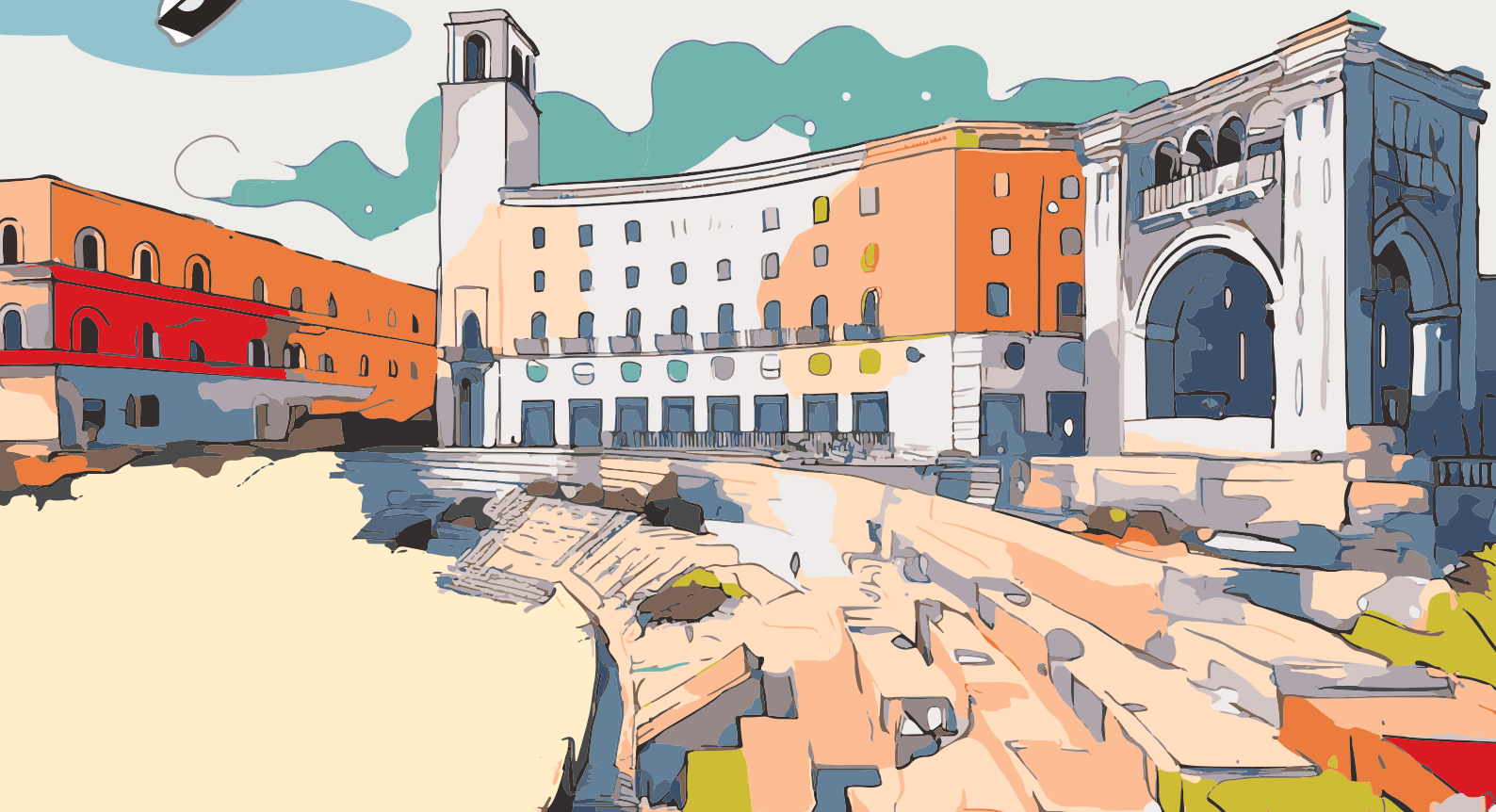
XXIII CIO

LECCE
8-12 SETTEMBRE 2025

22° CONVEGNO ITALIANO DI ORNITOLOGIA

BOOK OF ABSTRACTS



Finito di stampare nel mese di Agosto 2025
Grafica, layout & typesetting: M. M. Romano

22° CONVEGNO ITALIANO DI ORNITOLOGIA

LECCE 8 -12 SETTEMBRE 2025

Published by:

CISO – Centro Italiano Studi Ornitologici

XXII Convegno Italiano di Ornitologia

Università del Salento

Complesso Studium 2000

Edificio 5 (Via di Valesio angolo Viale San Nicola), Lecce

8-12 Settembre 2025

Riassunti: Comunicazioni e Poster

Edited by:

Flavio Monti, Alessandra Costanzo and Samuele Ramellini

Taxonomy curated by:

Cristiano Liuzzi and Egidio Fulco

Text revision and editing curated by :

Maurizio Sarà

Organizzato da:

CISO – Università del Salento – CNR IRET – LifeWatch – Or.Me

Con la collaborazione di:

WWF Oasi le Cesine - Lipu - AFNI – Museo Storico-Archeologico (MUSA)

Collaborazioni e Patrocini:

Comune di Lecce

COMITATI

Comitato Scientifico

Presidente: Flavio Monti, CNR-IRET
Rosario Balestrieri, Stazione Zoologica Anton Dohrn
Alessandro Berlusconi, Università degli Studi Milano
Chiara Bettega, Università degli Studi Milano
Letizia Campioni, Ornis italica
Gianpasquale Chiatante, Università degli Studi della Tuscia
Alessandra Costanzo, Università degli Studi Milano
Egidio Fulco, Studio Naturalistico Milvus
Elena F. Kappers, Altenburg & Wymenga ecological consultants
Cristiano Liuzzi, Centro Studi de Romita
Giulia Masoero, Swiss Ornithological Institute
Ugo Mellone, Mediterranean Raptor Migration Network
Michelangelo Morganti, CNR-IRSA
Samuele Ramellini, Australian National University
Martina Scacco, Max Planck Institute of Animal Behavior

Comitato Organizzatore

Presidente: Alberto Basset, Università del Salento
Rosario Balestrieri, CISO, SZN
Genuario Belmonte, Università del Salento
Laura Caciagli, LifeWatch ERIC
Leonardo Chiriacò, Or. Me.
Cristina Di Muri, CNR-IRET
Giuseppe La Gioia, Or.Me.
Luigi Musco, Università del Salento
Gloria Ramello, CISO, GPSO
Ilaria Rosati, CNR-IRET

Presidenza:

Maurizio Sarà
presidentecisocoi@gmail.com

Segreteria

Gloria Ramello
segreteriacisocoi@gmail.com

Citazione consigliata / Recommended citation:
Abstract Book:
Monti, F., Costanzo, A., Ramellini, S. (Eds.) 2025. Atti XXII Conv. It. Ornitologia. CISO - Centro Italiano Studi Ornitologici - DOI: 10.48372/39Z0-HG45

Contribution (example):
Alba, R. and Chamberlain, D. 2025. Birds on the move: How elevational shifts challenge the effectiveness of Alpine protected areas. In: Monti, F., Costanzo, A., Ramellini, S. (Eds.) 2025. Atti XXII Conv. It. Ornitologia. CISO - Centro Italiano Studi Ornitologici
DOI: 10.48372/39Z0-HG45

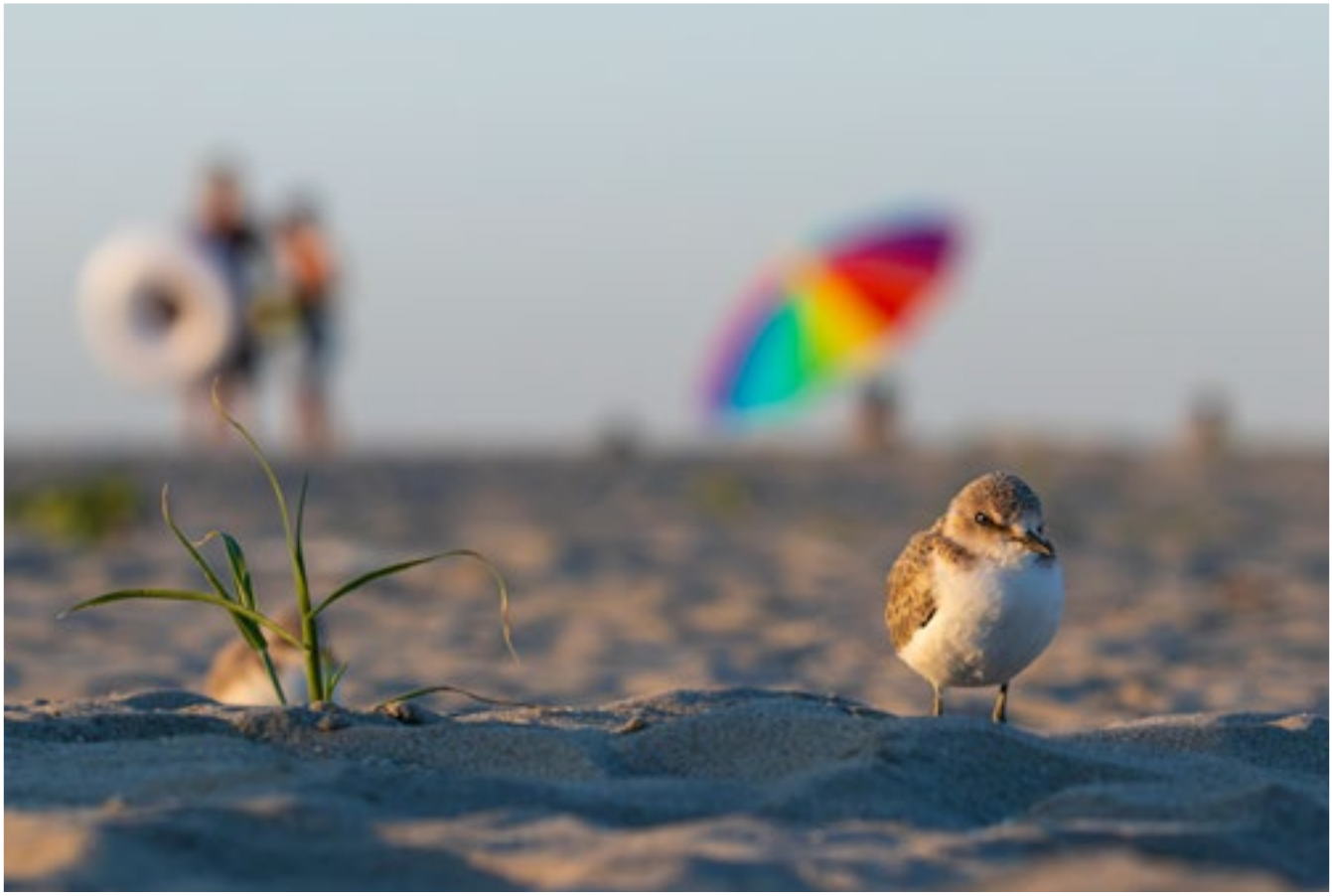


Photo credits: Davide Aresti AFNI

Cambiamo Rotta!

