



European Raptor Biomonitoring Facility

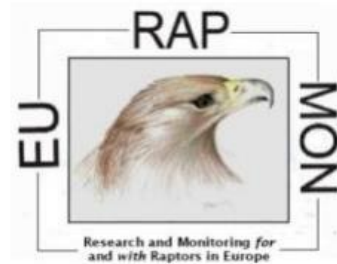
WG4 Meeting: Building capacity for contaminant sampling and collection of supporting monitoring data for raptors across Europe.

Trenta, Slovenia
September 2019


Sampling and contaminant monitoring protocol

Silvia Espín (silvia.espin@um.es)

Sampling and contaminant monitoring protocol for raptors




December 2014
Available on EURAPMON website
 (<http://www.eurapmon.net/>)


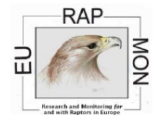


SAMPLING AND CONTAMINANT MONITORING PROTOCOL FOR RAPTORS

Research Networking Programme-EURAPMON

Research and monitoring for and with raptors in Europe



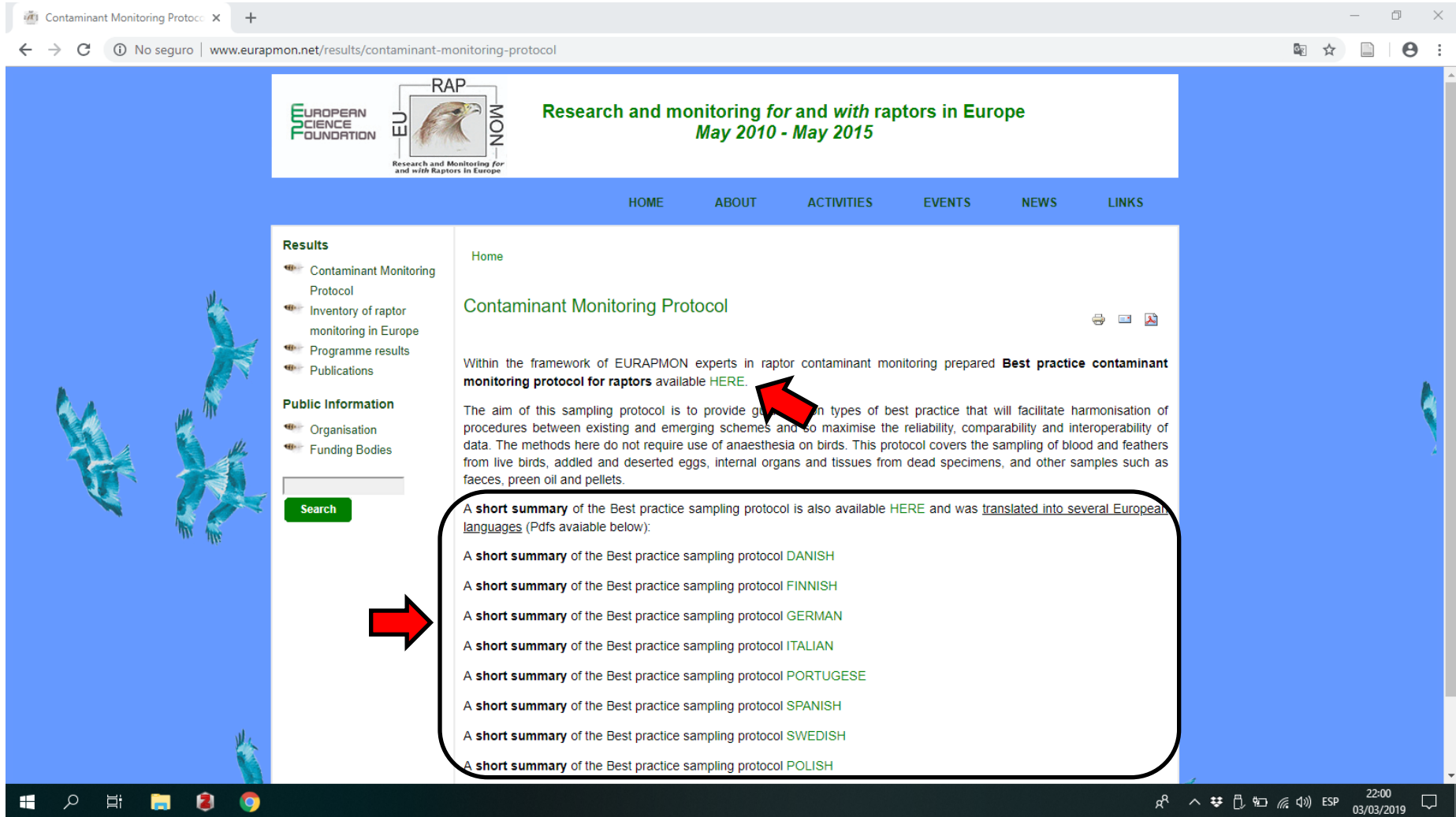
SAMPLING AND CONTAMINANT MONITORING PROTOCOL FOR RAPTORS

Espín S^{1*}, García-Fernández AJ¹, Herzke D², Shore RF³, van Hattum B⁴, Martínez-López E¹, Coeurdassier M⁵, Eulaers I⁶, Fritsch C⁵, Gómez-Ramírez P¹, Jaspers V.L.B.^{5,7}, Krone O⁸, Duke G⁹, Helander B¹⁰, Mateo R¹¹, Movalli P¹², Sonne C¹³, van den Brink NW¹⁴.

AIM

To provide guidance on appropriate sampling methods for contaminant monitoring

Sampling and contaminant monitoring protocol for raptors



Contaminant Monitoring Protocol x +

No seguro | www.eurapmon.net/results/contaminant-monitoring-protocol

EUROPEAN SCIENCE FOUNDATION **RAP** **MON**
 Research and Monitoring for and with Raptors in Europe

Research and monitoring for and with raptors in Europe
 May 2010 - May 2015

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Contaminant Monitoring Protocol

Within the framework of EURAPMON experts in raptor contaminant monitoring prepared **Best practice contaminant monitoring protocol for raptors** available [HERE](#).

