

RESEARCH NETWORKING PROGRAMME EURAPMON
RESEARCH AND MONITORING FOR AND WITH RAPTORS IN EUROPE
FINAL REPORT 20 MAY 2015

1. EXECUTIVE SUMMARY OF THE RNP

The *wider aim* of EURAPMON is to strengthen the contribution of research and monitoring (R&M) *for* and *with* raptors in Europe to deliver biodiversity, environmental and human health benefits, including maintenance and recovery of raptor populations and their habitats, and reduced chemical threats to ecosystems and human health.

EURAPMON, led by 15 Steering Committee members, 6 Advisory Experts and an external Coordinator from 15 European countries, achieved these objectives through a network which grew over the course of the programme to include over 300 participants from over 50 countries. Exchange of knowledge and experience was made possible through 8 science meetings (with two more to be completed by September 2015), 9 short visits, 4 exchange visits and a summer school. Strong links have also been made with existing networks.

To encourage consensus on Europe-wide priorities for raptor monitoring, EURAPMON has successfully established comprehensive inventories of existing monitoring coverage for both *for* and *with* raptors monitoring (based on questionnaire surveys with over 300 responses from 35 countries). Prioritization was addressed at three workshops resulting in a list of criteria and methods that will be used to categorise raptor species to provide guidance on appropriate assemblages of raptor species to monitor at pan-European scale. A workshop of the *with* raptors community investigated the potential for developing and initiating pan-European monitoring of trends in priority environmental contaminants.

A best practice sampling protocol for contaminant work has been agreed (Espin *et al*, 2014), a 4-page summary of the guidelines has been translated into several European languages to make it most widely accessible, and a refereed journal paper will be submitted in the summer of 2015. A best practice raptor dissection video was created and will be made publicly accessible via the website. On the raptor population monitoring side the UK Raptor Survey and Monitoring Guide *Raptors - A Field Guide to Surveys and Monitoring* (Second Edition 2009), was made available on the EURAPMON website, as a starting point to develop guidance on standardised monitoring across Europe. A workshop session at the EURAPMON Final Conference brought together monitoring coordinators from around Europe to share experiences and consider common monitoring protocols for the assessment of reliable trends suitable for conservation management, environmental evaluations and research at European scale. The summer school and nine short visits supported sharing of skills/best practice in specific research fields and capacity building.

A database of contacts, and searchable databases resulting from the two inventories of existing *for* and *with* raptor monitoring programmes, were established and are available online on the EURAPMON website. The website also provides pdfs of EURAPMON publications and contacts of National Coordinators appointed in almost every country in the pan-Europe region.

Within the EURAPMON group there is a strong desire to maintain the life of this network and its value for pan-European monitoring *for* and *with* raptors, including the important and novel integration across disciplines. To this end, the final conference included a session to collate ideas for future raptor-related research and monitoring priorities, and the Steering Committee has already met once to discuss the potential content of an application for EU COST funding. Such funding would further enhance pan-European monitoring of raptor population trends, demography and driving environmental factors (the *for* work) and contaminant monitoring (the *with* work), enhance impact at European scale, and ensure that the valuable integration of the two communities of researchers achieved by EURAPMON persists in the future.

PROGRAMME SCIENTIFIC OBJECTIVES

1.1 Establishment of a sustainable and resource-efficient pan-European network for monitoring for and with raptors, linked to existing international networks; EURAPMON has achieved a vibrant network of active

participants through activities such as ten science meetings, engagement of 31 National Coordinators, development of a useful website and other engagement activities. It now involves over 300 participants from 50 countries (including all 29 ESF member countries and 16 ESF EURAPMON funding countries) and over 180 organisations, ranging from students and early-career raptor ecologists and ecotoxicologists to established experts, academics, applied environmental scientists, conservation organisations and policy makers. Strong links have been maintained with existing networks (e.g. [BirdLife International](#); [MEROS](#); [WILDCOMS](#), [Raptor Research Foundation](#), the Society of Environmental Toxicology and Chemistry Wildlife Toxicology Group, UN Convention on Migratory Species – CMS for raptors).

