it is not a big problem since methods are well established and there are commercial standards available, but we need QC for rodenticides. Probably we won't have time to send spiked samples to all labs involved for inter-laboratory comparison before the PoC – this could be addressed later on.
- Labs should already have their own QC and they should somehow prove it. We can send NCs a form with QC parameters (**Pilar Gómez-Ramírez** compiled these in Madrid) and they can send them to the lab(s) in their country to complete. Then someone should check the quality of the each lab involved.

- We could include a map in the webpage to have a real time picture of samples collected and samples already analysed in the grid squares.

## 2. **Data analysis, predictive models** (report by **Richard Shore**)

- What is the spatial variation in contaminant levels – spatial by grid and by country, region, and by geographical gradients? Is the grid that is defined the most useful - for use of other explanatory variables?
- Could we identify hotspots? Think about the statistical methods?
- Can we relate concentrations to land use, human population density, weather, level of hunting and other spatially explicit explanatory variables?
- Need to relate concentration data to other contextual data but not clear which at the moment.
- For how many grid squares do we have data, for how many do we not have data – where are the gaps in coverage and why (e.g. no collector, inability to ship available samples)?
- What is the right spatial scale of sampling - model a concentration surface and test it with some of the data?
- We could keep the grid structure for sampling but use spatially explicit data closer to location of death for explanatory variables?
- We might compare concentrations between tawny owl and common buzzard where co-located (Fig. 3)?
- Provide information on sample “aggregation points” (gathered for sending) which will help define the specimen bank.
- Investigate the issues around using a single sample per square; have a subset of squares where we analyse multiple individuals and examine the relationship with squares with individual samples (read across to LIFE APEX).
- Concern about using poisoned birds as their residues may be outliers compared to the norm.
- How many squares have concentrations above a toxic threshold or for which we can assign a probability of mortality?
- Try and be as consistent as possible in the characteristics in type of bird, e.g. concentrate on birds collected in the breeding season?
- Is it worth looking at isomer ratio for anticoagulant rodenticides (ARs)?
- Compare which AR compounds are predominant and how this varies between species?
- Need to look again at aims of the project to see what other questions we may ask of the data that will inform us of how well we have met the aims.
- How frequently can samples be collected (info gathered from coordinators) – collection over a 5-year period is not useful for regulators.
- How are we filling partial squares (e.g. many squares overlap country borders)?

- Is there potential for analysing extra samples linked to the livers, such as feathers as SI (stable isotopes?)?
- Bank liver for other research groups for DNA analysis?
- We need a picture of each bird—concerns over sub-species/polymorphisms/age class—we need a protocol for photos.

### 3. Indicative schedule and actors for the PoC (report by Rafael Mateo)

Month	Actors	Tasks
Feb 2020	STSM1 Ana López	Contacting and agreement with national coordinators Contacting sample Providers Starting the database of available samples-Map on the web
Mar		
May	STSM2	Continue the contact with sample providers Update database and the map on the web Networking labs
Jun		
Jul		
Aug	CG + NCs	Time to fill the gaps in the map Shipment of samples – Agreement for financial support from LIFE APEX?
Sep		
Oct		
Nov	Labs	Analyses
Dec		
Jan 2021		
Feb	STSM3	Data analyses
Mar		
Apr		



Fig. 3: Tawny Owl (*Strix aluco*) & Common Buzzard (*Buteo buteo*). (photo: Al Vrezec, Davorin Tome)

## ***SESSION 2: Capacity-Building and Training Schools (WG1, WG2)***

The aim of this breakout session, lead by **Antonio Garcia-Fernandez** and **Richard Shore**, was to discuss a Summer School in accordance to the capacity-building objective in the Analysis Arena (WGs1&2). Particular consideration was given to building capacity in Eastern Europe.