The aim of this sampling protocol is to provide guidance on types of best practice that will facilitate harmonisation of procedures between existing and emerging schemes and so maximise the reliability, comparability and interoperability of data. The methods here do not require use of anaesthesia on birds. This protocol covers the sampling of blood and feathers from live birds, addled and deserted eggs, internal organs and tissues from dead specimens, and other samples such as faeces, preen oil and pellets.

A **short summary** of the Best practice sampling protocol is also available [HERE](#) and was [translated into several European languages](#) (Pdfs available below):

- A **short summary** of the Best practice sampling protocol **DANISH**
- A **short summary** of the Best practice sampling protocol **FINNISH**
- A **short summary** of the Best practice sampling protocol **GERMAN**
- A **short summary** of the Best practice sampling protocol **ITALIAN**
- A **short summary** of the Best practice sampling protocol **PORTUGUESE**
- A **short summary** of the Best practice sampling protocol **SPANISH**
- A **short summary** of the Best practice sampling protocol **SWEDISH**
- A **short summary** of the Best practice sampling protocol **POLISH**

Windows taskbar: 22:00 03/03/2019

Sampling and contaminant monitoring protocol for raptors

Contents

1. General guidelines

- Permission
- Identification
- Avoid contamination
- Personal safety and wildlife health
- Animal welfare

2. Basic data and records

- Date and time of sampling
- Study area
- Type and number of samples collected
- Biological data
- Nest information
- Other general observations