AFNI (Associazione Fotografi Naturalisti Italiani), **LIPU** (Lega Italiana Protezione Uccelli) e **CISO** (Centro Italiano Studi Ornitologici), unendo le loro competenze e visioni con il comune obiettivo di sensibilizzare e agire per la tutela del patrimonio naturale italiano, hanno realizzato durante tutti i giorni del XXII Convegno CIO
la mostra fotografica che unisce Arte e Conservazione

Inaugurazione 8 settembre ore 17:00

Riassunti: Comunicazioni e Poster

Ogni eventuale errore relativo a contenuti, affiliazioni, stile e lingua presente nei riassunti va attribuito esclusivamente agli Autori e alle Autrici, che se ne assumono ogni responsabilità. Eventuali modifiche alla tassonomia sono state effettuate in accordo con la IOC World Bird List Version 15.1.

CONTENTS

TUESDAY 9 SEPTEMBER 2025

Plenary

The Black-headed Bunting: A journey across deserts and through its life history

Sanja Barišić[1*]

1 Institute of Ornithology, Croatian Academy of Sciences and Arts, Zagreb, Croatia

*Presenter's email: sanjabarisic@gmail.com

The Black-headed Bunting *Emberiza melanocephala* provides a compelling model for understanding how migratory passerines integrate complex behaviours and ecological strategies across their annual cycle. This lecture will follow the species from its arrival at the breeding grounds in the East Adriatic to its wintering areas in India and back again. I will describe breeding biology, including the mating system, clutch size, and the roles of the sexes, and focus on song-flight behaviour — its timing, context, and relationship with mating success. I will further explore autumn and spring migration strategies, highlighting how buntings cross major ecological barriers such as the Iranian Plateau and Arabian deserts. Finally, I will discuss recent population trends: a collapse at traditional sites in the Mediterranean alongside expansion into the Pannonian Plain, raising questions about the role of climate change in shaping distribution and demography.

Session: Avifauna of the arid-steppe environments

Chairs: *Alessandro Berlusconi & Michelangelo Morganti*

Quick shift in wintering strategy of the Eurasian Stone-curlew *Burhinus oedicnemus* in Central Italy: From migratory to resident behaviour

Carlo Catoni[1*], *Flavio Monti[2], Sebastian Cannarella[1], Fabio Scarfò[3], Angelo Meschini[4], Marco Ciolfi[5], Giacomo Dell'Omo[1]*

1 Ornis italica, Piazza Crati 15, Roma

2 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce

3 Riserva Naturale Regionale Monterano

4 CORACIAS Viterbo, Viale Trieste 34

5 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Viale Marconi 2, 05010 Porano (TR)

*Presenter's email: carlo.catoni@gmail.com

Understanding changes in animal movement strategies is crucial for conservation and ecological studies. We analyzed GPS telemetry data from 19 Eurasian Stone-curlews *Burhinus oedicnemus* in central Italy (Viterbo), tagged with GPS during two different periods: 2017-2021 and 2023-2024 (these last financed by PSR 7.6.1 coordinated by Monterano Nature Reserve). In the first period, most (7 out of 9) individuals exhibited migratory behaviour, leaving their breeding sites in November or December to overwinter in Sardinia and/or Tunisia. In contrast, during the second period, only one out of 10 birds showed this migratory behaviour. To understand this shift, we calculated winter home ranges and compared them with reproductive home ranges to assess site fidelity across seasons. Additionally, we explored potential environmental drivers such as climatic conditions and vegetation indexes obtained from remote sensing data, during winter months (Sept-March), across the whole period. We discuss the possible causes for this behavioral change, particularly changes in land use, such as shifts between cultivated fields and fallow lands, and climate. These two factors might concur to modify habitat suitability and resource availability across different years. Understanding these dynamics is essential to assess the effects of environmental changes and land use on species movement ecology, ultimately supporting tailor-made conservation measures.

Avian community dynamics in the Fiumara Trionto river (Calabria, southern Italy): The role of local habitat changes and population trends after 32 years (1992 vs 2024)

Carlo Calabrò[1*], *Antonio Mingozzi[1], Domenico Gargano[1]*

1 Department of Biology, Ecology and Earth Sciences, University of Calabria, Rende (CS) 87030, Italy

*Presenter's email: carlo.naturalist@gmail.com

The "Fiumare" are large riverbed, almost desert-like environments, typical of the Calabrian Ionian coast, characterized by intense geomorphological dynamics and marked rainfall variability; "Fiumara Trionto" (SAC IT9310047) being among the largest ones. In this study, we compared the results of two bird censuses (breeding communities) repeated in the Fiumara by the same methodology (22 point counts) 32 years later (1992 vs 2024), to assess variations in the composition of the avian community and to identify potential causes through the integration of environmental data and multivariate analyses. The analyses aimed at verifying the correlation between matrices of biological and environmental data from the two surveys included Canonical Correspondence Analysis (CCA) and Redundancy

Analysis (RDA), both integrated with the Mantel Test to ensure the robustness of the obtained results. The findings show a clear increase in avian diversity, rising from 14 species recorded in 1992 to 24 in 2024, accompanied by an evident reversal in the abundances of key species, namely *Calandrella brachydactyla* vs *Galerida cristata*, and *Curruca conspicillata* vs *Curruca melanocephala*. Changes in species richness and abundance between surveys may be explained by the natural evolution of the Fiumara riverbed, characterized by the reduction of large floods in the last thirty years, with an increase in vegetation density and structuring, i.e. a vegetation dynamic that appears to have favored generalist species over those typically associated with open and sparsely vegetated habitats. Additionally, changes in the abundances of some species (Alaudidae) are also due to population dynamics on a larger scale.

Phototrapping technique for studying the reproductive behavior of the European Roller *Coracias garrulus*

Danila Mastronardi[1*]

1 Associazione Studi Ornitologici Italia Meridionale odv

*Presenter's email: danila.mastronardi@gmail.com

The European Roller *Coracias garrulus* population breeding in the Caserta area (Campania-South-Italy) has been monitored since 2012, when ASOIM became a partner in the national Coracias project. The breeding area is cultivated with crops that rotate between forage (especially for buffalo breeding), vegetables, and cereals. Throughout the investigation area, there are numerous abandoned ruins of the National Combatants Organisation (ONC). The area occupied by the species covers approximately 370 km^2. Monitoring has shown the size of Caserta population which is approximately 18 pairs and a preference by the species for ruins, recently by other anthropic structures as well. Previous studies have shown that pairs frequently move from one breeding site to another during the same season and especially between breeding seasons. In the years 2022 and 2023 direct observation at the nests were accompanied by the use of phototraps-Coolfile digital trail camera model, with infrared light, mounted on some occupied ruins. Two phototraps were mounted in 2022 on two nests placed in different locations, and two in 2023, one on the nest already monitored the previous year with this technique and the other on a new nest placed in another sector of the range. The analysis of the videos (no.1631 significant clips in total) captured data on the frequency of nest visits, the dates of fledging, the type of prey brought to the chicks, and revealed interesting interactions at the intra-and interspecific levels. It also revealed response to anthropogenic disturbance caused by agricultural activities.

Drongos maintain provisioning rates to nests on hot days by altering the timing of provisioning

Benjamin Murphy[1*], *Susan Cunningham[1], Thomas Flower[2]*

1 FitzPatrick Institute of African Ornithology, University of Cape Town

2 Biology Department, Capilano University

*Presenter's email: benjaminmurphy2406@gmail.com

Breeding success in birds is often reduced at high temperatures due to thermal constraints on parental care. Parents may compensate by increasing care on cooler days or at cooler times of day. Fork-tailed Drongo offspring show consistent mass at fledging even during hot weather, despite reduced foraging and provisioning behaviour of parents at high temperatures. We used feeding experiments to explore potential compensation by parent drongos, assessing whether they adjust foraging and provisioning at different times of day. Drongos increased provisioning but not foraging effort as mornings got hotter. No increase in foraging and provisioning was detected as evenings got hotter. In-

creased provisioning during hot mornings may therefore buffer against reduced activity during midday. However, the lack of compensatory provisioning on hot evenings could become concerning under climate change if extra provisions in the morning become insufficient to tide nestlings through physiologically challenging conditions during the day.

Factor affecting the coexistence of Golden Eagle and Bonelli's Eagle in Sicily

Massimiliano Di Vittorio[1*], *Andrea Marcon[1], Stefania Merlino[2], Luca Maria Luiselli[3], Ernesto Maria Sabbioni[4], Mario Lo Valvo[4]*

1 ISPRA

2 Institute for Development, Ecology, Conservation and Cooperation, Rome, Italy

3 Gruppo Tutela Rapaci

4 Dipartimento di Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche, Via Archirafi 18, I-90123 Palermo

*Presenter's email: massimiliano.divittorio@isprambiente.it

The Golden Eagle *Aquila chrysaetos* and Bonelli's Eagle *Aquila fasciata* are two large raptors often considered potential competitors due to their shared ecological traits and overlapping distributions in sympatry across vast parts of their ranges. In this study, we investigate the environmental factors promoting their coexistence on the island of Sicily, examining the dynamics at two spatial scales: the landscape level (10 x 10 km UTM squares occupied by each and by both species) and the home range level (5 km circular buffers centered on nest sites of Bonelli's and Golden Eagle). Using logistic Generalized Linear Models (GLM), we analyze the effects of various environmental variables–such as orographic, climatic, and land use factors–as predictors, with species occurrence serving as the dependent variable. Our findings highlight some differences in orographic, land use and climatic factors and reveal distinct patterns in the distribution of the two species, along with significant differences in their ecological preferences. The Golden Eagle tends to favor higher elevations, with greater roughness, cooler and more humid conditions, and habitats dominated by forest and shrubland. In contrast, Bonelli's Eagle is more commonly associated with lower altitudes and areas with arable land, particularly in drier environments. These results suggest that interspecific competition between the two species is minimal, with their coexistence in Sicily likely facilitated by ecological niche differentiation. However, because competition is often density-dependent, our findings may also be influenced by the different population abundances of the two eagle species on the island, where the population of Bonelli's Eagle is much more abundant (and, in recent years, growing) than that of the Golden Eagle, which instead remains quite stable. The results would highlight that Sicily is strongly suited for the Bonelli's Eagle (which is occupying all the suitable available spaces), while the occurrence of the Golden Eagle is clustered where the ecological conditions that allow it exist.