Potential aims for the Summer School were proposed and discussed by the attendants:

- Building capacity, capability and knowledge for labs, especially in Eastern Europe
- Building analytical capability across Europe in terms of techniques, quality assurance, etc.
- Building infrastructure for European Raptor Biomonitoring
- Exploring potential for labs to conduct wider analyses and expand wider pollutant monitoring.
- Should Summer School help development of visceral gout reporting template?
- Motivating Eastern countries on analysing poisoning cases

It would be possible to combine STSM(s) with the Summer School to create actual capacity to run the School. STSMs would be more individualized and concrete on the student's needs.

Regarding the involvement of Eastern Europe countries, the Bucharest meeting created a list of gaps that could be explored to identify the more relevant aims for the Summer School. It would be possible in the Summer School to run real analyses of poisoned animals and/or monitoring; and also it would include learning on quality control, etc. In this sense, the information obtained during Irene's STSM with **Philippe Berny** could be very useful, especially regarding potentially interested labs from Eastern countries.

Other aspects dealt with during the meeting:

- Which is the appropriate candidate to be local organizer? It was discussed whether the Summer School should be organized in an experienced and specialist laboratory in monitoring and particularly in wildlife poisoning investigation or whether this is not necessary. In this sense, there was a proposal from Spain (in Murcia) to organize it. However other proposals were discussed, such as labs in Eastern Europe, e.g. Serbia.
- When should the Summer School be run, GP4 or GP5? Session participants proposed to organize it in GP5.
- Regarding lesions in dead animals, would we only focus on visceral gout? Or other lesions could be interesting, like haemorrhages? In this sense, it was proposed to include aspects on the contextual data in poisoning cases, including forensic evidences.

It was agreed:

- To organize the school in GP5.
- To include among the aims the forensic investigation of poisoning (cause of death, visceral gout, haemorrhages, etc.).
- To write a draft programme of the course before inviting people.
- To ask potential invitees about their interests to ensure that we offer what the participants need.

- To create a call focussing on students from Eastern Europe but not excluding those from Western Europe.

### ***SESSION 3: Capacity-Building and Training Schools (WG3, WG4)***

#### **INTRODUCTION**

**Chris Wernham** explained for WG4 that the suggestion was to have a training school (summer school or training workshop) that would take a ‘train-the-trainer’ format. Due to the relatively small number of people that could be involved directly with the available budget (20-25 maximum), WG4 considered it better to train national ‘ambassadors’ who would then go back and coordinate more national or regional training activities. We would hold the training school somewhere attractive but also relatively cheap, to maximise attendance (North Macedonia has already offered to host for example). We would train them in all aspects of the new guidance that had been produced (which will be available on the ERBFacility ‘Advice Hub’ by this time). The training would include:

- some priority field skills (and time in the field to make the school enjoyable and memorable);
- explaining all the available guidance on sampling, collection, storage, shipping and collection of contextual population and demographic data;
- explanation of the available guidance on how to capacity build and train more people;
- potentially also have a session on how to find funding to continue training activities (e.g. how to apply for Erasmus funding).

**Paola Movalli** explained for WG3 that the suggestion was to hold a summer school (suggested at Naturalis Biodiversity Center in Leiden) aimed at curators and researchers within collections, training them in all aspects of the ERSpeB framework. The training would include:

- the aim and objectives of the overall ERBFacility, regulatory context for chemicals management in Europe;
- the aim and objectives of the ERSpeB, the role of collections and the benefits for collections, linkages with ERBioMS and ERSamP;
- overview of raptor collections in Europe;
- priority species and matrices for the ERBioMS and how to source them;
- standards and protocols for receiving, storing and processing raptor carcasses and samples for contaminant analysis;
- international shipping of samples between collections and from collections to labs
- ERSpeB database design, digitalisation of raptor carcasses/samples and links to DiSSCo and other databases;
- related guidance documents.

#### Discussion points

- We discussed to what extent the lists of potential participants from WG3 and WG4 would overlap – and agreed that there could be quite a lot of overlap because many

museums are also involved in collecting and field studies of raptors (e.g. Sweden, Finland represented at the meeting).