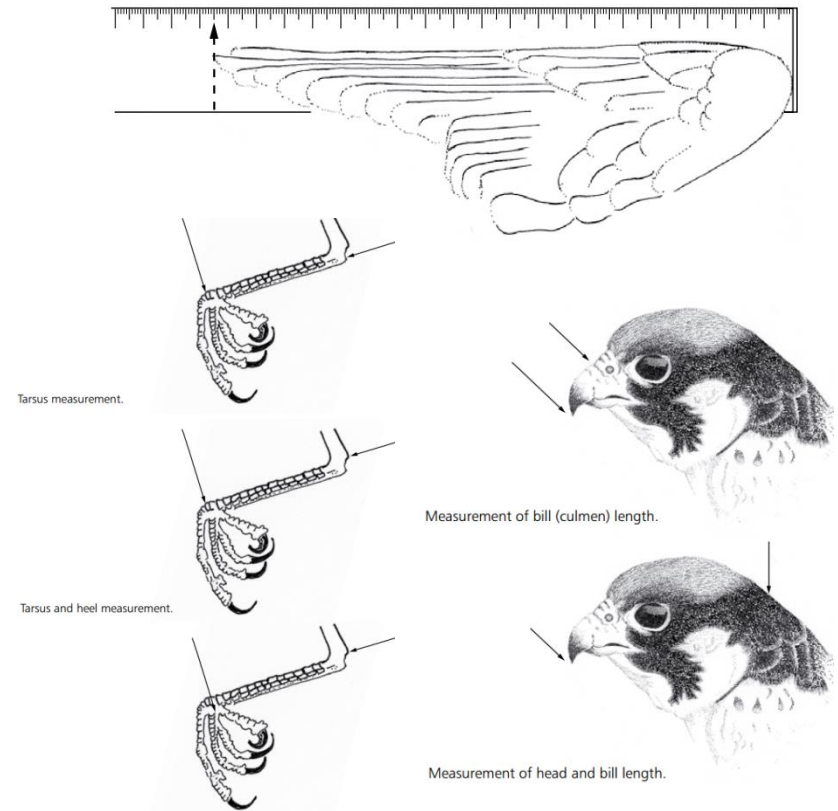


Figure. Morphometric measurements: “maximum chord” wing length measurement, tarsus length and head and bill lengths (from Hardey et al., 2009).

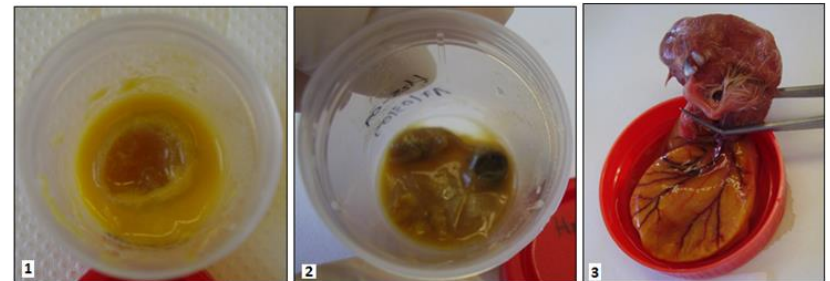
Sampling and contaminant monitoring protocol for raptors

PROTOCOL FOR EACH SAMPLE TYPE

1. Blood
2. Feathers
3. Unhatched eggs
4. Internal organs and tissues
5. Other samples: faeces, preen oil, pellets



- Sampling procedure
- Transport
- Pre-treatment of samples
- Storage
- Characterization of samples



Sampling and contaminant monitoring protocol for raptors



SAMPLING AND CONTAMINANT MONITORING PROTOCOL FOR RAPTORS



Figure 2. Brachial/jugular/tarsal veins (Photos: Pedro María-Mojica).



Brachial vein.



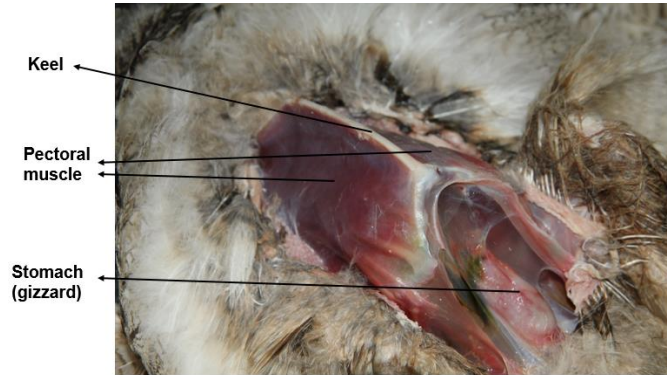
Jugular vein.