Variation in early life movements of juvenile Montagu's Harriers *Circus pygargus* from Central Italy

Giampiero Sammuri[1*], *Guido Alari Esposito[2], Giuseppe Anselmi[3], Francesco Pezzo[4], Vincenzo Rizzo Pinna[2], Andrea Sforzi[2], Flavio Monti[5]*

1 Tuscan Archipelago National Park, Locality Enfola, 57037 Portoferraio, Italy

2 Maremma Natural History Museum, Strada Corsini 5, 58100 Grosseto, Italy

3 Alcedo APS, Via Don Minzoni 30, 58100 Grosseto, Italy

4 Italian Institute for Environmental Protection and Research (ISPRA), Via Ca' Fornacetta 9, 40064 Ozzano dell'Emilia, Italy

5 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

*Presenter's email: giampiero.sammuri@gmail.com

In long-distance migratory species, fledged juveniles often rely on restricted time span to learn the essential skills for survival and to prepare for migration, possibly the most risky phase of their lives. Here, we used high-resolution GPS/GSM transmitters fitted to juvenile Montagu's Harriers *Circus pygargus* from central Italy to collect information on their movement ecology during the post-fledging dependence period (PFDP) and the pre-migratory phase (PMP). After fledging, individuals showed high variability in home range size, daily distances covered (6.88 ± 11.4 km/d), distance from the nest (1.45 ± 2.8 km) and PFDP length (23.3 ± 5.3 d). Residence time at the natal site significantly decreased, while the time interval between revisits in the natal area significantly increased as the PFDP progressed. During the PMP, explored areas and distance to nest varied among individuals, despite daily distances covered (27 ± 40 km/d) and time allocation between traveling (60.7%) and foraging (39.3%) were similar across individuals. The PMP lasted 38 ± 14 d. Land cover composition of foraging locations was mostly represented by agricultural lands (~78.2%), though habitat use differed among individuals. More than 76% of such locations were located outside protected areas. This individual-based tracking study improves previous knowledge based on field studies on the early life stages of the Montagu's Harrier. High inter-individual variability in movement patterns, broad-range exploratory movements and foraging locations outside protected areas make the application of standard conservation measures difficult, raising concerns about the long-term preservation of this vulnerable migratory species in Italy.

Unravelling the decision making of foraging vultures: Insights from a field experiment

Eneko Arrondo Floristan[1*], *Jorge Carracedo[2], Zebensui Morales Reyes[3], Patrick Mcallister[2], Roberto Pascual Rico[4], Martina Scacco[5], Ainara Cortés Avizanda[6], José Donazar[6], José Antonio Sanchez Zapata[7]*

1 Universidad de Granada
2 Universidad del Ulster
3 Universidad de la Laguna
4 Universidad Castilla la Mancha
5 Max Planck for ornithology
6 Estación Biológica de Doñana
7 Universidad Miguel Hernandez
*Presenter's email: bioeaf@gmail.com

Optimal Foraging Theory (OFT) integrates both the consumer and the resource, yet their simultaneous assessment is uncommon. Vultures represent an ideal model for OFT studies because carrion requires no capture effort and minimal handling, allowing them to focus primarily on food searching. Here, we combined GPS-tracking of 61 Iberian Griffon Vultures (consumers) with photo-trapping monitoring of 49 carcasses (resources) to assess the determinants of vulture foraging and the consequences for carrion consumption in two areas with different carrion abundance. First, we determined the importance of different factors (distance to the resource, hunger, and competition) in the decision of individuals to whether to descend or not on a carcass. Second, we compared carrion consumption patterns (time of carcass discovery and consumption, and maximum number of vultures gathered around the carcass) between areas. We found that distance, rather than hunger, is the primary factor determining whether a vulture descends to a carcass. In parallel, carrion was consumed similarly in areas with different resource availability. These findings indicate that vultures tend to eat whenever a nearby opportunity arises, consistent with a Type I functional response.

Session: Global changes and emerging threats I

Chairs: *Chiara Bettega & Riccardo Alba*

Birds on the move: How elevational shifts challenge the effectiveness of Alpine protected areas

Riccardo Alba[1], Dan Chamberlain[1*]

1 University of Turin

*Presenter's email: dan.chamberlain99@gmail.com

Mountains are global biodiversity hotspots but are increasingly vulnerable to climate change. In the European Alps, rising temperatures and land-use changes have caused vegetation shifts, impacting bird communities, particularly alpine specialists. Protected areas (PAs) are critical for buffering climate effects and safeguarding cold-adapted species, but their effectiveness in a warming world remains unclear. This study assessed shifts in bird assemblages across the elevational gradient in the Italian Alps over 13 years, using the Community Temperature Index (CTI) as a measure of community thermal tolerance. By comparing shifts inside and outside PAs, we identified key species and elevation bands driving CTI changes and modeled species-specific elevational shifts. Results revealed a critical divergence: CTI remained stable outside PAs but increased sharply within PAs, reflecting a 1.19 °C rise in mean annual temperature in the study area. Initially, PAs supported colder-adapted communities, but these differences diminished over time, reducing benefits for high-elevation species. The most marked changes occurred near the treeline, a key zone for sensitive species. CTI increases were driven by treeline and alpine grassland species which are most vulnerable to vegetation encroachment. Our findings suggest that PAs facilitate upward shifts but are insufficient to prevent declines in high-elevation species under rapid warming. Adaptive conservation strategies are urgently needed, including measures to counteract vegetation shifts, maintain habitat heterogeneity, and support elevational connectivity. Continuous CTI monitoring is essential to detect ecological disruptions and refine priorities, ensuring resilience in mountain biodiversity under climate change. These insights provide critical guidance for conservation globally.

Seabirds from the poles: Microplastics pollution sentinels

Davide Taurozzi[1*], *Massimiliano Scalici*[1]

1 Roma Tre University

*Presenter's email: davide.taurozzi@uniroma3.it

Arctic and Antarctica represent two of the most inhospitable and poorly investigated biomes in the world. While polar regions are still perceived as some of the most pristine places, these remote places are no longer immune to anthropogenic pollution, in particular, micro- and nanoplastics. Seabirds represent an early study group of ecological indicators for plastic pollution. Here, we evaluated the international research trends on the impacts of microplastics (MPs) and nanoplastics (NPs) in the last 40 years on seabirds inhabiting polar regions. A total of at least 13 seabird species were reported to have ingested MPs from 1983–2023. Overall, pellets were the most investigated matrices (699), followed by stomach contents (309), guano (101), and pouch contents (21). A total of 3526 MPs were found in the samples: stomachs (3013), pellets (398), guano (75), and pouch contents (40). Among the 374 (Arctic) and 756 (Antarctica) samples investigated, 90% and 97%, respectively, had at least one piece of MP in their content; 82% and 60%, respectively, of stomach contents had MPs, while 100% of pellet samples contained MPs. A median of 31.5 and 35 MPs per sample was found in Arctic and Antarctica, with an average of 7.2 and 1.1 MPs per sample, respectively.

Cellulose-based plastic was the dominant type of plastic, followed by sheet and plastic threads. Polyethylene, polypropylene and polystyrene were the dominant plastic polymers. Our findings highlight the importance of monitoring programs and standardized protocols for safeguarding seabirds and reducing the impacts of MPs on polar regions.

Seabird bycatch in the Pelagie Archipelago, central Mediterranean

Sara Bonanomi[1,2], *Antonella Di Gangi*[2,3], *Antonio Vulcano*[4], *Claudio Celada*[2], Giorgia Gaibani[2*]

1 National Research Council (CNR)
2 Lipu-BirdLife Italia
3 Berta maris
4 Birdlife International
*Presenter's email: giorgia.gaibani@lipu.it

Seabirds are among the most vulnerable marine species globally, facing significant threats from fisheries bycatch, which remains a major driver of mortality. The Pelagie Archipelago (central Mediterranean) is a critical marine biodiversity hotspot, hosting the second-largest breeding colony of Scopoli's Shearwater *Calonectris diomedea* in the Mediterranean and supporting intensive fishing activity. This study provides the first dedicated assessment of the impact of multiple fishing gears on marine megafauna, with a particular focus on seabirds. A total of 223 hauls were monitored between 2021 and 2024 by trained observers onboard drifting longlines, bottom longlines, bottom trawls, gillnets, and handlines. Drifting longlines emerged as the most detrimental gear for seabirds, with 27 *C. diomedea* and 9 Yellow-legged Gulls *Larus michahellis* unintentionally caught. Additionally, one *C. diomedea* was captured in bottom trawling operations. No seabird bycatch was recorded with bottom longlines, gillnets, or handlines. Other threatened marine species, including sharks, rays, and sea turtles, were primarily caught by bottom trawling and drifting longlines, while no cetacean bycatch was observed. These findings provide the first concrete evidence that seabird bycatch occurs in the Pelagie Archipelago and highlight the severe impact of drifting longline fisheries. Given the ecological importance of this region, urgent mitigation measures and stronger collaboration with fishers are needed to reduce bycatch and ensure the long-term conservation of these species.

Direct and indirect ecological drivers of bird communities in intensively cultivated landscapes

Matteo Anderle[1*], *Francesco Ceresa*[2], *Andreas Hilpold*[1], *Thomas Marsoner*[1], *Stephanie Roilo*[3], *Jarek Scanferla*[1], *Roberto Dellavedova*[1], *Ulrike Tappeiner*[1,4], *Mattia Brambilla*[5]

1 Institute for Alpine Environment, Eurac Research
2 Museum of Nature South Tyrol
3 Institute of Crop Sciences and Resource Conservation, University of Bonn
4 Department of Ecology, University of Innsbruck
5 Dipartimento di Scienze e Politiche Ambientali, University of Milan
*Presenter's email: matteo.anderle@eurac.edu

Agriculture has played a pivotal role in shaping the European mountain biodiversity. Traditional agricultural practices, characterized by low intensity of management and a mosaic of different crops, have historically created complex and heterogeneous landscapes that support a high level of biodiversity. However, agricultural intensification has changed these traditional landscapes into artificial habitats. This transformation has resulted in increased field sizes, habitat fragmentation, and a significant decrease in habitat heterogeneity, thereby contributing to the

nowadays farmland biodiversity crisis. In this study, we investigated the direct and indirect ecological drivers of bird communities in intensively cultivated landscapes within the Alps (South Tyrol). We aimed to disentangle the effects of biotic and abiotic factors on birds in permanent and annual crops (i.e., vineyards, apple orchards, arable lands). Using piecewise structural equation models, we analyzed bird indices (taxonomical and functional) and indicator species to explore the direct, indirect, and total effects of most important ecological drivers. Results indicate that natural/near-natural habitats and compositional habitat heterogeneity positively influence bird species richness and functional diversity. Conversely, structural habitat heterogeneity often has negative effects on bird communities. Topo-climatic variables, such as elevation and slope, also play significant roles, with elevation generally promoting functional diversity and species richness, while slope increasing near-natural habitat within the landscapes. We conclude that maintaining and enhancing natural/near-natural habitats within intensively cultivated landscapes is crucial to support biodiversity. Our results underscore the need for landscape-scale conservation strategies that consider both direct and indirect ecological drivers to effectively manage and conserve bird communities in the Alps.

