

# Raptors Worldwide

Proceedings  
of the VI World Conference on Birds of Prey and  
Owls

Budapest, Hungary  
18-23 May 2003

Edited by  
R. D. CHANCELLOR & B.-U. MEYBURG

Line drawings by  
Szabolcs Kokay



MME/BirdLife Hungary  
Group for Protection of  
Birds of Prey



# Contents

## INTRODUCTION

- The Status of Birds of Prey and Owls in Hungary 3  
*János Bagyura and László Haraszthy*

## VULTURE STUDIES

### Part 1. OLD & NEW WORLD VULTURES

- Commentary on Released California Condors *Gymnogyps californianus* in Arizona 9  
*Tom J. Cade, Sophie A. H. Osborn, W. Grainger Hunt and Christopher P. Woods*
- Consequences of Bovine Spongiform Encephalopathy (BSE) on breeding success and food availability in Spanish Vulture populations 27  
*Alvaro Camiña*
- Griffon Vulture *Gyps fulvus* monitoring in Spain: current research and conservation projects 45  
*Alvaro Camiña*
- The Status and Conservation of Griffon Vulture *Gyps fulvus* in Cyprus 67  
*Savvas Iezekiel, Dimitris E. Bakaloudis and Christos G. Vlachos*
- Courtship Behaviour in reintroduced California Condors: evidence for extra-pair copulations and female mate guarding 75  
*Allan Mee, Greg Austin, Mike Barth, Colleen Beestman, Tessa Smith and Mike Wallace*
- Proposed global Population-monitoring Scheme for the Cape Griffon *Gyps coprotheres* 83  
*S.E. Piper*
- The King Vulture *Sarcoramphus papa* in El Salvador: an Endangered Species 93  
*Marsha A. Schlee, Ricardo A. Pérez León, Vidal Campos, José E. Sandoval, Miguel Catalán, Orlando Martínez and Enrique Fuentes*
- Parental Investment of Lappet-faced Vultures *Torgos tracheliotos* during breeding at the Mahazat as-Sayd Protected Area, Saudi Arabia. 111  
*Mohammed Shobrak*
- A Success Story: The Reintroduction of Eurasian Griffon *Gyps fulvus* and Black *Aegypius monachus* Vultures to France 127  
*Michel Terrasse, François Sarrazin, Jean-Pierre Choisy, Céline Clément, Sylvain Henriquet, Philippe Lécuyer, Jean Louis Pinna, and Christian Tessier*
- Action Plan for the Recovery and Conservation of Vultures on the Balkan Peninsula: activities and projects during 2002 and 2003 147  
*Evelyn Tewes, Michel Terrasse, Juan Jose Sánchez Artés, Wolfgang Fremuth and Hans Frey*
- Status and Conservation of the European Black Vulture *Aegypius monachus* in Europe 177  
*Evelyn Tewes, Juan Jose Sánchez Artés and Pilar Ramirez*

Alpine Monitoring of Bearded Vultures <i>Gypaetus barbatus</i> : preliminary data on dispersal, pair settlement and survival	185
<i>Richard Zink</i>	

## Part 2. VULTURE DECLINE IN SOUTHERN ASIA

Population Collapses of Three Species of <i>Gyps</i> Vultures in the Indian Subcontinent: an overview	197
<i>Robert W. Risebrough</i>	

On the decline of Oriental White-backed Vultures <i>Gyps bengalensis</i> in lowland Nepal	215
<i>Hem Sagar Baral, Jeet Bahadur Giri and Munir Z. Virani</i>	

The Status and Decline of Vultures in the provinces of Punjab and Sind, Pakistan: a 2003 update	221
---	-----

*Martin Gilbert, J. Lindsay Oaks, Munir Z. Virani, Richard T. Watson, Shakeel Ahmed, Muhammad Jamshed Iqbal Chaudhry, Muhammad Arshad, Shahid Mahmood, Ahmad Ali, Rehman Mahmood Khattak and Aleem Ahmed Khan*

Population and Conservation Status of Griffon Vultures in the former Soviet Union	235
<i>Todd Katzner, Alexander Gavashelishvili, Sergei Sklyarenko, Michael McGrady, Jevgeni Shergalin and Keith Bildstein</i>	

