



Science Meeting – Scientific Report

Proposal Title: SUMMER SCHOOL - MONITORING FOR AND WITH RAPTORS IN EUROPE

Application Reference N°: 5592

1) Summary

The EURAPMON Summer School on Monitoring for and with Raptors was held at the Naturalis Biodiversity Center, Leiden, The Netherlands, 27-29 August 2014. The aim of the Summer School was to build capacities in Europe for research and monitoring for and with raptors. Naturalis houses one of the most important museum collections of raptor skins in the world. In the spirit of EURAPMON, the school placed an emphasis on linking contaminant monitoring with raptors, and raptor population monitoring.

The Summer School was targeted at early stage researchers and conservation practitioners including doctoral students, post-docs, and others holding either a B.Sc. or an M.Sc. and working on raptors as researchers or conservation practitioners. 14 participants from 9 countries were invited, from a field of 31 applicants.

The participants benefited from the presence of leading and inspirational scientists and practitioners: Charles Henny, Scientist Emeritus, USGS Forest and Rangeland Ecosystem Science Center, a leading authority on contaminant monitoring with raptors, avian surveys and monitoring; Reuven Yosef, Associate Professor, Ben Gureon University of the Negev, Israel and previously chief executive of the international bird ringing and monitoring center, Eilat, Israel; Keith Bildstein, Sarkis Acopian Director of Conservation Science, Hawk Mountain and author *Migrating Raptors of the World, Their Ecology and Conservation*; Rene Dekker, Director of Collections, Naturalis Biodiversity Center; Peter van Geneijgen, Chairman, Dutch Peregrine Working Group; Steven van der Mije, Head of Vertebrate and Invertebrate Collections, Naturalis Biodiversity Center; Paola Movalli, founding Coordinator EURAPMON and Guest Editor *Ambio* special issue 37[6] on *Monitoring for and with Raptors in Europe*; and Guy Duke, founding Chair EURAPMON and previously responsible for EU biodiversity policy at the European Commission.

Presentations included: an introduction to the Summer School and the Eurapmon Research Networking Programme (Movalli); an introduction to Naturalis Biodiversity Center and the raptor collection (Dekker); an overview of the raptor contaminant monitoring program at Patuxent Wildlife Research Center Maryland (Henny); a review of selected field projects on contaminant monitoring in osprey and peregrine falcon in the U, (Henny); research and education at Hawk Mountain Sanctuary, the world's first long-term raptor migration watchsite

(Bildstein); research and monitoring on migratory raptors at Eilat, Israel, and the importance of landscape perspectives (Yosef); origin and population dynamics of breeding Peregrine Falcons in The Netherlands 1990-2013 (van Geneijgen); monitoring environmental contaminants in museum raptor feathers (Movalli); the handling and sampling of museum raptor skins and fresh raptor carcasses (Movalli, van der Mije, Kamminga); ptilochronology (the study of feather growth) (Yosef); the policy context for raptor research and monitoring in Europe (Duke). Participants also took part in a highly informative guided tour of the Flevopolder, a grand experiment in re-wilding, and viewed 8 species of raptor including white-tailed eagle, osprey, peregrine, hen harrier and marsh harrier.

The school is expected to have encouraged the participating early stage researchers to continue their research in the field of monitoring for and with raptors. In particular, the event will have enhanced understanding among the participants of: (1) both monitoring *for* raptors, and contaminant monitoring *with* raptors, thus promoting the better integration, in future, of the various disciplines involved; (2) the design and implementation of long-term monitoring programmes; (3) the value of museum collections for retrospective studies on raptors; (4) practical skills in the dissection of raptor carcasses, the sampling of feathers from museum skins for contaminant analyses, and the counting of feather fault bars; (5) the policy context for research and monitoring for and with raptors, including how such research and monitoring can contribute to the effective implementation of EU chemicals policy and EU biodiversity policy.

2) Description of the scientific content of and discussions at the event

The EURAPMON Summer School on Monitoring for and with Raptors was held at the Naturalis Biodiversity Center, Leiden, The Netherlands, 27-29 August 2014. ***The aim of the Summer School was to build capacities in Europe for research and monitoring for and with raptors.***

Naturalis houses one of the most important museum collections of raptor skins in the world. In the spirit of EURAPMON, the school placed an emphasis on linking contaminant monitoring with raptors, and raptor population monitoring. To make the most of the venue, attention was given during the school to the value of the outstanding Naturalis collections for historical and contemporary raptor studies.