Genetic diversity analyses revealed silent threat of forest selective logging to tropical understorey birds

Simone Messina[1*], *David Costantini*[1]

1 Università della Tuscia

*Presenter's email: simone.messina@unitus.it

Most old-growth (primary) forests in tropical countries have been replaced by selectively logged forests. Logged forests have found retaining high levels of avian biodiversity, however it often takes a considerable time for populations to become extinct. Mechanisms generating extinction debt involve genome-wide loss of genetic diversity driving decrease in adaptive potential. We conducted a study to assess whether selective logging leads to a substantial loss of genetic diversity in tropical understorey birds. We carried-out mist-netting in Danum Valley, Malaysian Borneo, where primary and selective logged forests form a unique vast contiguous forest. We collected blood samples for DNA extraction from 10 bird species. The study species belong to three different families: six species of the babbler family Pellorneidae, three species of the babbler family Timaliidae, and one species of the bulbul family Pycnonotidae. Babblers are strictly insectivorous while the sole Bulbul is a frugivore, and they all are highly sedentary and weak flyers. Using Next-Generation Sequencing techniques applied to 102 re-sequenced whole genomes, we assessed population structure and intraspecific differences in the levels of inbreeding and nucleotide diversity across old-growth pristine forest and selectively logged forest. We found higher levels of inbreeding and a loss of nucleotide diversity in two species currently considered common, raising concerns about silent population-genetic processes threatening to impact these seemingly abundant birds in the long term. Our findings suggest that genetic diversity scans may be an invaluable tool of the future to flag populations at risk.

The effects of changing climate, landscape and human density on bird population trends

Emanuela Granata[1*], *Gianpiero Calvi*[2], *Claudio Celada*[3], *Matteo Fontanella*[3], *Federica Luoni*[3], *Paolo Pedrini*[4], *Roberta Righini*[3], *Laura Silva*[3], *Mattia Fontanella*[3], *Mattia Brambilla*[1]

1 Milan University, Department of Environmental Science and Policy

2 Studio Pteryx

3 Lipu/BirdLifeItalia

4 MUSE – Trento Science Museum

*Presenter's email: emanuela.granata@unimi.it

Thanks to their sensitivity to environmental changes, birds are widely used as indicators to understand general patterns of biodiversity variation and ecosystem shifts. In this study, we explored the relationships between long-term trends of breeding bird populations in Italy and changes in climate, land-use/land-cover, and human population density. We rely on the data collected within the framework of the common bird monitoring (Farmland Bird Index) and assessed the relative importance of these drivers—both at group and single-predictor level—on species trends, community indices, and functional groups. The main sampling units of the bird monitoring were 10×10 km cells; here, all predictors have been estimated at the same spatial resolution. All groups and species considered were somehow negatively impacted by climate change. Rising temperatures were associated with declines in insectivores, even for some taxa expected to be favoured by climate warming, likely due to habitat deterioration and/or decreased insect availability in key periods. Precipitation changes also had a negative impact on all functional groups and on some individual species, highlighting vulnerability to extreme weather events and rainy springs. Increasing human density negatively affected insectivores, possibly through habitat loss, lower food availability and other anthropogenic stressors. Land cover played a key role: initial grassland cover had a positive effect on all trophic groups, and mixed forests supported forest insectivores and granivores over time. By interpreting these patterns in a national and European context and considering future scenarios, we highlighted the urgent need for targeted conservation strategies to mitigate the multi-faceted pressures shaping bird communities and ecosystem functions.

Avian functional diversity in agroecosystems: Evidence of long-term clustering and multi-scale land-use impacts

Pietro Tirozzi[1*], *Valerio Orioli[1,2], Olivia Dondina[1,2], Luciano Bani[1,2]*

1 University of Milano-Bicocca

2 National Biodiversity Future Center - NBFC

*Presenter's email: pietro.tirozzi@unimib.it

Land-use changes are among the main drivers of biodiversity loss worldwide, posing significant threats to ecosystem functionality. Functional diversity (FD) represents a critical community property connecting biodiversity, ecosystem functioning, and conservation objectives. In agricultural landscapes, avian communities are undergoing large-scale biodiversity erosion, underscoring the importance of understanding long-term dynamics in FD. Using long-term bird data (2007–2021) collected from lowland agricultural landscapes at a regional scale, we analysed temporal trends in FD metrics (richness, divergence, evenness), assessed functional clustering/overdispersion, investigated the relationship between FD and species richness, and examined the multi-scale effects of land use on FD along a local-to-landscape gradient. Results revealed decoupled trends, with FD metrics declining while species richness increased. Our findings, coupled with persistent evidence of functional clustering, suggested a loss of originality and an increase of redundancy in communities. Land use emerged as a driver of FD, likely acting as an environmental filter influencing trait clustering. Notably, built-up areas consistently exerted a detrimental effect on all FD metrics at all scales, whereas woody features (e.g. timber crops, forest patches, and hedgerows) had a positive effect on FD at the landscape level. Water bodies and wetlands were important to sustain functional richness and divergence, but not evenness, for which the effect of the hedgerows' density was also negative. These findings highlight the need for long-term studies to understand spatiotemporal dynamics of FD and emphasise the importance of a multi-scale spatial approach for informing land management strategies to conserve avian communities and ecosystem functionality.

Session: New Tools for Ornithology

Chairs: Letizia Campioni & Jacopo Cecere

Gene expression as a window into wildlife responses to environmental stress

Manrico Sebastiano[1*], *Marcel Eens[1], Olivier Chastel[2], David Costantini[3]*

1 University of Antwerp, Belgium

2 CEBC Chizé

3 University of Tuscia

*Presenter's email: manrico.sebastiano@uantwerpen.be

Wildlife is increasingly confronted with multiple environmental and anthropogenic stressors, including nutritional limitations and contaminant exposure. Such challenges are suspected to severely disrupt physiological homeostasis by impacting on essential physiological pathways including those responsible for maintaining immune functions, paving the way for decreased wildlife health and pathogen emergence. Understanding the molecular mechanisms behind such vulnerabilities is crucial to close key knowledge gaps in eco-immunology, disease ecology, and environmental toxicology. In our study, we quantified gene expression profiles of the Magnificent Frigatebird *Fregata magnificens*, a long-lived seabird whose chicks are facing a lethal viral infection, a disease linked to nutritional stress and contaminant exposure. We explored how shifts in molecular pathways correspond with disease susceptibility and progression, and we further examined the association between gene expression and mercury concentrations in blood. Our analyses revealed pronounced transcriptional differences between healthy and visibly sick individuals. Differentially expressed genes were primarily associated with immune responses to biotic stressors, inflammatory processes, and antimicrobial activity. By longitudinally monitoring chicks over several weeks, we also identified individuals who transitioned from healthy to sick states, enabling us to assess whether pre-disease gene expression profiles could signal vulnerability. Furthermore, mercury exposure was associated with shifts in gene expression linked to detoxification and oxidative stress. We discuss the potential of gene expression analyses in elucidating the mechanisms through which environmental challenges perturb physiological processes, with cascading effects on individual fitness and population health.

Characterization of a seabird colony in Bona Island, Panama, and evaluation of drivers influencing the productivity during breeding seasons with different El Niño intensities

Silvia Melchiori[1*], *Jonas Hentati-Sundberg[2], Giacomo Santini[3], Charlotte K. Steeves[4], Hector M. Guzman[1]*

1 Naos Marine Laboratory, Smithsonian Tropical Research Institute, Amador Causeway 7066, Panama City, Panama

2 Department of Aquatic Resources, Swedish University of Agricultural Sciences, Almas Allé 5, 75007 Uppsala, Sweden

3 Department of Biology, University of Florence, Via Madonna del Piano 6, 50019 Sesto Fiorentino (Florence), Italy

4 107 Lowell Road, Pepperell, MA 01463, USA

*Presenter's email: silviamelc@gmail.com

The Gulf of Panama is a critical nesting area for several seabird species, due to its unique oceanographic conditions that generate abundant foraging opportunities during seasonal upwelling events. However, long-term monitoring of seabird breeding colonies in the region has been lacking, leaving critical ecological aspects of these species,

including their responses to climatic anomalies, insufficiently updated. This study combined remotely sensed oceanographic data, drone surveys and field assessment to evaluate seabird breeding patterns on Bona Island, a newly designated protected area, during years with different El Niño intensities. Data on local sea surface temperature, chlorophyll-a concentration, and primary productivity were analysed alongside population numbers and breeding performance data for Brown Pelican *Pelecanus occidentalis*, Magnificent Frigatebird *Fregata magnificens*, and Brown Booby *Sula leucogaster*. Oceanographic conditions showed minimal differences between years, limiting the ability to directly correlate them with observed seabird population trends. Brown Booby breeding performance did not suggest dramatic impacts from El Niño, despite overall low reproductive success. The Brown Pelican breeding population remained stable throughout the years, indicating a healthy colony, while the Magnificent Frigatebird population declined in 2023-2024 compared to earlier years, warranting further investigation. Drone surveys have proven to be an efficient monitoring tool, and we recommend the adoption of standardized drone-based techniques for future population assessments. Future research is needed to fully comprehend colony trends and their relationship to oceanographic changes, informing better policy and management measures.

Estimation of the colony size of *Larus michahellis* nesting on the island of Bergeggi (Liguria, SV) using the double-observer method

Giacomo Actis Dato[1*], *Daniele Duradoni[1], Andrea Costa[2], Giacomo Rosa[2], Davide Virzi[3], Fabiano Sartirana[1]*

1 Ce.S.Bi.N. srl

2 University of Genoa

3 Area Marina Protetta "Isola di Bergeggi"

*Presenter's email: giacomoactisdato1@gmail.com

The study employed the double-observer method to estimate the number of *Larus michahellis* colony in the Marine Protected Area of Bergeggi Island (Liguria, SV). Monitoring was conducted during the seagull nesting period and consisted of two monthly surveys from March to June, totalling eight replicates. The island was divided into three sectors, and counts were conducted from a boat positioned at a fixed point in front of the island, recording the seagulls that settled. The collected data were analysed using the DOBSERV software and processed in RStudio. The estimated mean number of seagulls present on the island during the nesting period was 196,445 ± 53,627 individuals. The high detection probability and the characteristics of the study area confirmed the validity of the method used. This study highlights the innovative application of the double-observer method in an island marine context, where traditional land-based counts are often not practicable due to limited accessibility and potential disturbance to wildlife. By combining remote observation from fixed boat stations with digital analysis tools such as DOBSERV and RStudio, this approach offers a replicable, low impact and efficient strategy for monitoring large colonial bird populations in protected and sensitive areas. The results suggest that the double observer method is a reliable and novel tool for estimating nesting populations of *Larus michahellis* in similar environments.