Diagnostic Investigation of Vulture Mortality: the Anti-Inflammatory Drug Diclofenac is associated with Visceral Gout	241
---	-----

*J. Lindsay Oaks, Carol U. Meteyer, Bruce A. Rideout, H.L. Shivaprasad, Martin Gilbert, Munir Virani, Richard T. Watson and Aleem Ahmed Khan*

Saving Asia's <i>Gyps</i> Vultures: the "Vulture Rescue" Team's Conservation Programme	245
--	-----

*Vibhu Prakash, Deborah J. Pain, Susanne Shultz and Andrew A. Cunningham*

Preliminary Population Viability Analyses for Oriental White-Backed Vulture <i>Gyps bengalensis</i> in Punjab province, Pakistan	257
--	-----

*François Sarrazin, Munir Z. Virani, Martin Gilbert & Aleem A. Khan*

A Survey of the Reproductive Activities at some <i>Gyps</i> Vulture Nests in Kanha, Bandhavgarh and Ranthambhore National Parks, India, in the 2002/2003 breeding season	263
--	-----

*Munir Z. Virani, Patrick C. Benson, Martin Gilbert and Simon Thomsett*

## POPULATION LIMITATION

Tree-nesting Peregrines <i>Falco p. peregrinus</i> in Europe did not recover	271
<i>Wolfgang Kirmse</i>	

Raptor Habitat Studies – the state of the art	279
<i>Asko Lõhmus</i>	

How Raptor Re-introductions can contribute to Understanding Population Regulation: the Mauritius Kestrel, a case study	297
--	-----

*Malcolm A. C. Nicoll, Carl, G. Jones and Ken Norris*

## RESOLVING RAPTOR/HUMAN CONFLICTS

Conflicts in Raptor Conservation: an overview	307
<i>Beatriz Arroyo, Steve Redpath and Javier Viñuela</i>	

Science and the Conservation of the California Spotted Owl 317  
*R. J. Gutiérrez*

Management Tools for Raptor Conservation 329  
*R.E. Kenward*

Vulture Restaurants – Conflict in the midst of Plenty 341  
*S.E. Piper*

## ENVIRONMENTAL CONTAMINANTS & RAPTORS

Effect of Food Supply and Contaminants on Osprey Productivity in southern British Columbia, Canada 353  
*Christy A. Morrissey, Gabriella V. Kardosi, Laurie K. Wilson and John E. Elliott*

An Evaluation of Osprey Eggs to Determine Spatial Residue Patterns and Effects of Contaminants along the Lower Columbia River, U.S.A. 369  
*Charles J. Henny, Robert A. Grove, James L. Kaiser and V. Raymond Bentley*

Exposure of the Eastern Screech-owl *Otus asio* to Organophosphorus Insecticides and Anticoagulant Rodenticides in Apple Orchards of Southern Quebec, Canada 389  
*Ngaio L. Richards, Pierre Mineau and David M. Bird*

## ELECTROCUTIONS

The BB Line - Evaluating the Role of Birds in Line Faults 411  
*John Acklen, Zakkary Bates and Douglas Campbell*

Birds and Power Lines – status in the Slovak Republic 417  
*Michal Adamec*

A Review of Measures taken against Bird Electrocution in Hungary 423  
*János Bagyura, Tamás Szittu, István Sándor, Levente Viszló, Gábor Firmánszky, Balázs Forgách, Sándor Boldogh and Iván Demeter*

Bald Eagle *Haliaeetus leucocephalus* Electrocutions in Alaska and Florida - a comparison of retrofitting measures 429  
*Richard E. Harness*

Vulture Electrocutions on Vertically Configured medium voltage Structures in the Northern Cape Province South Africa 437  
*Rudi Kruger, Abri Maritz and Chris van Rooyen*

Power line Design and Raptor Protection in Bulgaria 443  
*Stoycho Stoychev and Tzesar Karafeizov*

## TAXONOMY, PHYLOGEOGRAPHY & MOLECULAR MARKERS

Morphometric Measures of male and female Spot-winged Falconets *Spizapteryx circumcinctus* sexed using PCR Amplification Methods 451  
*Marc J. Bechard, José H. Sarasola and Andreas J. Helbig*

Sex Determination of Nestlings in Eleonora's Falcon *Falco eleonora*: plumage characteristics and molecular sexing 459  
*Dietrich Ristow, Ludger Witte and Michael Wink*