- We discussed the problem that some museums do not have adequate storage space and need to get rid of samples (many samples are lost). Some need very practical guidance on how to set up and maintain storage facilities.
- We discussed the idea to train people to maximize what to do with dead animals – expanding the use of carcasses in museums (integration of ecologists/ecotoxicologists and museum curators) to maximise sample use for contaminants work, ecology, genetics etc. We need to think further about samples required for the future (not just livers for the proof of concept study). It is important that we do not stimulate museums to start collecting new samples and then change our priorities.
- We discussed the value of having videos to show people how to do things (e.g. like the ones being developed by the University of Murcia but also for the collections arena).
- We also agreed the value of having a video available for use by ambassadors, so that they can explain what is required in their own countries and carry out their own capacity building activities. The ambassador is unlikely to be a specialist in all the relevant arenas but may need to encourage specialists to take part – so must have appropriate information available to them.
- We discussed the value of having an on-line training course (webinars of different modules) available as an alternative to training people face-to-face, as this would allow us to reach many more people. We would have to have people willing to help to produce the materials for this, as it probably would not be suitable for an STSM.
- We agreed that having an on-line training course available would be very good but it would be in addition to, and not a substitute for, a face-to-face training course. The aim of training will be to stimulate countries that are not already involved in ERBF and that do not already have the expertise, and to encouraging people from these countries to act as ambassadors for activity in their own countries. It is unlikely that an on-line course alone would work – we need to train people face-to-face, build relationships with them and encourage them to be enthusiastic and take part.
- It is possible that in some countries the person that volunteers to be the national ambassador is not well-connected or accepted by other priority people – so we need to consider other ways to influence larger numbers of people to take part.
- We need to clarify what contextual data is valuable to collect and set clear priorities for this, and then make sure appropriate guidance is available.
- ERBFacility must carry out self-evaluation after the proof of concept study and be clear about future perspectives and sample priorities, so that ambassadors can be given clear guidance during the training.
- The Leiden meeting in April will be used to develop further ideas for the WG3 part of the training for collectors and curators.

## **Conclusions**

We agreed that there was some overlap between the participants that WG3 and WG4 wish to train, so that the most efficient way to run a training school might be to start with WG3



day(s), then an overlap day when all participants (WG3+WG4) attend (to train in topics common to both), followed by specific day(s) for WG4 field participants. Some trainers and some participants would likely be common to both sessions (so we could save on travel costs by combining the two courses).

We agreed that the first step would be for WG3 and WG4 to make lists of priority participants (from countries lacking in capacity currently) and then to look to see how many participants were in both lists. We also need to see how the national coordinators for the proof of concept work get on in their roles (we can ask them to carry out some kind of self-evaluation later).

A final decision on whether to run separate WG3 and WG4 courses or to combine them will be based on both how much overlap is there in participants and the final budget available from COST.

#### ***SESSION 4: Communication and Dissemination***

Discussion was conducted in two breakout groups chaired by **Chris Wernham** and **Guy Duke**. Here discussion main conclusions from both groups are summarized.

##### **1. Initial proposal for a final ERBFacility publication**

At COST ERBFacility Second General Meeting in Florence in 2019 the first discussions about possible final action publication were first drafted by **Al Vrezec** and **Rui Lourenço** and then further discussed by several MC members and with the CG. According to discussions so far Al Vrezec presented initial concepts of the final ERBFacility publication/book to be discussed further:

##### **(1) Working title:**

European Raptor Biomonitoring Facility – Assessing Environmental Contamination at a Pan-European Level

##### **(2) Objectives:**

- inclusion of 3 arenas (Figure 4)
- contaminants in raptors
- raptors in collections
- raptor population monitoring
- European biomonitoring scheme
- to collate knowledge collected during ERBFacility (and EURAPMON) including published papers

##### **(3) Initial two concepts for the publication:**

###### **a. Scientific publication**

- reference review for Raptor Biomonitoring Scheme
- review of scientific background to establish Raptor Biomonitoring scheme considering contaminants in raptors, raptor samples collection facilities, raptor population and breeding monitoring, raptor contextual data
- proposal of the framework of Raptor Biomonitoring Scheme in Europe