EURAPMON network at First Steering Committee meeting in May 2010



EURAPMON network at Final conference in March 2015

1.2 Establishment of consensus on Europe-wide priorities for monitoring for and with raptors, based on comprehensive inventory of existing monitoring, and of needs of key users; EURAPMON has successfully established comprehensive inventories of existing monitoring activities for both *for* and *with* raptors (based on questionnaire surveys with over 300 responses from 35 countries). The collated information from the inventories and the two resulting peer-reviewed publications (Gómez-Ramírez *et al.*, 2014, Derlink *et al.* to be submitted in 2015) can be used very effectively to assess the practicalities of recommending or reporting on pan-European monitoring of particular species. Two workshops (SM5, SM7) of the *for* raptors community were held to consider the range of potential criteria for setting priority raptor species for monitoring, relating to their conservation status, relative abundance, drivers of change, sensitivity to contaminants and other threats to populations. A workshop (SM7) of the *with* raptors community investigated the potential for developing and initiating pan-European monitoring of trends in priority environmental contaminants.

1.3 Spreading best practices and build capacities in Europe for harmonized monitoring for and with raptors; Three workshops (SM4, SM6, SM7) were held to address the development of best practice guidance across Europe. A sampling protocol for contaminant monitoring was agreed, designed to be used by those monitoring *for* raptors (Espin *et al.*, 2014). The 4-page summary of the guidelines will be translated into many European languages to make it as widely accessible as possible. A refereed journal manuscript, (Espin *et al.*, 2015), discussing the suitability of different raptor tissue types for monitoring selected contaminants for the first time, will be submitted for publication in the summer of 2015. A best practice raptor necropsy video was created (to be made publicly accessible via the website). A *for* raptor monitoring workshop (SM5) considered the main user needs that should be addressed with respect to best practice guidelines. The UK Raptor Survey and Monitoring Guide *Raptors - A Field Guide to Surveys and Monitoring* (Second Edition 2009; available on the EURAPMON website) - was the preferred starting point to develop guidance on standardised monitoring across Europe. Two exchange visits used the EURAPMON inventory data to collate existing pan-European monitoring methods across species and countries in preparation for work on guidance documents. A further workshop (SM7) brought together selected monitoring coordinators around Europe to share experiences and to consider common monitoring protocols for assessment of reliable trends suitable for conservation management, environmental evaluations and research at European scale. The conclusions will be made freely available in a special issue of *Ambio* or *Bird Study* journal. A further nine short visits and a summer school supported the sharing of skills/best practice in specific research fields and capacity building (see Appendix 4).

1.4 Establishment of a web based database; Early on in the EURAPMON programme we reached a common understanding that the collection of raw raptor monitoring data and new pan-European analyses of these data would not be feasible because of the sensitivities surrounding the sharing of raptor data between individuals and organisations. Instead we agreed to focus effort on developing meta-databases that would provide important knowledge on the current state of population monitoring across Europe and allow interested stakeholders to search the databases for useful information.

An online database of contact details of students and researchers working with raptors in Europe (90 participants) is available online and accessible to any registered user to further promote networking and identifying sources of expertise and common research interests. A searchable MS Excel database of analysed responses to 35 questionnaires on raptor contaminant monitoring and an online tool with information on *for* raptor population monitoring collected through 300 questionnaire responses are available online on the [EURAPMON website](#).

2. RNP ACTIVITIES: SCIENTIFIC QUALITY AND IMPACT

The programme has been of unique value as no similar European network had been established previously at a continental scale. This is particularly true when taking into account that the network facilitated the successful close working of two relatively different research communities - the *for* and *with raptors* communities - involving raptor researchers from 50 countries. The programme has demonstrated a strong demand for, and the importance of, a high-level, continental-scale network for sharing, discussing and harmonizing best practices. The appointment of voluntary National Coordinators in 31 countries was critical in achieving pan-European information collection and assessment, best practice development and dissemination of EURAPMON outputs all over Europe.

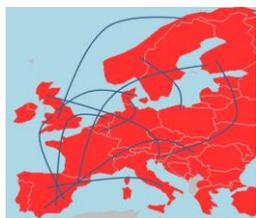
The investigation and development of the indicator role of diurnal birds of prey and owls has never been timelier, when we are experiencing rapid global environmental changes. Networking is crucial to develop both shared monitoring protocols to keep abreast of changes in the numbers and trends in raptor populations in the changing environment, and some agreement over priority species and parameters to target in order to further enhance existing monitoring.