Long-term use of bioacoustics to monitor the pre-nuptial migration of the Song Thrush in Liguria

Fabiano Sartirana[1*], *Matteo Capurro[1], Daniele Duradoni[1], Giacomo Actis Dato[1], Fabrizio Oneto[1]*

1 Ce.S.Bi.N. srl

*Presenter's email: info@cesbin.it

The aim of this study is to monitor the pre-nuptial migration of the Song Thrush *Turdus philomelos* in Liguria. From 2022 to 2025 (inclusive), Song Meter Mini Acoustic Recorder were deployed at various mountain passes and other sites known for thrush migration. Recordings were made continuously each day, covering the night-time hours (starting from approximately 03:00) through to early dawn, in order to detect the last migrating individuals. The monitoring period spanned from December to April. All data were analysed using the Kaleidoscope Pro software, which confirmed the effectiveness of this method in detecting migratory individuals during the time intervals considered. The results validate the suitability of acoustic recorders for this type of research and demonstrate their potential as a viable alternative to field observers—especially during night-time hours, when detecting the species is particularly challenging.

The avian community is resilient to forest logging in the Vico Lake Natural Reserve

Gianpasquale Chiatante[1*], *Daniele Canestrelli[1], Giuseppe Puddu[2], Gianluca Sabatini[3], David Costantini[1]*

1 Università della Tuscia, Dipartimento di Scienze Ecologiche e Biologiche, Largo dell'Università sn, 01100 Viterbo,

2 Ente Monti Cimini – Riserva Naturale Lago di Vico, S.P. 1 Cassia Cimina Km 12.0, 01032 Caprarola

3 Cooperativa Trifolium, Via del Paradiso 3, 01100 Viterbo

*Presenter's email: gp.chiatante@unitus.it

Over the past decades, forest cover in Italy has increased, making it essential to clarify the role of different silvicultural practices in shaping animal communities. Using Passive Acoustic Monitoring, we described and compared the community structure and diel activity of birds breeding in the woodlands of the Vico Lake Natural Reserve. To this end, we deployed 10 autonomous recording units in February 2024, collecting a total of 212,909 1-min audio files through October 2024. Six sites were located in an old-growth beech woodland, three in a mixed coppice of oaks and chestnuts, and one in an intensively managed hazelnut grove. Data were extracted with a semi-automatic approach: recordings were classified with BirdNET Analyzer and a sample was acoustically validated. We detected 70 species, including 46 breeding landbirds. The Common Blackbird, European Robin, and Great Spotted Woodpecker were the most frequently recorded species. Species richness and abundance were highest in the old-growth beech forest. While the three most common species were dominant across all forest types, Great Tits and Eurasian Nuthatches were particularly abundant in the beech forest, whereas Eurasian Jays and Eurasian Blackcaps were more frequent in the mixed coppice. Species richness was lowest in the hazelnut grove, although bird abundance was comparable to that in the mixed coppice. In conclusion, our results suggest that avian communities show resilience to forest logging, whereas the expansion of hazelnut groves may lead to significant declines in species richness.

Drones and advanced technologies for monitoring Scopoli's Shearwater *Calonectris diomedea* colonies at Ventotene: Results and perspectives

Sara Riello[1,2*], *Carmen Biondo[2], Federico Filipponi[3], Luigi Alcaro[4], Pierpaolo Giordano[4], Antonio Romano[1], Michela Mannozzi[4]*

1 AMP-RNS Isole di Ventotene e S.Stefano piazza Castello n.1 04031 Ventotene (LT)

2 Associazione LAVICA via olivi n.2/3 04031 Ventotene (LT)

3 CNR-IGAG strada provinciale 35d, n.9 Montelibretti (RM)

4 ISPRA via Vitaliano Brancati n.48 00141 Roma

*Presenter's email: sarariello@gmail.com

Emerging Earth observation technologies, such as Remotely Piloted Aircraft Systems (RPAS), equipped with advanced sensors, provide innovative tools for monitoring seabird colonies and conducting avian censuses. As part of the EU IRA-MAR project, ISPRA, the RPAS unit of the Italian Fire Brigade and the Ornithological Observatory of Ventotene and Santo Stefano MPA tested drones for counting Scolopoli's Shearwater *Calonectris diomedea* at raft. The study combined thermal cameras and aerial surveys, tracking birds at raft until take-off for their return to the northwestern Ventotene cliffside colony. This methodology provides more accurate counts than traditional ground-based methods and successfully detecting individuals arriving at raft even in low-visibility conditions. Additionally, 3D surveys of the nesting cliff were conducted using photogrammetry and LiDAR technology to identify potential nesting cavities. The use of thermal imaging has enhanced night-time detection of individuals, enabling more accurate identification of the available cavities and the accurate recognition of those are occupied. In a confirmed nesting case, we successfully tested the feasibility of defining cavity shape and size. Trials 2023 -2024 validated a standardised, minimally invasive methodology. Future developments of this research will extend data collection to the entire Ventotene perimeter, allowing for a mapping morphological characterisation of nesting cavities. This innovative approach could significantly enhance seabird colony monitoring, particularly in inaccessible sites, achieving unprecedented accuracy unattainable with traditional methods. These characteristics also highlight the significant advantages of employing such technologies in detecting distressed specimens during the critical phases of an environmental emergency caused by oil or other pollutants spills.

The Lampedusa Oceanographic Observatory: A multidisciplinary platform for ocean-climate monitoring and avian ecology

Antonella Di Gangi[1*], *Simone Colella[2], Elena Principato[3], Damiano Sferlazzo[3], Alcide di Sarra[3]*

1 Berta Maris, via Mannarazza s.n.c., 92031 Linosa, Italy

2 Institute of Marine Sciences, National Research Council, Rome, Italy

3 Dipartimento Sostenibilità, circolarità e adattamento al cambiamento climatico dei Sistemi Produttivi e Territoriali C.R. ENEA Casaccia - Via Anguillarese 301, 00123 Roma, Italy

*Presenter's email: ipomeaviolacea.adg@gmail.com

The Lampedusa Oceanographic Observatory (LOO) is a fixed offshore platform consisting of an elastic beacon buoy equipped with a suite of sensors for continuous monitoring of key atmospheric and oceanographic parameters. Installed in August 2015 and managed by the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), the observatory plays a vital role in long-term climate and marine research in the central Mediterranean. Situated approximately 3.3 nautical miles southwest of Lampedusa Island, in the Strait of Sicily, the buoy operates at a depth of 74 meters. In addition to its primary research function, the LOO buoy, installed in June 2023, is equipped with a high-resolution webcam that has unexpectedly documented intense bird activity around the structure. Since the webcam was installed until the end of 2024, the buoy has been frequently used as a temporary offshore roost by six bird species, including Western Cattle Egrets *Ardea ibis*, Sandwich Terns *Thalasseus sandvicensis*, Common Gulls *Larus canus*, Ospreys *Pandion haliaetus*, European Shags *Gulosus aristotelis* and Yellow-legged Gulls *Larus michahellis*. Notably, many of these observations occurred outside of peak migratory periods, suggesting that the platform may serve additional ecological roles beyond traditional migration stopovers. This incidental avian dataset highlights the potential of oceanographic observatories to contribute valuable information to seabird ecology, particularly regarding offshore movement patterns and habitat use. Moreover, these findings offer new perspectives for integrating avian monitoring into the design and operation of offshore infrastructures, with implications for biodiversity assessments and the development of mitigation strategies in marine spatial planning.

Symposium: Advancing avian research: Remote surveillance technologies for bird monitoring and behavioral studies

Chairs: *Sauro Giannerini & Flavio Monti*

Bird Concentration Monitoring System. Leveranging AI for monitoring and managing the risk associated with wildlife

Christian Angelici[1], Fabio Masci[1*], *Francesca Brighi*[1], *Alessandro Tarullo*[1], *Matteo Barato*[1], *Mattia Mazzoli*[1], *Giuseppe Nacci*[1]

1 The Edge Company, Via Flaminia 171, 47923 Rimini RN, Italy

*Presenter's email: fabio.masci@theedgecompany.net

The use of new technologies to support scientific monitoring is one of the most stimulating and evolving topics in modern science. A key challenge is developing systems capable of monitoring birds with greater accuracy and efficiency. BCMS® VENTUR is an innovative system that combines artificial intelligence, ultra-high-definition cameras and a priori scientific information to detect the presence of birds – both in flight and on the ground, individually or in flocks. It can count individuals, identify species, locate them in 3D space, track their direction, and predict their movements. These features make it a valuable tool for ecological monitoring and for mitigating birdstrike risks at airports and vertiports, as well as reducing collisions with wind turbines in wind farms. The analysis of data extrapolated from installations currently active around the world: Italy, Canada, United States, Germany, Croatia, Saudi Arabia and Bangladesh, including airports, wind farms and natural parks, show an average true positive and true negative rate above 85%, and a species classification accuracy also above 85%. This innovative technology allows continuous monitoring of wide areas, in all weather conditions and without time limitations. The presence of trained personnel ensures data reliability and its correct application for specific scientific or safety purposes. The analysis of collected data highlights the effectiveness of AI-based systems in supporting ornithological studies and impact mitigation. It also offers a valuable comparison with existing technologies such as radar, underlining the added value of artificial intelligence in ecological monitoring.

Using accelerometer data and machine learning to identify feeding events in Griffon Vultures

Ilaria Fozzi[1*], *Martina Scacco*[2], *Davide De Rosa*[1], *Chiara Costantino*[1], *Mauro Aresu*[3], *Marco Muzzeddu*[4], *Dionigi Secci*[5], *Kamran Safi*[6], *Fiammetta Berlinguer*[1]

1 Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100, Sassari, Italy

2 Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Landscape Dynamics - Dynamic Macroecology unit Zürcherstrasse 111 CH-8903 Birmensdorf, Switzerland

3 Via Crispi 5, 08015 Macomer, Italy

4 Agenzia Forestale Regionale per lo Sviluppo del Territorio e l'Ambiente della Sardegna (Fo.Re.S.T.A.S.), Via Roma 62, 07100 Sassari, Italy

5 Agenzia Forestale Regionale per lo Sviluppo del Territorio e l'Ambiente della Sardegna (Fo.Re.S.T.A.S.), Via Luigi Merello 86, 09100 Cagliari, Italy

6 Department of Migration, Max-Planck Institute of Animal Behavior, Radolfzell, Germany

*Presenter's email: fozzi.ilaria@gmail.com

Understanding the feeding behaviour of scavenging raptors is crucial for conservation and ecological research. Traditional methods for studying foraging in large soaring birds like the Griffon Vulture *Gyps fulvus* often rely on direct observation or GPS tracking, which provide limited behavioural resolution. In this study, we combined tri-axial accelerometry with machine learning to identify feeding events automatically, validated through field observations. We deployed GPS tags with accelerometer sensors on Griffon Vultures in Sardinia (Italy) and recorded acceleration data, which we analysed using a random forest model trained on manually labelled behavioural sequences. Feeding events were validated using camera traps and direct observations in the wild and in the aviary of a wildlife rescue centre. The model successfully distinguished feeding from other behaviours with high accuracy, providing a reliable method for detecting foraging behaviour. Our results demonstrate that accelerometry, combined with machine learning and field validation, offers a powerful tool for non-invasive, automated monitoring of foraging behaviour. These findings have broad applications, including assessing the overlap between foraging grounds and renewable energy infrastructure development, identifying areas with high ecotourism potential, and detecting heavily used habitats that may require increased protection, such as the designation of new protected areas. This study highlights the value of advanced bio-logging techniques for ornithology and supports the development of data-driven conservation strategies.

