



MAIN FINDINGS FROM THE WG3 REVIEW OF COLLECTIONS AND IMPLICATIONS FOR THE PROOF OF CONCEPT STUDY

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WG4 Meeting, Slovenia, 16-20 September 2019



Task 3.1 Review of Raptor Collections

NHMs as a source of samples

- **For most countries, NHMs are the main recipients of raptor carcasses**
 - Few countries (e.g. UK, Sweden...) have a dedicated ESB collecting raptor samples
 - Some (e.g. Germany, Spain) have research collections
- **Almost 75% of all NMHs receive fresh raptor/owl specimens** – almost all receive specimens ad hoc, but many also go out and collect
- **Many thousands of raptor specimens arrive annually at NHMs, ESBs and research collections across Europe**
 - ✓ **NHMs can be a principle source of raptor samples for contaminant biomonitoring**
 - ✓ **In a few countries (UK, Sweden) ESBs play this role so less need for NHMs to engage**



Task 3.1 Review of Raptor Collections

Frozen samples

- Almost all collections store raptor carcasses in freezers (-21C)
- c. 60% then add wet tissues from these carcasses (and c. 60% add dry tissues) to their archive collection
- Over half of these (i.e. 30% of all collections) freeze the wet tissues.
 - ✓ **Most NHMs gather frozen specimens suitable for contaminant biomonitoring, many archive frozen samples**



Task 3.1 Review of Raptor Collections

Freezer capacity in NHMs

- Freezer capacity is a constraint for **short-term retention of carcasses** for c. 50% of these collections – so many carcasses arriving are rejected/discarded
- Freezer capacity is much less of a constraint for **longer-term tissue storage** (samples occupy much less volume than whole carcasses!)
 - ✓ **If we want to increase numbers of frozen samples, we need to find solutions to freezer capacity constraints**
 - **Faster processing of carcasses could increase numbers of archive samples, free up short-term freezer space, reduce wastage of specimens – but this requires people/time**
 - **Shipping of carcasses to collections with greater storage and processing capacity may be an answer**



Task 3.1 Review of Raptor Collections

Digitisation of NHM raptor samples

- c. 80% of collections keep record of carcasses in freezers
- c. 50% of collections have digitised records of frozen carcasses and tissues
- c. 50% of collections yet to start digitisation
 - ✓ **Digitised collections are a pre-requisite for a European meta-database**
 - ✓ **NHMs have made a good start on digitising – but there is some way to go (we are collaborating with DiSSCo on this!)**



Task 3.1 Review of Raptor Collections

Ecotox research and NHMs

- Almost 50% of collections are already engaged in raptor research
- But only 20% are engaged in ecotox studies on raptors
 - ✓ **Contaminant studies are novel for most NHMs**
 - ✓ **Engaging NHMs will require raising awareness, building capacities**



3.1 Review of Raptor Collections

Optimising NHM collections for biomonitoring

- Few NHMs have appropriate protocols in place
 - possible cross-contamination may be an issue for some contaminant analyses
- Not all NHM samples are optimal for contaminant monitoring
 - those from resident, adult birds generally of more value than migrant and/or juvenile birds
 - some are sourced from recovery centres (drug treatment must be taken in to account)
 - ✓ **Introduction of standard operational procedures, learning from ESBs, can enhance sample quality for contaminant monitoring – we are working on this!**
 - ✓ **NHMs could be encouraged to prioritise those specimens best suited to contaminant biomonitoring**



IMPLICATIONS FOR PROOF OF CONCEPT WORK

- We have a pretty good **picture of the state of raptor collections** across Europe and the constraints they face
- Collections are **well placed to play a key role in the supply of samples** for the Proof of Concept (PoC) study
- However, **further data is required from collections to know exactly how many specimens they have of species chosen for PoC study** (only around 10% of Review respondents gave this information).