An announcement of opportunity was published on the EURAPMON website and circulated to the EURAPMON community on 27 June 2014. The Summer School was targeted at early stage researchers and conservation practitioners. The eligibility criteria specified in the Announcement were as follows:

- Doctoral students who have already started their doctoral training by the closing date for applications; or
- Post-doctoral researchers or conservation practitioners who received a doctorate no earlier than 5 years prior to the closing date for applications; or
- Holders of either a B.Sc. or an M.Sc. and working on raptors as researchers or conservation practitioners.

In response to the Announcement, 31 applications were received, all of which were eligible and the large majority of which were from well-qualified candidates. The applications were evaluated by a 3-person evaluating committee, on the basis of criteria specified in the Announcement, namely:

- Relevance of doctoral and, where appropriate, post-doc research and/or conservation work (5 points)
- Motivation (5 points)
- Publications and/or conservation achievements (5 points)

Where applicants ranked equally, preference was given first to candidates from EURAPMON funding countries, then to candidates from other countries having an ESF Member Organisation, and finally to candidates from other European countries.

While the original intention had been to give places to 10-12 applicants, generous co-financing from Naturalis allowed us to invite 14 participants (in addition to the speakers), of 9 nationalities. 8 participants were nationals of EURAPMON funding countries (1 Netherlands, 3 Portugal, 4 Spain), 5 were nationals of other countries having an ESF MO (1 Belgium, 1 Bulgaria, 1 Czech Republic, 1 Greece, 1 Turkey), and 1 was from another European country (Latvia). There was a good gender balance (8 men, 6 women). The participants had a good range of experience with both diurnal and nocturnal raptors. They included masters and doctoral students, post-docs, and conservation practitioners.

The participants benefited from the presence of leading and inspirational scientists and practitioners: (1) in the field of contaminant monitoring with raptors; and (2) in the field of raptor population monitoring, namely:

- **Charles Henny**, Scientist Emeritus, USGS Forest and Rangeland Ecosystem Science Center. Charles Henny is a leading authority on contaminant monitoring with raptors and on avian surveys and monitoring. He has a long-term interest in Ospreys, and an interest in the unique situations/ characteristics that make particular species vulnerable to contaminant threats.
- **Reuven Yosef**, Associate Professor, Ben Gureon University of the Negev, Israel and previously chief executive of the international bird ringing and monitoring center, Eilat, Israel. Reuven Yosef was awarded an Associate Laureate, Rolex Awards for Enterprise for his work at Eilat.
- **Keith Bildstein**, Sarkis Acopian Director of Conservation Science, Hawk Mountain and author *Migrating Raptors of the World, Their Ecology and Conservation*.
- **Rene Dekker**, Director of Collections, Naturalis Biodiversity Center, ornithologist, author of *The Megapodes* (OUP) and former co-editor of *Systematic Notes on Asian Birds*.
- **Peter van Geneijgen**, Chairman, Dutch Peregrine Working Group.
- **Steven van der Mije**, Head of Vertebrate and Invertebrate Collections, Naturalis Biodiversity Center.
- **Paola Movalli**, founding Coordinator EURAPMON, Correspondent Naturalis, and Guest Editor *Ambio* 37[6] on *Monitoring for and with Raptors in Europe*.
- **Guy Duke**, founding Chair EURAPMON, Independent Member UK Joint Nature Conservation Committee, previously responsible for EU biodiversity policy at the European Commission.

Presentations included:

- Introduction to the Summer School and the Eurapmon Research Networking Programme (Movalli)
- Introduction to Naturalis Biodiversity Center and the raptor collection (Dekker)
- An overview of the raptor contaminant monitoring program at Patuxent Wildlife Research Center Maryland, a large research center with field stations scattered throughout the United States, which were the eyes and ears of what was happening with contaminants in the US (Henny)
- A review of selected field projects on contaminant monitoring in osprey and peregrine falcon in the US, including surveys documenting the population recovery and reduced reproductive effects following a ban on DDT in 1972, using the osprey to evaluate emerging contaminants like PBDEs, and long-term monitoring of contaminants in blood of peregrines (Henny).
- Research and education at Hawk Mountain Sanctuary, the world's first long-term raptor migration watchsite (Bildstein).
- Research and monitoring on migratory raptors at Eilat, Israel, and the importance of landscape perspectives (Yosef).
- Origin and population dynamics of breeding Peregrine Falcons in The Netherlands. The first 24 years after colonisation.1990-2013 (van Geneijgen).
- Monitoring environmental contaminants in museum raptor feathers (Movalli) and practical session on the handling and sampling of museum raptor skins (Movalli, van der Mije, Kamminga)
- Ptilochronology (the study of feather growth) with practical demonstration of measurement of growth and fault bars (Yosef).
- The policy context for raptor research and monitoring in Europe (Duke).

On the final morning, participants took part in a highly informative guided tour of the Flevopolder, a grand experiment in re-wilding, with Frans Vera of Staatsbosbeheer, the inspiration behind the re-wilding. The group viewed 8 species of raptor including white-tailed eagles, osprey, peregrine, hen harrier and marsh harrier.