Camera trapping as a non-invasive tool for the study of bird feeding ecology: Lessons from Red-backed Shrike

Leonardo Ancillotto[1,2], Emiliano Mori[1,2], Marco Zaccaroni[3], Rocco Labadessa[4], Matteo Annessi[5], Jacopo Martino[6], Matteo Bianchi[7], Giulia Santalmasi[7], Sauro Giannerini[7*]

1 Consiglio Nazionale Delle Ricerche, Istituto di Ricerca sugli Ecosistemi Terrestri, Via Madonna del Piano 10, 50019 Sesto Fiorentino (Firenze), Italy

2 National Biodiversity Future Center, 90133 Palermo, Italy

3 Dipartimento di Biologia Universitá di Firenze via Madonna del Piano 6, 50019 Sesto Fiorentino (Firenze), Italy

4 Istituto sull'Inquinamento Atmosferico (CNR – IIA), Consiglio Nazionale Delle Ricerche, Bari, Italy

5 Dipartimento di Scienze, Università di Roma Tre, Roma, Italy

6 Dipartimento di Biologia e Biotecnologia "Charles Darwin", La Sapienza Università di Roma, Roma, Italy

7 Oasi Dynamo, Via Privata San Vito 1, Località Piteglio 51028 San Marcello Piteglio (Pistoia), Italy

*Presenter's email: g.sauro@hotmail.it

The use of automated cameras to detect wildlife and record their behavior has become an essential tool for researchers. The obvious advantages of cameras for recording bird behaviour include facilitating the ability to collect large amounts of data. The Red-backed Shrike *Lanius collurio* is a passerine bird that hunts from exposed perches, catching its prey mostly in low grasslands or on the ground and frequently consuming prey from favorite and predictable locations. All these aspects of the species' biology make it an excellent candidate for using autonomous cameras to assess foraging preferences, a highly needed piece of information to better plan and implement conservation actions. Since 2016, we have been testing a monitoring framework based on autonomous cameras to investigate shrike ecology, including diet composition, in a protected area of the northern Apennines. Based upon 50956 photographic records collected between 2022 and 2024 we were able to record >1500 predation events by 18 individually marked shrikes. Collaboration between ornithologists and entomologists allowed us to identify 35% of preyed items at species level, and 37.4% at genus level. The whole dataset comprised >80 arthropod taxa, identifying Orthopterans, and specifically bush crickets (Ensifera) as key food resources to the Red-backed Shrike, and that differences may arise between sexes and among individuals. The same pictures indicate birds' strong fidelity to perches and territory seasonally and yearly, respectively. The obtained images were also used for educational purposes, to raise awareness among the general public about the conservation of grasslands and of the Red-backed Shrike.

The dark side of the roost: Temporal distribution of nighttime activity of wintering Common Cranes *Grus grus* using camera traps

Flavio Monti[1*], *Giuseppe Anselmi[2], Francesco Ferretti[3]*

1 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

2 Alcedo APS, Via Don Minzoni 30, 58100, Grosseto, Italy

3 University of Siena, Department of Life Sciences, University of Siena, Via Mattioli, 4, 53100, Siena, Italy

*Presenter's email: flavio.monti@cnr.it

Diurnal species may be particularly vulnerable at night due to reduced visibility and increased predation risk. Thus, they are expected to have evolved specific antipredatory strategies, particularly in social species where collective vigilance and coordinated group dynamics can enhance survival. We investigated the nighttime activity patterns of wintering Common Cranes *Grus grus* in central Italy (2022–2023) using camera traps. Specifically, we examined how activity and vigilance behaviors varied across different phases of the night (twilight vs darkness), moon phases (as a proxy for visibility) and over the course of winter. We hypothesized that both activity and vigilance would be influenced by these temporal factors, with lower vigilance expected during brighter moon phases and changes in behavior as winter progressed. Overall, we collected 1394 videos across 49 nights. Cranes were highly active (92.9% of videos), with frequent vigilance behavior (72.8%). On average, 89.4% ± 2.1 of detected individuals per night were active, while 44.8% ± 3.9 displayed vigilance. Using GLMMs, we found that both activity and vigilance diminished at night compared to twilight periods, but increased significantly as winter progressed. Vigilance increased under new moon conditions. Additionally, display behavior was higher in early morning and during night, and increased significantly later in winter, likely reflecting pre-migratory behavioral shifts. These findings highlight the role of environmental and temporal factors in shaping nighttime activity patterns in a social diurnal species, suggesting that Common Cranes adjust their antipredatory strategies dynamically in response to changing conditions, offering new insights into how diurnal species navigate nighttime risks.

Assessing the effects of Artificial Light at Night (ALAN) on Western Barn Owls' *Tyto alba* spatial behavior in Western Switzerland

Margherita Albanese[1*], *Anne-Caroline Heintz[1], Ramon Sager[1], Alexandre Roulin[2], Bettina Almasi[1], Marco Apollonio[3], Jacopo Cerri[4]*

1 Vogelwarte - Swiss Ornithological Institute

2 UNIL - University of Lausanne

3 UNISS - University of Sassari

4 Mammal Research Institute Bialowieza

*Presenter's email: margheritaalbanese98@gmail.com

Artificial light at night (ALAN) is a pervasive anthropogenic disturbance that disrupts nocturnal wildlife behavior, physiology, and ecosystem interactions. Despite growing concern, its effects on nocturnal predators remain understudied. We investigate how ALAN influences movement behavior, space use, and habitat selection in the Western Barn Owl *Tyto alba*, a nocturnal raptor of conservation concern in Switzerland that nests and forages near human infrastructure. We collected movement data during the 2019, 2020, and 2024 breeding seasons, deploying 269 GPS devices across monitored nest boxes. Additional data were recorded in 2025 (May–August) on ~40 breeding pairs. These owls nest in artificial boxes, enabling standardized monitoring and collection of biometric and reproductive data. Adults were captured during chick rearing and equipped with lightweight multi-sensor loggers (GPS, tri-axial accelerometer) to track fine-scale movements during commuting and foraging. GPS locations were recorded at 1-second intervals, with devices active for 5 ± 1 nights. To assess ALAN's influence on hunting, we integrated owl movement data with high-resolution nocturnal light maps from Jilin-1 satellite imagery, providing detailed artificial light exposure. These data assessed whether owls avoid or use illuminated areas, and quantified home range,

flight paths, and habitat selection along light gradients. We hypothesize that Western Barn Owls avoid brightly lit areas, particularly during foraging and prospecting. This behavior may cause functional habitat fragmentation, reducing foraging efficiency and affecting reproductive success. Our findings address a key gap in nocturnal raptor ecology and support strategies to mitigate light pollution in illuminated human-dominated landscapes.

ECO-AID: An integrated monitoring framework for bird conservation using Ecoacoustics, Artificial Intelligence, and Satellite Data Transmission

Alessia Portaccio[1*], *Alberto Testolin[2], Roberto Sacchi[2], Marco Giordani[1], Sara Pizzi[3]*

1 DiSTA - Dipartimento di Scienze della Terra e dell'Ambiente, Università di Pavia, Pavia, Italy

2 DPG - Dipartimento di Psicologia Generale, Università di Padova, Padova, Italy

3 DEI - Dipartimento di Ingegneria dell'Informazione, Università di Padova, Padova, Italy

*Presenter's email: alessia.portaccio@unipd.it

Despite the presence of various protected areas in Italy, many fall short of meeting their conservation objectives—especially regarding bird species, which are key indicators of ecosystem health. One major limitation is the absence of an efficient, scalable system for monitoring avian biodiversity and tracking population trends over time and space. Addressing this gap, the ECO-AID project is developing an innovative framework designed specifically for the large-scale, long-term monitoring of birds in remote and ecologically significant areas. At its core, ECO-AID integrates a distributed network of smart sensors capable of continuously recording and processing environmental and biological sounds, focusing on bird vocalisations. By applying advanced signal processing techniques in artificial intelligence and deep learning algorithms, the system can automatically detect and identify bird species in real time. This allows for high-resolution, non-invasive monitoring of avian presence, diversity, and activity patterns. To overcome the challenges of remote data access, the framework incorporates satellite communication to transmit compressed, relevant summaries to a central operating hub for further analysis. This approach ensures constant surveillance of key habitats, whether for routine monitoring or in response to specific conservation triggers, such as migratory events or signs of population decline. ECO-AID is inherently interdisciplinary, combining expertise in ecoacoustics, AI, and satellite technology. It offers a powerful tool to enhance the to protect and manage bird communities in an era of rapid environmental change.

Symposium: Studying birds outside the breeding season: New evidence and challenges

Chairs: *Samuele Ramellini & Giacomo Assandri*

Winners and losers in the city: A seasonal perspective

Riccardo Alba[1*], *Fabio Marcolin[2], Giacomo Assandri[3], Luca Ilahiane[4], Francesca Cochis[1], Mattia Brambilla[4], Diego Rubolini[4], Dan Chamberlain[1]*

1 Department of Life Sciences and System Biology, University of Turin, Via Accademia Albertina 13, 10123 Turin, Italy

2 Forest Research Centre and Associated Laboratory TERRA, School of Agriculture, University of Lisbon, Lisboa, Portugal

3 University of Eastern Piedmont, Alessandria, Italy

4 Department of Environmental Sciences and Policy, University of Milan, Milan, Italy

*Presenter's email: riccardo.alba@unito.it

Urbanization is a key driver of global biodiversity decline, profoundly reshaping animal communities. While most studies on urban birds focus on the breeding season, we adopt a multi-season approach to identify species responses and their associated traits along an urbanization gradient. Conducting bird surveys across six Italian cities using a stratified design, we found that bird assemblages respond differently to urbanization depending on the season. 'Winners'—urban exploiters—exhibited traits such as colonial nesting, high productivity, and longevity. In winter, they adopted generalist foraging strategies and solitary behavior. In contrast, 'losers'—urban avoiders—were often insectivorous, ground-nesting, and short-distance migratory species. Notably, intra-species variation emerged, with some species wintering in highly urbanized areas despite avoiding them for breeding. Our findings highlight the importance of considering seasonal dynamics in urban ecology and emphasize the need for multi-season research and urban planning to support biodiversity conservation in cities, particularly in regions where supplementary feeding is uncommon.