- case studies (Proof of Concept etc.)

b. Specialists/popular publication

- guidelines for raptor biomonitoring participants (analysis, samples storage, samples collection, collection of contextual data, analysis)
- popularisation of raptor contaminant biomonitoring
- illustration of raptor biomonitoring by case samples (in a popular way)



**Figure 4:** Raptors in focus: dissemination should be targeted to all three arenas and to different audience. (photos: Enej & Al Vrezec)

## 2. Main audiences

Both groups defined main audiences for action communication and dissemination:

### (1) Scientific / Professional audience

- Raptor field research / conservation community
- Collection curators (museums, specimen banks)
- Ecotoxicology / lab researchers
- International NGOs

### (2) General public

### (3) Regulators (facility key target audience)

- implementing agencies for chemical regulation management (ECHA, EFSA, ...)
- policy makers
- decision makers
- fundors

## 3. Communication channels/media

Different audiences require different communication channels and approaches. Ideas for communication channels/media were proposed to increase scientific and general visibility of ERBFacility, for each key target audience within the network.

### (1) Scientific / Professional audience

- a. a standard poster/presentation/video to be used by people involved in ERBFacility to disseminate the Action in scientific meetings (international and national), 4 versions – ERBFacility overview, analysis arena, collections arena, field arena. ERBFacility poster (pdf) for conferences (roll-up concept).
- b. common scientific papers: to stimulate collaboration in producing papers and to connect them to ERBFacility (to encourage ERBFacility community in producing papers with co-authors from different ERBFacility parties) – to search for help/collaboration within community (minimum 2 COST countries involved). Acknowledgement of ERBFacility/COST funding. To give message out to all MC and collaborators.
- c. virtual special issue – open submission deadline within one publisher with several journals (to find a publisher or to approach Editors within network and to invite people in the network for submissions); potential publisher: Elsevier,...
- d. a book – books on raptors in ecotoxicological studies are already existing, but mainly refer to America and not Europe and are thus less relevant for establishment of European Raptor Biomonitoring scheme.
- e. Technical report – for the (future) ERBFacility acknowledging the people/institutions involved in the network. This can be a “living” document that can add new people after release.
- f. practical technical guidelines - for people to be supported in acting within European Raptor Biomonitoring Scheme
- g. website – with static contents (guidelines, reports, papers, videos etc.) and dynamic content – a map showing the people involved in the network ERBFacility
- h. 1-2 page factsheet resuming the project – also to be used in PoC

## (2) Regulators\*

- a. compiled data from literature – urgent need for new data (why necessary, why important, making a case)
- b. Short report to policy-makers and funders
- c. Final product/result from PoC showing that (common) raptor species are useful sentinels of environmental contamination and human health – this can include a **report** and a **video** (simple explanation of the main results of the PoC)
- d. website – with static contents (guidelines, reports, papers, videos etc.) and dynamic content – a map showing the people involved in the network ERBFacility

## (3) General public

- a. Layman report to general public
- b. “Influencer” video – used to convince people about the relevance of ERBFacility) – with translation/subtitles

- c. website – with static contents (guidelines, reports, papers, videos etc.) and dynamic content – a map showing the people involved in the network ERBFacility
- d. 1-2 page factsheet resuming the project – also to be used in PoC

\* Dissemination materials for regulators and users of ERBioMS can be at least partly developed in preparing an ERBFacility business plan (under a potential COST Innovator's Grant following the end of the Action).

The above is an initial brainstorming on ERBFacility communication and dissemination, which will be taken to the Core Group for further discussion and implementation according to budget and network capacity.