Participants and speakers enjoyed plenty of time during coffee breaks, lunches and dinners and during the field trip for informal interaction with speakers and with each other. Evening meals were particularly lively in the convivial surroundings of the local restaurant *In den Doofpot*.

3) Assessment of the results and impact of the event on the future directions of the field

The event was not aimed at training early stage researchers rather than influencing the direction of the field. However, the event is expected to have encouraged the participating early stage researchers to continue their research in the field of monitoring for and with raptors. These participants are likely to be among the leaders in this field in the future.

In particular, the event will have achieved the following impacts on the participants:

- Enhanced understanding of both monitoring *for* raptors, and contaminant monitoring *with* raptors, thus promoting the better integration, in future, of the various disciplines involved (ecotoxicology, ecology, ornithology, conservation biology). This should lead to more inter- and multi-disciplinary work in future, which is likely to enhance the impact of research outcomes.
- Enhanced appreciation of the design and implementation of long-term monitoring programmes including long-term contaminant monitoring, long-term monitoring of populations of migratory raptors, and long-term monitoring of breeding, resident raptors. This should help lead to the establishment of more such long-term programmes in future, which are vitally important to provide a better understanding both of trends in raptor populations, and of trends in environmental contamination, helping to better inform our understanding of broader environmental change.
- Enhanced appreciation of the largely untapped value of museum collections for retrospective studies on raptors. This should help lead to greater use of these collections for raptor studies in future, thereby enhancing the societal value of these collections.
- Enhanced practical skills in the dissection of raptor carcasses, in the sampling of feathers from museum skins for contaminant analyses, and in the measurement of feather fault bars. This should encourage more work using raptor carcasses and skins in future, helping to elaborate contaminant and other pressures on raptors and the wider environments in which raptors occur.
- Enhanced understanding of the policy context for research and monitoring for and with raptors, including how such research and monitoring can contribute to the effective implementation of EU chemicals policy and EU biodiversity policy. This should help the participants better place their research within this context, enhancing their chances of securing future funding. It should also help strengthen the policy-relevance of their research, and thereby strengthen the societal impact of future raptor research and monitoring.

ACKNOWLEDGMENTS: Thanks are due to all the early stage researchers who participated in the workshop for sharing their enthusiasm for, and knowledge on, raptor research and monitoring. Special thanks are due to the speakers for sharing their experience and expertise and for inspiring participants in their future studies. Special thanks are also due to Naturalis for agreeing to open to the summer school their outstanding raptor collections, providing specimens for practical sessions, and providing excellent organizational support, most of which was provided free of charge as a contribution in kind. Last but not least, thanks to Al Vrezec, Irena Bertoncelj and the Eurapmon Steering Committee for their support for this event and to ESF for accepting the application for funding and efficient administrative support.

Dr Paola Movalli, Scientific Convenor
Dr Rene Dekker, Host & Co-convenor

- 4) **Annexes 4a) and 4b): Programme of the meeting and full list of speakers and participants**

Annex 4a: Programme of the meeting

Tuesday 26 August

Participants arrive.

Wednesday 27 August

- 09:00-09:30 Registration at Naturalis (use public entrance at Pesthuis)
- 09:30-09:45 Welcome – Movalli, Dekker
- 09:45-10:15 Introduction to the Summer School and the EURAPMON Research Networking Programme (Movalli)
- 10:15-10:45 Introduction to Naturalis Biodiversity Center and the raptor collection (Dekker)
- 10:45-11:15 Coffee
- 11:15-12:45 Tour of the collection (Dekker)
- 12:45-14:00 Lunch
- 14:00-15:30 (1) Role of raptors in contaminant research at Patuxent Wildlife Research Center Maryland, US, and (2) Toxicology in raptor research and monitoring (Henny)
- 15:30-16:15 Origin and Population dynamics of breeding Peregrine falcons in The Netherlands; The first 24 years of a growing Population (van Geneijgen)
- 16:15-16:30 Coffee/tea
- 16:30-18:00 Research and education at Hawk Mountain Sanctuary, the world's first long-term raptor migration watchsite (Bildstein)
- 18:00-19:30 Free time
- 19:30 Dinner, In Den Doofpot restaurant