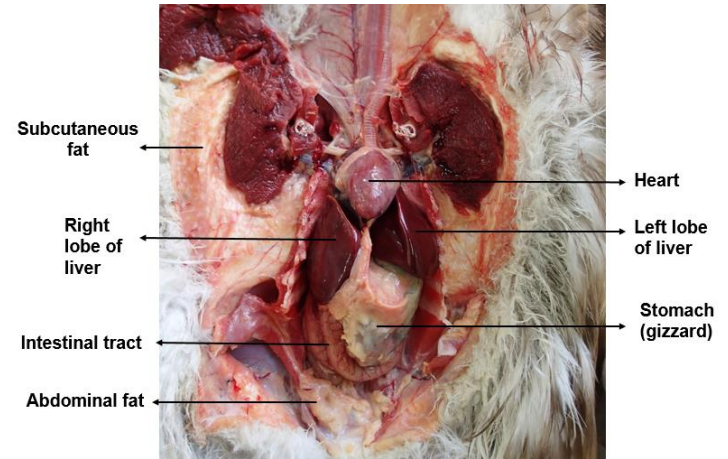
Tarsal vein.

Sampling and contaminant monitoring protocol for raptors

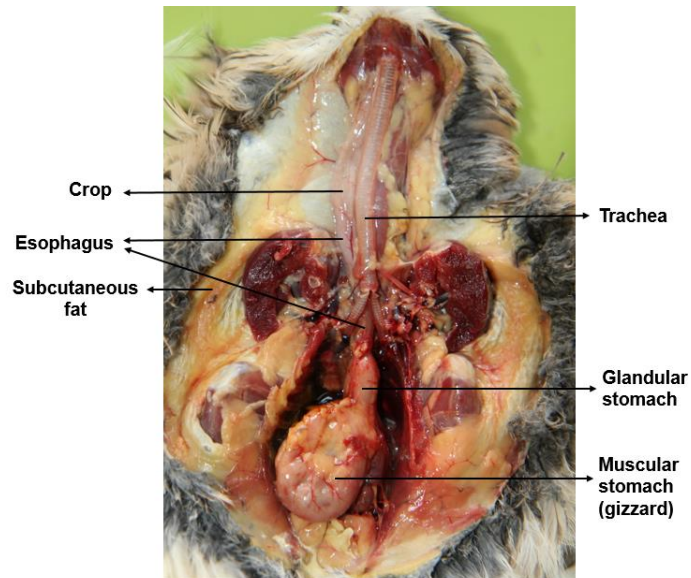
Anatomy of raptors



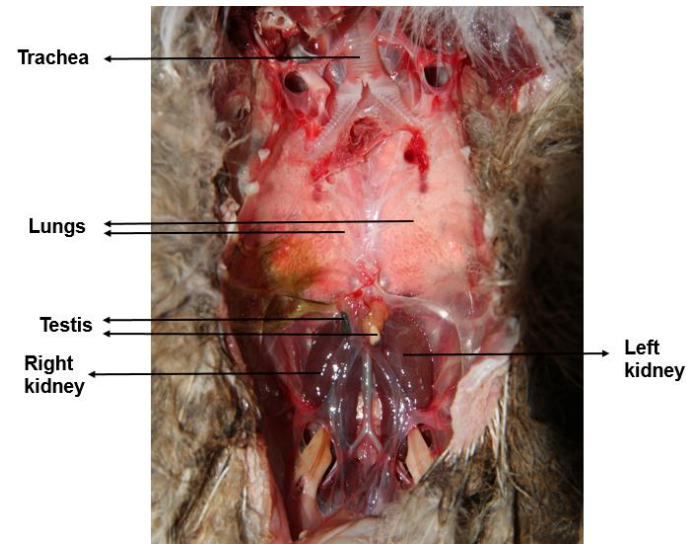
Eagle owl (*Bubo bubo*)
Photo: Pedro María-Mojica



Booted eagle (*Hieraetus pennatus*)
Photo: Pedro María-Mojica



Common kestrel (*Falco tinnunculus*)
Photo: Pedro María-Mojica



Eagle owl (*Bubo bubo*)
Photo: Pedro María-Mojica



CA16224 - European Raptor Biomonitoring Facility
Working group workshops on
“Prioritisation of species (WG 1, 2, 3 & 4) and best practice guidance for collecting raptor samples and contextual data (WG 4)”
in Thessaloniki
4-8 February 2019 |



Transport and storage conditions?