Predictors of the initiation of bird vocal activity at the transition between non-breeding and breeding season

Fulvio Fraticelli[1*], *Marco Gustin[2], Roberto Lardelli[3], Samuele Ramellini[4]*

1 Stazione Romana Osservazione e Protezione Uccelli, Roma, Italia

2 Lipu-BirdLife, Parma, Italia

3 Ficedula, Morbio Inferiore, Svizzera

4 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australian Capital Territory, Australia

*Presenter's email: f_fraticelli@hotmail.com

Animals are predicted to time their life-history stages, schedules and behavioural responses to macro-ecological factors and resource conditions. Such synchronization between animals and the environment is particularly important in seasonal or highly variable environments where dramatic changes in conditions can affect individual fitness. For instance, birds mistiming the singing activity might be unable to convey sexual signals or incur in physiological costs with potential negative effects on the following breeding season. While these costs might have substantial effects on the individual ability to reproduce, there still remains a knowledge gap on the effect of environmental changes on singing behaviour. Such bias can be explained by the remarkable challenge of study-

ing the schedule of bird song over large scales and broad environmental ranges. In this study, we leveraged data collected through the ornitho.it citizen science platform to answer the question of which broad environmental parameters (ecological, anthropogenic and geographical) drive changes in one of the most iconic bird behaviours – bird song. We analyse presence/absence data of song behaviour over a highly diverse national scale spanning a broad range of environmental conditions and human disturbance. We show how seasonality (phenology), weather (e.g. temperature), anthropogenic (e.g. urbanisation), and geographical (e.g. latitude) drivers shape the emergence of this seasonal behaviour. Overall, our results point out large variation in song activity based on macro-ecological factors. While individuals might be able to plastically vary their schedules based on external factors, future environmental changes might significantly impair birds' ability to adapt their schedules to environmental conditions.

Linking non-breeding social behaviour with breeding territoriality: The case of the Superb Fairywren *Malurus cyaneus*

Samuele Ramellini[1*], *Franziska Hacker[1], Helen L. Osmond[1], Ettore Camerlenghi[2], Andrew Cockburn[1], Damien R. Farine[1]*

1 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australian Capital Territory, Australia

2 Collegium Helveticum, ETH, Zürich, Switzerland

*Presenter's email: samuele.ramellini@anu.edu.au

Seasonal breeders concentrate their breeding efforts in a short life-history stage, during which they can show high territoriality. Conversely, many species become more tolerant of conspecifics during the non-breeding season and form social groups. Such seasonal differences in behaviours are thought to be a strategy to reduce the costs arising from year-round territoriality, but it is also possible that sociality can reduce future reproductive conflict. Here, we propose that social behaviours outside of the territorial period can increase survival of neighbours and reduce conflict with these neighbours by re-establishing previous territorial boundaries in the subsequent breeding period, ultimately also increasing the chance of successfully keeping the territory. Here, we combine over 30 years of data on Superb Fairywren *Malurus cyaneus* demography, group membership, and breeding success to quantify how over-winter social stability translates to territory stability (from one season to the next) and future reproductive performance. Our results show that birds that maintained more neighbours from one breeding season to the next had more similar territory areas than birds that maintained fewer neighbours. This suggests that sociality during winter can have carry-over effects on the following breeding season and that preferential association during the non-breeding season could play a role in offsetting the costs of territory establishment and allow birds to focus on expending energy on reproduction rather than costly territorial maintenance during this critical period. These benefits could explain the emergence of the complex multilevel society recently described in sedentary seasonal breeders, such as the Superb Fairywren.

Spatial and temporal variation in the distribution and abundance of birds wintering in Italy: The AIRONE project

Diego Rubolini[1*], *Gianpiero Calvi[2], Enrico Caprio[3], Fulvio Fraticelli[4], Marco Gustin[5], Roberto Lardelli[6], Luca Puglisi[7], Maurizio Sarà[8], Roberto Tinarelli[9], Mattia Brambilla[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano

2 Studio Pteryx

3 Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università degli Studi di Torino

4 SROPU - Stazione Romana Osservazione e Protezione Uccelli
5 LIPU - BirdLife Italia
6 FICEDULA - Associazione per lo studio e la conservazione degli uccelli della Svizzera italiana
7 COT - Centro Ornitologico Toscano
8 Dipartimento STEBICEF, Università degli Studi di Palermo
9 AsOER - Associazione Ornitologi dell'Emilia-Romagna
*Presenter's email: diego.rubolini@unimi.it

Distribution atlases of wild species constitute a fundamental tool for biodiversity conservation and management. Realizing such atlases at broad spatial scales (national or transnational) is however challenging because it requires huge economic and logistic efforts. Such challenges can be partly overcome by leveraging on coordinated efforts of volunteer observers to data collection. Here, we present the first results of the AIRONE project, which aims at summarising 15 years of monitoring of wintering bird species in Italy through both non-standardised and standardised citizen science surveys. The AIRONE project is the continuation of the first Italian wintering bird atlas project, initially launched in 2010. Data for the AIRONE project have been collected through the Ornitho.it web platform and the NaturaList mobile app between winter (December-January) 2010-2011 and 2024-2025. Based on over 4.6 million georeferenced observations collected by over 4300 volunteer observers, we generated distribution maps for all widespread wintering species for three distinct 5-year time periods at the 10 km scale. We further investigated spatial and temporal patterns in the distribution and abundance for the most widespread species based on quantitative bird surveys of over 1200 1 km time-constrained linear transects, evenly spread across the country, that were surveyed once during winters 2010-2011/2015-2016 and re-surveyed during winter 2024-2025. The observed spatial and temporal changes in winter bird distributions are discussed in light of the ongoing rapid changes in the Italian winter climate and of demographic changes of both Italian and European bird populations.

Ontogeny of natal dispersal strategies across the non-breeding period in a long-lived raptor species

Benedetta Catitti[1*], *Damien Farine[2], Florian Orgeret[3], Patrick Scherler[1], Martin Grüebler[1]*

1 Swiss Ornithological Institute (Vogelwarte Sempach)
2 Department of Evolutionary Biology and Environmental Studies, University of Zurich, Winterthurerstrasse 190, 8057 Zurich, Switzerland
3 La Rochelle Université, 23 avenue Albert Einstein, BP 33060 - 17031 La Rochelle
*Presenter's email: benedetta.catitti@vogelwarte.ch

Behavioural specialisation, defined as consistent individual differences in behaviour, can strongly influence how animals interact with their environment. However, its role in natal dispersal remains understudied, as dispersal is often treated as a single event rather than a prolonged process. In long-lived, territorial species like the Red Kite *Milvus milvus*, dispersal unfolds over several years, offering the opportunity to investigate specialisation in prospecting behaviour. Using GPS tracking on 127 non-breeding red kites, we tested whether individuals consistently follow different prospecting strategies, such as targeting low-density areas with fewer competitive costs or high-density, resource-rich areas with greater intraspecific competition. We found repeatable individual differences in space use, with some kites returning to areas with similar breeding density profiles across years. These specialisations were linked to settlement patterns, with specialised individuals more likely to settle in areas that matched their earlier prospecting locations in both spatial position and breeding density. Our findings suggest that specialisation in prospecting behaviour plays an important and previously overlooked role in shaping dispersal dynamics.

Post-breeding habitat selection of the Purple Heron *Ardea purpurea* in wetlands of southern Europe

Pablo Vera[1*], *Mauro Fasola[2], Juan S. Monrós[3], Celia Peralta Aranda[3], Lucien Bolboaca[4], Elisa Cardarelli[5], Benedetta Catitti[6], Jacopo G. Cecere[7], Jocelyn Champagnon[8], Alexandru Dorosencu[4], Olivier Duriez[9], Martin Gruebler[6], Enrico Viganò[10], Diego Rubolini[11], Davide Scridel[2], Milo Manica[12], Michelangelo Morganti[2,13]*

1 Servicio de Conservación de Ambientes Acuáticos, SAV/Servicio Devesa-Albufera, Ajuntament de València, Spain

2 CNR-IRSA, Consiglio Nazionale delle Ricerche – Istituto di Ricerca sulle Acque, Brugherio (MB), Italy

3 Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia, Spain

4 DDRI Delta Danube Research Institute, Tulcea, Romania

5 "Indipendente"

6 Vogelwarte, Sempach, CH

7 ISPRA, Istituto Superiore Protezione Ricerca Ambientale, Ozzano dell'Emilia (BO)

8 Tour Du Valat Research Institute, Arles, France

9 Universitè de Montpellier, Montpellier, France

10 C.R.O.S. Varenna, Varenna (LC), Italy

11 Università degli Studi di Milano, Milano, Italy

12 GIO Gruppo Insubrico Ornitologia

13 NBFC, Palermo, Italy

*Presenter's email: pablovera_g@hotmail.com

The Purple Heron *Ardea purpurea* is a migratory species of conservation concern in Europe, primarily due to the ongoing degradation and loss of wetlands within its breeding range. This study examines post-breeding habitat selection in southern European wetlands using spatial data collected through GPS tracking. Between 2018 and 2022, 42 adult individuals were equipped with GPS/GSM devices over 6 key breeding wetlands: Albufera de Valencia (Spain), Camargue (France), the Po Valley (Italy, across three sites), and the Danube Delta (Romania). For analysis, we selected GPS locations recorded outside of the breeding colonies and prior to the first migration-related movements, corresponding approximately to the July–September period. Location data were overlaid on a land-use map with nine levels, derived from the CORINE Land Cover. Habitat selection ratios were calculated in a use-versus-availability framework within the 99% kernel utilization distribution. The results indicated a marked preference for natural wetland habitats. Although rice fields were frequently visited, they appear to function as suboptimal habitats compared to natural wetlands. Notably, 38% of individuals exhibited substantial pre-migratory movements of up to 400 km, underscoring the significance of both expansive wetlands and smaller landscape features such as rice fields in supporting the species during the post-breeding period. This study provides important insights into habitat use beyond the core breeding season, emphasizing the need for integrated conservation strategies that prioritize both natural and semi-natural wetlands. Such approaches are essential to ensure the long-term viability of Purple Heron populations and other wetland-dependent species across Europe.

Session: Migration I

Chairs: *Ugo Mellone & Michelangelo Morganti*

Wintering trends of the Common Crane in Northern Apulia from 2000 to 2025

Matteo Felice Caldarella[1*], *Maurizio Marrese[1], Vincenzo Rizzi[1], Michela Ingaramo[1], Maurizio Gioiosa[1], Salvatore Giannino[1], Giuseppe Agnelli[1], Michele Bux[1]*

1 Centro Studi Naturalistici Onlus

*Presenter's email: ecomatteo@gmail.com

The study focuses on wintering Common Cranes *Grus grus* in northern Apulia (Italy) particularly in the area known as "Capitanata" (Province of Foggia). The data cover the period from 2000 to 2025, during which censuses were carried out in January at known roosting sites. In Capitanata the species has always been relatively common during migratory periods, occurring in autumn (November-December), and spring (February-March) with variable numbers, sometimes up to several thousand individuals crossing the region without stopping for wintering. However, long-term monitoring at roosts over 25 years has revealed a clear positive trend in wintering populations, a remarkable change for a species that was virtually absent (as wintering) from the region until late 19th century. Two main roosting areas have been identified: 1) Oasi Lago Salso and 2) Saltpans of Margherita di Savoia. The two roosting sites are within the SPA IT9110038 "Paludi presso Il Golfo di Manfredonia" covering parts of the Trinitapoli, Cerignola, Zapponeta, and Manfredonia municipalities. The positive trend is evident when comparing the first year census in 2000, which recorded 102 cranes, to the most recent data from 2025, which recorded 2.950 individuals(with a peak of 4.254 in January 2023). These findings highlight a remarkable exponential increase in the wintering population over the past 25 years, establishing Capitanata as one of the most important wintering areas for the species in the Italian peninsula.