Phylogeographic Relationships of the Black Kite <i>Milvus migrans</i> <i>Jessica Scheider, Michael Wink, Michael Stubbe, Sabine Hille and Wolfgang Wiltschko</i>	467
Genetic structure of Greater <i>Aquila clanga</i> and Lesser Spotted Eagle <i>A. pomarina</i> populations: Implications for phylogeography and conservation <i>Ülo Väli, Rimgaudas Treinys and Kostas Poirazidis</i>	473
Phylogenetic Relationships in Diurnal Raptors based on nucleotide sequences of mitochondrial and nuclear marker genes <i>Michael Wink and Hedi Sauer-Gürth</i>	483
Phylogenetic Relationships in the Hierofalco Complex (Saker-, Gyr-, Lanner-, Laggar Falcon) <i>Michael Wink, Hedi Sauer-Gürth, David Ellis &amp; Robert Kenward</i>	499
Phylogeographic Relationships of the Lesser Kestrel <i>Falco naumanni</i> in Breeding and Wintering Quarters, inferred from nucleotide sequences of the mitochondrial cytochrome b gene <i>Michael Wink, Hedi Sauer-Gürth and David Pepler</i>	505
Phylogenetic Differentiation of the Osprey <i>Pandion haliaetus</i> inferred from nucleotide sequences of the mitochondrial cytochrome b gene <i>Michael Wink, Hedi Sauer-Gürth and Hans-Hinrich Witt</i>	511
Phylogenetic Relationships in Owls based on nucleotide sequences of mitochondrial and nuclear marker genes <i>Michael Wink, Hedi Sauer-Gürth &amp; Marc Fuchs</i>	517
<b>EAGLE STUDIES</b>	
Population changes of the White-tailed Eagle <i>Haliaeetus albicilla</i> in Hungary, with special attention to the lower Hungarian Danube-valley, 1987-2003 <i>László Bank, Tamás Deme, Zoltán Horváth, Béla Kalocsa and Enikő Tamás</i>	529
Analysis of breeding habitats of the Lesser Spotted Eagle <i>Aquila pomarina</i> in Latvia <i>Ugis Bergmanis</i>	537
Long-term Population trends and nesting success of Imperial Eagle, Golden Eagle and White-tailed Sea Eagle in North-West Kazakhstan in 1990-2002 <i>Evgeny Bragin and Todd Katzner</i>	551
Breeding Biology of the Crested Serpent Eagle <i>Spilornis cheela hoya</i> in Kenting National Park, Taiwan <i>Ta-Ching Chou, Pei-Fen Lee and Huisheng Chen</i>	557
Immature Plumages of the Eastern Imperial Eagle <i>Aquila heliaca</i> <i>William S. Clark</i>	569
Use of Breeding Area by Immature Spotted Eagles <i>Aquila pomarina</i> and <i>A. clanga</i> in Belarus: different strategies <i>V. C. Dombrovski</i>	575
The diet of Bonelli's Eagle <i>Hieraetus fasciatus</i> in Cyprus <i>Savvas Iezekiel, Dimitris E. Bakaloudis and Christos G. Vlachos</i>	581