Thursday 28th August

- 09:00-10:45 Monitoring environmental contaminants in museum raptor feathers (Movalli) and practical session on the handling and sampling of museum raptor skins (Movalli, van der Mije, Kamminga)
- 10:45-11:15 Coffee
- 11:15-12:45 Ptilochronology and practical session on the measurement of growth and fault bars (Yosef)
- 12:45-14:00 Lunch
- 14:00-15:30 Research and monitoring on migratory raptors at Eilat, Israel, and the importance of landscape perspectives (Yosef)
- 15:30-16:00 An overview of raptor research and monitoring in Europe and the related policy context (Duke)
- 16:00-16:30 Coffee
- 16:30-17:15 North American ospreys in human landscapes: contaminants, conflicts and benefits (Henny)
- 17:15-17:30 Wrap up (Movalli & Dekker)
- 17:30-19:00 Free time
- 19:00 Dinner, In Den Doofpot restaurant

Friday 29th August

- 08:00-10:00 Bus from IBIS hotel to the Flevopolder

10:00-13:00 Field trip to the Flevopolder to view raptors including white-tailed eagles, hen harrier, marsh harrier; guided tour with Frans Vera, Staatsbosbeheer
13:00-14:00 Lunch
14:00-16:00 Bus from the Flevopolder to Schiphol airport
16:00-16:30 Bus from Schiphol to Leiden, free evening for those staying on

Annex 4b: Full list of speakers and participants

SPEAKERS

- Dr Keith **Bildstein** (M, American) Sarkis Acopian Director of Conservation Science, Acopian Center for Conservation Learning at Hawk Mountain Sanctuary, USA
- Dr Rene' **Dekker** [CO-CONVENOR] (M, Dutch), Director of Collections, Naturalis Biodiversity Center, The Netherlands.
- Mr Guy **Duke** (M, British), founding Chair EURAPMON, Senior Visiting Research Associate, Oxford Environmental Change Institute, UK
- Dr Charles **Henny** (M, American) Scientist Emeritus, USGS Forest and Rangeland Ecosystem Science Center, USA.
- Dr Paola **Movalli** [CONVENOR] (F, Italian), founding Coordinator EURAPMON, Correspondent Naturalis Biodiversity Center, The Netherlands.
- Mr Steven **van der Mije** (M, Dutch), Head of Vertebrate and Invertebrate Collections, Naturalis Biodiversity Center, The Netherlands.
- Mr Peter **van Geneijgen** (M, Dutch), Chairman, Dutch Peregrine Working Group. The Netherlands.
- Dr Reuven **Yosef** (M, Israeli), Associate Professor, Ben Gureon University of the Negev, Israel.

EARLY STAGE RESEARCHERS

- Dr Ralph **Buij** (M, Dutch), Animal Ecology, Alterra Wageningen University and Research Centre, The Netherlands.
- Ms Manuela Andreia Gonçalves **Carneiro** (F, Portuguese), Centre for the Research and Technology of Agro-Environmental and Biological Sciences (CITAB), University of Trás-os-Montes e Alto Douro, Portugal.
- Mr Vladimir **Damyonov Dobrev** (M, Bulgarian), Bulgarian Society for the Protection of Birds/BirdLife Bulgaria, LIFE+ office, Bulgaria.
- Dr Silvia **Espín Luján** (F, Spanish), Faculty of Mathematics and Natural Sciences, Department of Biology, Section of Ecology, University of Turku, Finland.
- Dr Pilar **Gómez Ramírez** (F, Spanish), Department of Toxicology, Faculty of Veterinary Medicine, University of Murcia, Spain.
- Mr Süreyya Cevat **Isfendiyaroğlu**, (M, Turkish), Doga Dernegi (BirdLife Turkey), Turkey.
- Mr Tomáš **Kunca** (M, Czech), Faculty of Environmental Sciences, Department of Ecology, Czech University of Life Sciences, Czech Republic.
- Dr Juan Manuel **Pérez-García** (M, Spanish), Ecology Area. Department of Applied Biology, Miguel Hernández University, Spain.
- Janis **Reihmanis** (M, Latvian), Latvian Fund for Nature, Latvia.

- Ms Andreia Suzana **Ribeiro e Costa de Pinho Dias** (F, Portuguese), CIBIO - Centro de Investigação em Biodiversidade e Recursos Genéticos, Universidade do Porto, Portugal.
- Filipa **Silveira Calado Azevedo Machado** (F, Portuguese), Monitoring Team, Finnish Museum of Natural History - LUOMUS, University of Helsinki, Finland.
- Mr Wouter **Vansteelant** (M, Belgian), Institute for Biodiversity and Ecosystem Dynamics (IBED), University of Amsterdam, The Netherlands.
- Mr Pablo Sánchez **Virosta** (M, Spanish), Faculty of Mathematics and Natural Sciences, Department of Biology, Section of Ecology, University of Turku, Finland.
- Mr Konstantinos **Vlachopoulos** (M, Greek), Laboratory of Ecosystem Management and Biodiversity, Department of Agriculture Crop Production and Rural Environment, University of Thessaly, Greece.