Conservation biologists, ecologists, raptor ecotoxicologists and researchers with broad monitoring experience all participated during the implementation of the different work packages of the project, clearly demonstrating a multi-disciplinary forum through which cutting-edge methods for early detection of environmental change, determination of drivers of change and prediction of emerging problems may be developed in the future. The EURAPMON work to maximise scientific output and knowledge on (i) long-term trends in contaminants at a pan-European scale; (ii) the impacts of contaminants on raptor species, which are often good sentinels of environmental health will be valued by regulators, decision-makers and environmentalists when managing European raptor populations and also in determining the effectiveness of international legislation and agreements, such as EU-wide instruments for authorising the use and release of industrial chemicals ([Registration, Evaluation, Authorisation & restriction of CHemicals - REACH](#)), plant protection products ([Regulation \(EC\) No 1107/2009](#)) and biocides ([EU Biocides Regulation \(528/2012\)](#)), and the effectiveness of international conventions, such as the [Stockholm Convention](#) and the [United Nations Environment Programme Minamata Convention on Mercury](#).

2.1 Science meetings; The eight EURAPMON science meetings (Appendix 4) brought together the shared expertise of 246 participants (181 male and 65 female). The inaugural workshop was essential for building ownership of the programme across as many countries as possible, by involving participants in shaping the scientific and technical aspects of all its work packages. Meetings 2 and 3 were workshops that brought together appropriate participants to begin identification of information for the *for raptors* and *with raptors* inventories respectively, which were developed and implemented successfully by the programme, and to build a shared understanding of how these inventories would be tailored to the needs of users. Meeting 4 was a workshop dedicated to reviewing and completing the first-round documents related to the setting of best practices for contaminant monitoring and progressing work on user needs. A further workshop (meeting 5) was required to ensure comprehensive coverage for the *for raptors* inventory and to develop more guidance on priority species for monitoring in relation to user needs. Meeting 6 was run as a summer school for early stage researchers and covered training in *for* and *with raptor* monitoring from a range of leading and inspirational scientists and practitioners in the field. The Final EURAPMON conference (meeting 7) brought together existing network participants and new contacts to share the outcomes of the EURAPMON programme and continue to develop the impact of the programme. There were five working sessions focused on exchange of knowledge on: EU-level user needs; further pan-European contaminant monitoring development; sharing of best practice guidance for *for raptor* monitoring across Europe; monitoring contaminants, emerging diseases and environmental change with

raptors and links to human health; and setting of strategic priorities for raptor monitoring enhancement. A closing session also collating suggestions for future network activities and funding proposals from across the participants involved. A final meeting of the Steering Committee and invited experts (meeting 8) evaluated the success of the programme for final reporting and took forward a first set of ideas for future funding proposals. A further two meetings (one to further develop funding proposals and a second to further develop pan-European standards for the monitoring of migratory raptors) will take place before September 2015.

2.2. Short and exchange visits



EURAPMON visits, and particularly the longer exchange visits (Appendix 4; a total of 9 short visits and 4 exchange visits), were fundamental to developing important scientific products and user-targeted impacts from the programme. The visits of Pilar Gomez-Ramirez and Maja Derlink were essential for analysing the results of the *with* and *for* inventory questionnaires respectively and preparing them for publication (Gómez-Ramírez *et al.* 2014; Derlink *et al. in prep*). The visits of Antonio Garcia-Fernandez, Silvia Espin, and Joan Real were all important in the development of best practice protocols. The other visits either made important contributions to capacity building by allowing expertise in key technical areas to be shared (e.g. Mike McGrady, Szilvia Gori, Miklos Dudas, Stiven Kocijančič, Elaine Potter) and/or led to valuable scientific collaboration and publication of research findings (e.g. Michele Panuccio, Igor Eulaers).

2.3. Activities linked to the establishment of databases; The essential role of the EURAPMON network, scientific meetings and visits in collating, analysing, checking, publishing and disseminating the value of the three databases established by the programme (Section 1.4) are highlighted in Sections 2.1 and 2.2 above. The network of National Coordinators established by EURAPMON was critical for ensuring as comprehensive coverage as possible and these, plus the final conference, project brochure, web presence and final project communications, will ensure wide dissemination to maximise user value.

3. EUROPEAN ADDED VALUE AND RNP VISIBILITY

EURAPMON has established a truly pan-European dimension, with participants from all 16 ESF member countries (funding EURAPMON), from 26 additional European and 8 non-European countries (Azerbaijan, Georgia, Israel, Djibouti, Canada, South Africa, Australia, and the USA), networking involving a total of 50 countries and an important number of raptor-related experts in Europe among its participants. The 31 EURAPMON National Coordinators now exist as a valuable network for knowledge exchange.