## Annex 1: List of participants

Participant	Institution	Country
Nili Anglister	Israeli Wildlife Hospital	Israel
Brice Appenzeller	Luxembourg Institute of Health	Luxembourg
Arianna Aradis	ISPRA	Italy
Emmanuel Baltag	Universitatea Alexandru Ioan Cuza	Romania
Oded Berger-Tal	Ben-Gurion University of the Negev	Israel
Philippe Berny	Vetagro Sup, Campus veterinaire	France
Dora Bjedov	University of Osijek	Croatia
Katerina Blagoevska	Faculty of veterinary medicine	North Macedonia
Wieslaw Bogdanowicz	Museum and Institute of Zoology, Polish Academy of Sciences	Poland
Dragana Bošković	University of Novi Sad	Serbia
Marcello D'Amico	Institute of Environmental Assessment and Water Research	Spain
Rene Dekker	Naturalis Biodiversity Center	Netherlands
Giacomo Dell'Omo	Ornis Italica	Italy
Cristian Domsa	Romanian Ornithological Society / BirdLife Romania	Romania
Guy Duke	University of Oxford	UK
Maria Dulsat Masvidal	IDAEA-CSIC	Spain
Marcel Eens	University of Antwerp	Belgium
Silvia Espín	University of Murcia	Spain
Igor Eulaers	Aarhus University	Denmark
Andreia Freitas	Instituto Nacional de Investigação Agrária e Veterinária	Portugal
Antonio Garcia-Fernandez	University of Murcia	Spain
Pilar Gómez-Ramírez	University of Murcia	Spain
Marco Grotti	Department of Chemistry and Industrial Chemistry	Italy
Michel Guiraud	Museum National d'Histoire Naturelle	France
Paulo Gusmão Guedes	Natural History and Science Museum of the University of Porto	Portugal
Gunnar Thór Hallgrímsson	Institute of Life and Environmental Sciences	Iceland
Marta Herrero Villar	Institute for Game and Wildlife Research (IREC)	Spain
Ulf Johansson	Swedish Museum of Natural History	Sweden
Dražen Kotrošan	National Museum of Bosnia and	Bosnia and Herzegovina

	Herzegovina	
Andras Kovacs	Imperial Eagle Foundation	Hungary
Oliver Krone	Leibniz Institute for Zoo & Wildlife Research	Germany
Toni Laaksonen	University of Turku	Finland
Sanja Lazić	University of Novi Sad, Faculty of Agriculture	Serbia
Madis Leivits	Estonian University of Life Sciences	Estonia
Ricardo Jorge Lopes	CIBIO-InBIO, Universidade do Porto	Portugal
Rui Lourenço	University of Évora	Portugal
Ana López-Antia	University of Antwerp	Belgium
Abigail Maiden	Northern Ireland Raptor Study Group	UK
Rafael Mateo	Institute for Game and Wildlife Research	Spain
Paola Movalli	Naturalis Biodiversity Center	Netherlands
Joško Račnik	University of Ljubljana, Veterinary Faculty	Slovenia
Rob Robinson	British Trust for Ornithology (BTO), EURING	UK
Nermina Sarajlić	Ornithological Society "Naše ptice"	Bosnia and Herzegovina
Anastasios Saratsis	Veterinary Research Institute, NAGFRE Campus	Greece
Blagica Sekovska	Faculty of veterinary medicine, University St. Cyril and Methody	North Macedonia
Richard Shore	Centre for Ecology & Hydrology, Lancaster Environment Centre	UK
Kristinn Skarphedinsson	Icelandic Institute of Natural History	Iceland
Pablo Sánchez Virosta	University of Murcia	Spain
Dragana Šunjka	University of Novi Sad	Serbia
Jari Valkama	University of Helsinki, Finnish Museum of Natural History	Finland
Irene Valverde Dominguez	University of Murcia	Spain
Konstantinos Vlachopoulos	University of Thessaly	Greece
Al Vrezec	National Institute of Biology & Slovenian Museum of Natural History	Slovenia
Chris Wernham	BTO Scotland, University of Stirling	UK
Stavros Xirouchakis	University of Crete, Natural History Museum of Crete	Greece