On the Food of the Imperial Eagle <i>Aquila heliaca</i> on Sakar Mountain and Dervent Heights, Bulgaria <i>Simeon A. Marin, Ivelin I. Ivanov, Dilian G. Georgiev and Zlatozar N. Boev</i>	589
Diet of Booted Eagles <i>Hieraaetus pennatus</i> in Southeastern Spain <i>J.E. Martínez, M. Cremades, I. Pagán and J.F. Calvo</i>	593
The Situation of the Lesser Spotted Eagle <i>Aquila pomarina</i> in Germany: The need for an Action Plan and active Conservation <i>Bernd-U. Meyburg, Torsten Langgemach, Kai Graszynski and Jörg Böhner</i>	601
Home range size, Habitat utilisation, Hunting and Time budgets of Lesser Spotted Eagles <i>Aquila pomarina</i> with regard to Disturbance and Landscape Fragmentation <i>Bernd-U. Meyburg, Wolfgang Scheller and Ugis Bergmanis</i>	615
Nest Site Selection by the Eastern Imperial Eagle in the North-west part of its Range <i>Vojtech Mrlík</i>	637
Nest Occupancy Patterns of Booted Eagles <i>Hieraaetus pennatus</i> in Southeastern Spain <i>I. Pagán, J.E. Martínez, M. Carrete and J.F. Calvo</i>	645
Status of the Eastern Imperial Eagle <i>Aquila heliaca</i> in Bulgaria between 1994 and 2002 <i>Stoycho Stoychev, Ivelin Ivanov, Tzeno Petrov, Simeon Marin, Dimitar Demerdzhiev, Gradimir Gradev and Dobromir Domuschiev</i>	653
<b>FALCON STUDIES</b>	
Population Trend of the Saker Falcon <i>Falco cherrug</i> in Hungary between 1980 and 2002 <i>János Bagyura, Tamás Szitta, László Haraszthy, Iván Demeter, István Sándor, Miklós Dudás, György Kállay and Levente Viszló</i>	663
Comparison of Saker Falcon <i>Falco cherrug</i> Predation during and after the Breeding Period <i>János Bagyura, László Haraszthy, Sándor Gróf and Iván Demeter</i>	673
Associations of evolutionary & ecological distinctiveness amongst Indian Ocean kestrels <i>Jim J. Groombridge, Malcolm A. Nicoll, Carl G. Jones &amp; Jeff Watson</i>	679
Ecological Aspects of Distribution for Saker Falcons <i>Falco cherrug</i> and Altai Gyrfalcons <i>F. altaicus</i> in the Russian Altai <i>Valeri Moseikin and David H. Ellis</i>	693
On the insect diet of Eleonora's Falcon <i>Falco eleonorae</i> and its importance for coloniality <i>Dietrich Ristow</i>	705
Sex, Age, and Evolution criteria to be derived from dark feather patterns in the Hobby & Red-footed falcon group <i>Dietrich Ristow</i>	713
Status of the Lesser Kestrel <i>Falco naumanni</i> in Thessaly, Central Greece <i>Christos Vlachos, Dimitris Bakaloudis and Evangelos Chatzidakis</i>	731

## **BIOLOGY OF OWLS**

Barn Owl *Tyto alba* Management and Monitoring in south-west Hungary 739  
*László Bank, Győző Horváth, Zoltán Tóth and Ernő Müller*

Ecology and Conservation of the Palau Owl *Pyrroglaux podarginus* 747  
*Wade L. Eakle*

Effects of Clean Water Act Permits on the Cactus Ferruginous Owl *Glaucidium*  
*brasilianum* in Arizona 755  
*Wade L. Eakle*

Trophic Ecology of the Burrowing Owl in Southeast Brazil 763  
*José Carlos Motta-Junior and Adriana de Arruda Bueno*

Food habits of the Striped Owl *Asio clamator* in South-East Brazil 777  
*José Carlos Motta-Junior, Cleber José Rodrigues Alho and Sonia Cristina Silva*  
*Belentani*

## **GENERAL RAPTOR STUDIES**

Motorway Mortality of Birds of Prey and Owls in the East of France 787  
*Hugues Baudvin*

Wave Moults of the Primaries in Accipitrid raptors, and its use in ageing  
immatures 795  
*William S. Clark*

Kleptoparasitism rates and Aggressive Interactions between Raptors 805  
*Will Cresswell*

Raptor Migration as a Conservation Opportunity: First Full-season Migration  
Counts in South-east Romania 815  
*Zoltán Domahidi, Robert Zeitz and Daróczy J. Szilárd*

Protection of Montagu's Harrier *Circus pygargus* on the Heves-Borsod Plain  
with special attention to nesting on agricultural habitats 823  
*Imre Fatér, László Tóth and Enikő Tamás*

Observations on the behaviour of male Montagu's Harriers *Circus pygargus* at  
communal roosts during the post-fledging period: a case study 829  
*Ignacy Kitowski*

The order Falconiformes in Cuba: status, distribution, migration and conservation 835  
*Freddy Rodríguez Santana*

Sky-dancing as an Honest Criterion of Mate Choice in Montagu's Harrier *Circus*  
*pygargus* 845  
*Jaroslav Wiacek*

Causes of Raptor Mortality in Crete 849  
*Stavros Xirouchakis*

**RESOLUTIONS** 863