EURAPMON has brought considerable benefits to research and monitoring groups in all these countries, most notably by facilitating contacts and collaborations across national borders and helping to generate consensus on priority issues. At the heart of EURAPMON was an aim to deliver significant benefits to international organisations (e.g. by facilitating the provision of relevant data on raptor status and trends to BirdLife International for its work on *Wildlife Comeback in Europe*). EURAPMON National Coordinators can contribute effectively to improving the reporting of such data by Member States under Article 12 of the EU Birds Directive. EURAPMON is already delivering valuable contacts and cutting-edge knowledge on raptor R&M in support of the [CMS BoP](#) and there exists the potential to make greater contribution from the established network in future.

The value of EURAPMON in delivering important data on environmental contaminants in support of the EU chemicals legislation has already been outlined in section 2. Developing initiatives, the potential for which were identified at the EURAPMON Final Conference held in Murcia in 2015, include harmonised post-mortem screening for key poisoning symptoms at necropsy, development of more harmonised monitoring for selected contaminants such as mercury, and closer networking between poisoning centres across Europe.

EURAPMON gained added visibility through supporting the travel costs of European participants to a United Nations Environment Programme (UNEP) Convention on Migratory Species (CMS) [workshop](#) to develop guidelines to minimize the risk of poisoning to migratory birds from various priority substances and from illegal practices. These [guidelines](#) were adopted by the CMS at its [Conference of the Parties in 2014](#) and calls on all

global signatories to adopt and implement the guidelines, thereby adding impetus to reducing the impact of contaminants on migratory species and raptors generally.

With regard to **young scientists**, over 100 of them have attended EURAPMON meetings to date, and the short and exchange visits have largely been awarded to young scientists. The EURAPMON summer school was particularly targeted at inspiring and building capacities in young scientists. Some of these visits also resulted in new funding applications being made to other funding bodies to support further research by young scientists between laboratories connected through EURAPMON.

Regarding **EURAPMON visibility**, the Steering Committee members have attended high profile meetings held by other organizations (e.g. the Conference of Signatories of the CMS Raptors MoU in Abu Dhabi). Scientific oral presentations have been presented at a number of international conferences: 19th International Conference of the European Bird Census Council, Cluj Napoca, Romania, September 2013 (Burfield *et al.* 2013); Eagles of Palearctic: Study and Conservation, Elabuga, Tatarstan, Russia, September 2013 (Vrezec *et al.* 2013); and the Raptor Research Foundation Annual Conference, Bariloche, Argentina, October 2013 (Saurola *et al.* 2013). A wide visibility has also been achieved through strong online connectivity (e.g. search engine, Google, returns a result with the keyword “EURAPMON” of 4820 hits), including many key organizations in raptor research and conservation.

4. RNP MANAGEMENT AND FINANCES

EURAPMON was led by 15 Steering Committee members, 6 Advisory Experts and the external Coordinator who have met at 8 Steering Committee meetings. The ESF representative Dr. Paola Campus participated at several SC meetings, was included in the SC mailing list and was in close contact with the Chair and Coordinator. The RNP was chaired by Mr. Guy Duke and coordinated by Dr. Paola Movalli from May 2010 until December 2012 and from then onward chaired by Assist. Prof. Dr. Al Vrezec and coordinated by Dr. Irena Bertoncelj.

Financial coordination was closely monitored by ESF representatives. The total foreseen contributions by the end of the RNP were 505.000€ (Appendix 3), however of these 8.000€ were not paid. The planned total expenditure by the end of May 2015 is 85.5% of the total budget. The remaining funds will be used for upcoming publications, and science and fundraising meetings up to September 2015 as agreed with ESF (Appendix 8). The combined costs of all networking activities (science meeting, short and exchange visit grants and chair’s dissemination travels) for the whole period was planned at 48% of the entire spending, with 51% for Steering Committee costs, external coordination and ESF administration. Many participants of the science meetings and conferences (approx. 20%) were very successful at finding additional funding to cover their participation. All the science meetings were co-financed by local sponsors and organisers, financially or materially supporting the organisational costs of the meetings, significantly reducing the costs charged to the RNP.