More schematic and easy-to-follow protocol





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Transport and storage conditions?



More schematic and easy-to-follow protocol



Matrix*	Metals (Pb/Hg)			Agrochemicals			Pharmaceuticals			Rodenticides			Perfluorinated		
	Volume/Mass (range)	Type of container	Transport conditions	Volume/Mass (range)	Type of container	Transport conditions	Volume/Mass (range)	Type of container	Transport conditions	Volume/Mass (range)	Type of container	Transport conditions	Volume/Mass (range)	Type of container	Transport conditions
Blood*	0.5-2.5 ml	PP tubes - metal foil	Temperature Time ca. 24-48 h	1-2 ml	PP tubes	Temperature Time ca. 24-48 h	0.2-1 ml	PP tubes	Temperature Time ca. 24 h	0.2-1 ml	PP tubes	Temperature Time ca. 24 h	0.2-1 ml	PP tubes	Temperature Time ca. 24 h
	Cold boxes		-20°C	Cold boxes		-20°C	Cold boxes		-20°C	Cold boxes		-20°C	Cold boxes		-20°C
	Insaf			Insaf			Insaf			Insaf			Insaf		
	Transport to the lab			Transport to the lab			Transport to the lab			Transport to the lab			Transport to the lab		
	Time			Time			Time			Time			Time		
	Temperature			Temperature			Temperature			Temperature			Temperature		
	Storage conditions			Storage conditions			Storage conditions			Storage conditions			Storage conditions		
	Time			Time			Time			Time			Time		
	Temperature			Temperature			Temperature			Temperature			Temperature		
	Storage conditions			Storage conditions			Storage conditions			Storage conditions			Storage conditions		
	Time			Time			Time			Time			Time		