5. PUBLICITY AND PUBLICATIONS: SCIENTIFIC QUALITY AND IMPACT

EURAPMON was very successful in producing publications and in publicizing the outputs of the RNP. A total of 35 published peer-reviewed scientific papers were produced including 26 papers in a special issue of the journal *Acrocephalus* (Appendix 7). Network members were regularly updated on EURAPMON events and achievements through e-newsletter and e-announcements. An introductory brochure was produced, and a final brochure is almost completed. The EURAPMON activities were regularly updated on the EURAPMON website including announcements of events, reports, best-practice guidelines and publications,

5.1 Public and scientific outreach; A large amount of information has been made available on the EURAPMON website. The inventory questionnaires of *for* and *with* raptor monitoring resulting in more than 300 responses of raptor researchers are available online as searchable databases. The website also provides reports of all Science Meetings carried out to date, an online map of Europe with links to presentations of raptor monitoring in 25 countries (results of Science Meeting 2), a downloadable pdf of *Raptors - A Field Guide to Surveys and Monitoring* (Second Edition 2009) to spread best practice of *for* raptor monitoring, other publications, links,

network events and related events, links to the organisational home pages of all SC members/advisors/experts, pdf of published open access papers, best practice guidelines *Sampling and contaminant monitoring protocol for raptors* including a short summary translated into several languages for the use of fieldworkers, a best practice raptor necropsy video for contaminant analysis as guidelines for the *for* raptor research community and to enhance collaboration between *with* and *for* raptor research community in Europe. All workshops and EURAPMON activities have been also announced and presented in local media (printed media, online press, television) and on other research, conservation or citizen science oriented websites (Appendix 6).

5.2 Scientific publications enabled by the RNP; Building on the inventory *with* raptor monitoring, an open-access paper *An overview of existing raptor contaminant monitoring activities in Europe* was published in *Environment International* in 2014 by Gómez-Ramírez *et al.* (15 co-authors from 9 countries). Proceedings of Science Meeting 2 on the inventory of *for* raptor monitoring activities in Europe were published in a special issue of the peer-review journal *Acrocephalus* in 2012. This includes 25 papers by National Coordinators from 25 European countries presenting current *for* raptor monitoring in their countries and a review paper entitled *Overview of raptor monitoring activities in Europe* by Vrezec *et al.* including 8 SC members from 5 countries as co-authors. Other publications include abstracts from EURAPMON presentations from three scientific conferences (Burfield *et al.* 2013, Saurola *et al.* 2013, Vrezec *et al.* 2013). From science meetings, short and exchange visits we are expecting additional publications that are in the process of revision, submission and preparation including *A review of raptor and owl monitoring activity across Europe: its implications for capacity building towards pan-European monitoring* (Derlink *et al.*), *A pan-European assessment of exposure to mercury and the associated health impact in European raptor species and their subpopulations* (Eulaers *et al.*), and *Best practices for monitoring pollutant exposure in raptors* (Espin *et al.*). Through networking activities several additional scientific papers have been encouraged. The co-authors of these papers include members of the EURAPMON Steering Committee and the papers are strongly related to EURAPMON objectives (Sonne *et al.* 2010, Eulaers *et al.* 2011, Jaspers *et al.* 2011, Sonne *et al.* 2012, Andreotti and Borghesi 2013, Eulaers *et al.* 2013, Jaspers *et al.* 2013).

6 FUTURE PERSPECTIVES

To conclude the RNP, the EURAPMON activities work plan for 2015 includes upcoming Science Meeting on migration monitoring of raptors, a fundraising meeting, publication of a special issue of *Ambio* or *Bird Study* journal, publication of at least one additional scientific paper as open access, publication of a final EURAPMON brochure for funding organisations and others interested in the project outcomes, and translation of best practice protocols into several European languages. The EURAPMON external website will remain open for at least three more years, including the operational search tools for the raptor monitoring inventories, the open access publications, the best practice guidance established to date and the summarised outcomes and achievements of the EURAPMON RNP.

It is clear from views expressed at the EURAPMON Final Conference and within the Steering Committee and Expert group that there is a strong desire to maintain the life of the EURAPMON network and its value for pan-European monitoring *for* and *with* raptors, including the important and novel integration across disciplines. To this end, the final conference included a session to collate ideas for future raptor-related research and monitoring priorities, and the Steering Committee has already met once to discuss the potential content of an application for EU COST funding for future networking activities (the meeting mainly focused on *for* raptors elements of the proposal, due to the mix of Committee members able to be present, but the planned proposal will have a balance of *for* and *with* elements). There is a strong desire to use such an application to take forward further development of best practice guidance, on field data collection, survey design and analysis of datasets, and take the capacity building elements of the *for* and *with* work further than was possible within EURAPMON as a starting point of pan-European raptor research and monitoring network. This would further enhance pan-European monitoring of raptor population trends, demography and driving environmental factors (the *for* work) and contaminant monitoring (the *with* work), and ensure that the valuable integration of the two communities of researchers achieved by EURAPMON persists in future. The COST Action proposal will have a strong focus on impact at European scale.