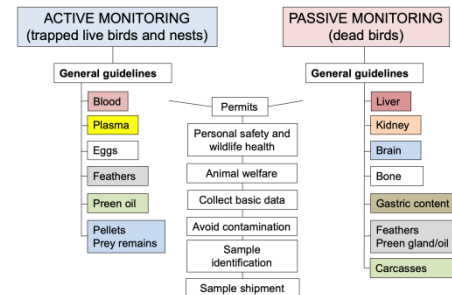


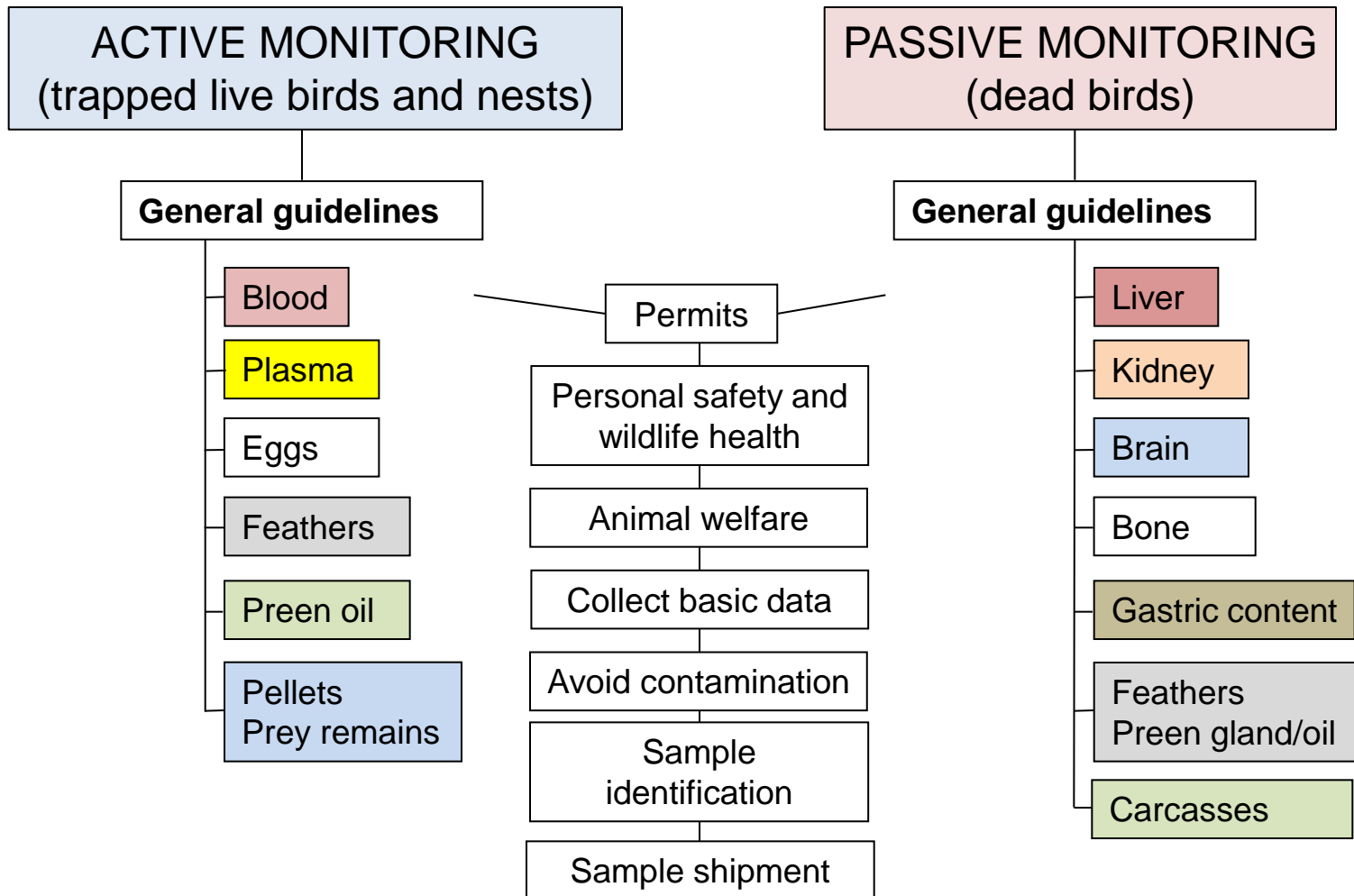
Table – Volume/Mass of sample, transport and storage conditions

Matrix ^a	Metals (Pb/Hg)						Agrochemicals						Pharmaceuticals						Rodenticides						Perfluorinated					
	Volume/Mass (range)	Type of container	Temperature	Time	Storage conditions	Transport to the lab	Volume/Mass (range)	Type of container	Temperature	Time	Storage conditions	Transport to the lab	Volume/Mass (range)	Type of container	Temperature	Time	Storage conditions	Transport to the lab	Volume/Mass (range)	Type of container	Temperature	Time	Storage conditions	Transport to the lab	Volume/Mass (range)	Type of container	Temperature	Time	Storage conditions	Transport to the lab
Blood ^b	0.1-0.25 ml	PP tubes - metal free	Cold blocks	ca. 24-48 h	-20°C	Indef	Cold blocks	ca. 24-48 h																						
Plasma ^b																														
Feathers ^c																														
Eggs ^d																														
Liver ^e																														
Kidney ^e																														
Brain																														
Bone																														
Muscle																														
Fat																														
Preen oil																														
Regurgitated pellets																														

Link to suitable containers/material for storage



Schematic protocol



- Beginning of document will provide easy route to find what person needs
- Separate protocols for sample types (links to videos/photos)

- Schematic synopsis of the procedures to collect the sample type...

BLOOD



Prepare the correct needle and syringe



Use of anticoagulants



Collect blood from brachial, jugular or tarsal vein



Transfer to proper tube



Transport and store samples (see table)



Link to video

- *Click on the picture to get additional information*
- *Link to table showing mass/volume required, transport and storage conditions*

What can we measure from each sample type?



European Raptor Biomonitoring Facility

**WG4 Meeting: Building capacity for
contaminant sampling and collection of
supporting monitoring data for raptors
across Europe.**

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Thank you for your attention!

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