Changes in fall migration timin g of European Honey Buzzard *Pernis apivorus* in Western Alps

Michela Fadda[1*], *Fabiano Sartirana[2], Elisa Avanzinelli[2], Luca Giraudo[3], Stefano Leonardi[4]*

1 Università degli studi di Parma

2 Ente di gestione delle Aree Protette delle Alpi Marittime

3 Via Rana 10 – 12012 Boves (CN)

4 Dip. SCVSA - Università degli Studi di Parma

*Presenter's email: fadda.michela99@gmail.com

The aim of this work is to investigate if the European Honey Buzzard's timing of fall migration in Valle Stura di Demonte (CN) is changed. We also want to understand if there is a relationship between the migration of this bird of prey and the meteorological variables. We investigate the long-term trends in fall migration phenology of Honey Buzzard using a 33 years dataset collected in Valle Stura. Data are analysed to obtain six variables, that could describe the timing of migration: migration midpoint, average peak day, weighted average peak day, first peak day, mean of the days and standard deviation. Results show an average advanced of 2.6 days during this period. We also use daily and annual data of average temperature, average precipitation and average speed of wind to understand the relationship between the migration and meteorological variables. The daily analysis of meteorological variables shows as temperature (until a value of 20°C: after this value, observed birds decreased)

and precipitation grew, the numbers of observed birds increased. Instead, the annual analysis of meteorological variables, show that in the warmer years, the average peak day, weighted average peak day and first peak day are postponed during the migration. These results are very useful for the conservation of a highly valuable protected species (Annex I Birds Directive EU), which remains subject to persecution in parts of the Mediterranean region.

Climate conditions drive co-migration fidelity in trans-Saharan birds at a Mediterranean spring stopover site

Erica Calabretta[1*], *Ivan Maggini[1], Leonida Fusani[1,2], Massimiliano Cardinale[3], Claudio Carere[4], Bruno Bellisario[4]*

1 Konrad Lorenz Institute of Ethology, University of Veterinary Medicine, Vienna, Austria

2 Department of Behavioural and Cognitive Biology, University of Vienna, Austria

3 Department of Aquatic Resources, Swedish University of Agricultural Sciences, Lysekil, Sweden

4 Department of Ecological and Biological Sciences, University of Tuscia, Viterbo, Italy

*Presenter's email: erica.calabretta@gmail.com

In recent decades, meteorological perturbations have intensified rapidly in the Mediterranean region, making the crossing of such a large ecological barrier even more challenging for migratory landbirds. Social interactions as collective navigation might enhance migratory success, for example by correcting the direction and orientation during strenuous flights. However, their role in migratory ecology remains largely unexplored. This study investigated whether and how changing climatic conditions along the Mediterranean route influence the temporal co-occurrence of 15 trans-Saharan species upon arrival at a stopover island during the pre-breeding migration. We examined how the seasonal North Atlantic Oscillation (NAO) index and anomalies in tailwinds and temperatures (from the seasonal climate normal 1993–2023) influence the temporal co-occurrence of migratory birds. To do this, we analyzed 17 years of standardized ringing data (2007–2023). Using feather samples from 2022, we also assessed the effects of non-breeding isotopic niche distances on species clustering in their arrival at the stopover site. Our results showed that while the temporal co-occurrence ('co-migration fidelity') increased significantly throughout years, it sharply decreased when birds experienced higher tailwinds during the sea crossing. Besides, species with similar non-breeding isotope niches tend to arrive simultaneously at the stopover site. These results suggest that overlapping non-breeding ecology and less favorable weather along the sea route resulted in migrating birds arriving more synchronously at the stopover site, potentially as a behavioral strategy to successfully complete the Mediterranean crossing under changing environmental conditions.

Modulation of sleep in relation to ambient temperature during migration in the Garden Warbler *Sylvia borin*

Maia Pastres[1*], *Ivan Maggini[1], Massimiliano Cardinale[2], Leonida Fusani[1,3], Andrea Ferretti[4]*

1 Konrad-Lorenz Institute of Ethology, University of Veterinary Medicine, Vienna, Austria

2 Swedish University of Agricultural Sciences, Department of Aquatic Resources,Institute of Marine Research, Lysekil, Sweden

3 Department of Behavioural and Cognitive Biology, University of Vienna, Vienna, Austria

4 Avian Sleep Group, Max Planck Institute for Biological Intelligence, Seewiesen, Germany

*Presenter's email: maiapastres97@gmail.com

Several birds adopt migration as an important life-history strategy, but the passage through ecological barriers causes loss of energy reserve and increases physiological stress. To limit this, birds need stopover sites to rest and restore energy. In previous works, we analyse the relationship between sleep, metabolic state and energy

conservation strategies, in particular the consequences of the sleep posture (untucked or tucked) on the metabolism and the vigilance. We demonstrated that sleeping tucked results in metabolic energy savings, at the cost of high predation risk. In this work, we evaluated the effect of temperature to understand if the metabolic cost of each posture varies when temperature changes. We hypothesized that when the temperature requires lower metabolic costs, the birds can afford to sleep in a safer but less energy efficient position (untucked). Preliminary results show that, except for the tucked posture, metabolic consumption decreases as the temperature increases and birds sleep more in untucked position at higher temperatures. This therefore confirms the initial hypothesis and emphasizes how birds can adapt their sleeping patterns to environmental conditions.

Factors affecting route choice European Honey Buzzards breeding near a migratory divide

Gianpasquale Chiatante[1], Ugo Mellone[2], Enikő Anna Tamás[3,4], Giacomo Dell'Omo[5], Béla Kalocsa[4], Péter Óvári[4], István Péntek[6], Miklós Váczi[7], Nicolantonio Agostini[2*]

1 Università della Tuscia, Dipartimento di Scienze Ecologiche e Biologiche, Largo dell'Università sn, 01100 Viterbo

2 MEDRAPTORS (Mediterranean Raptor Migration Network), via Carlo Alberto 4, 89046 Marina di Gioiosa Jonica, Italy

3 University of Public Service, Faculty of Water sciences, Bajcsy-Zs. utca 12-14, 6500 Baja, Hungary

4 MME BirdLife Hungary, Költő st. 21, 1120 Budapest, Hungary

5 Ornis Italica, Piazza Crati 15, 00199 Rome, Italy

6 Bükk National Park, Sánc u. 6, 3304 Eger, Hungary

7 Fertő -Hanság National Park, Rév-Kócsagvár 4, 9435 Sarród, Hungary

*Presenter's email: nicolantonioagostini@gmail.com

We analyze the migration strategies of adult European Honey Buzzards *Pernis apivorus* breeding in Central-Eastern Europe, focusing on their routes, timing, and environmental influences. Using GPS tracking data from 15 individuals breeding in Hungary between 2015 and 2024, we analyzed migration parameters such as departure and arrival dates, travel distances, speeds, stopovers, and route selection. Results indicate that in autumn, individuals followed three main migratory flyways: the Western Mediterranean (via Spain, 44.8%), the Central Mediterranean (via Italy, 31.0%), and the Eastern Mediterranean (via Greece, 24.1%). Route choice was influenced primarily by departure longitude and weather conditions. Birds taking the Greek route tended to migrate faster over the Sahara than those using other paths. Spring migration exhibited a different pattern, with no birds using the Greek route. Most individuals (72.2%) followed the Italian flyway, while a smaller portion (27.8%) migrated via Spain. Migration in spring was significantly faster, with birds covering more direct routes, suggesting a time-minimization strategy to reach breeding sites earlier. Additionally, our study revealed significant sex-based differences in migration behavior in this period, with males arriving at breeding sites earlier than females. Some individuals demonstrated high interannual variability in route selection, adapting to varying atmospheric conditions. Our findings highlight the flexibility of migration strategies in Honey Buzzards, demonstrating how individuals optimize their routes based on seasonal constraints and environmental conditions.

At-sea surveys expose migration of pelagic seabirds through the Central Mediterranean

Marie Claire Gatt[1*], *Nicholas Galea[2], Benjamin Metzger[1]*

1 Independent researcher

2 BirdLife Malta

*Presenter's email: mcgatt57@gmail.com

Much of the effort towards the monitoring of bird migration is centred in migratory landbird or shorebird counts at terrestrial vantage points. However, a proportion of avian passage is not accessible with these methods – the pelagic migration of seabirds. Here we present data from 3 years of at-sea surveys, a decade apart, around the Maltese Islands in the Central Mediterranean. Surveys were conducted intensively in 2012 and 2013 as part of the LIFE Malta Seabird project carried out by BirdLife Malta, and a less intensive transect set-up carried out between 2023 and 2024 for the collection of data for Article 12 reporting under the EU Birds Directive. These at-sea surveys, following ESAS (European Seabirds At Sea) methodology, substantiated our knowledge of the use of the Maltese Fisheries Management Zone for the migratory stopover of Black Terns *Chlidonias niger* in late summer and early autumn, displaying a strong association with fishery and aquaculture infrastructure. Pelagic trips specifically to tuna pens in recent years have exposed thousands of Black Terns stopping over at these potential food sources annually. Sightings also suggest the active westerly migration of Mediterranean Gulls *Ichthyaetus melanocephalus* and Scopoli's Shearwaters *Calonectris diomedea* through Maltese waters in autumn, and movements of Little Gulls *Hydrocoloeus minutus* in March and December. Low-intensity surveys may not be sufficient to estimate passage population numbers in the open sea, but provide clues into offshore activity for more directed surveying.

Round table: Nature Restoration Law: Roles and opportunities for the ornithological community

Organizers:
Federica Luoni, *Lipu BirdLife Italia*
Claudio Celada, *Lipu BirdLife Italia*

The Nature Restoration Law is a key act to reverse biodiversity loss. To implement it, Member States must draw up a National Restoration Plan containing data on the conservation status and concrete restoration measures. For the plan to be effective, it will be essential that the drafting process is participatory and that all available scientific knowledge is included. The ornithological community can play a key role, both because it is the repository of knowledge on the state of bird conservation and because of it has the knowledge of the necessary environmental restoration measures that should be included in the plan.

LifeWatch Italy contribution

Supporting the biodiversity research lifecycle with the LifeWatch Italy digital infrastructure

Ilaria Rosati[1,2*], *Andrea Tarallo[1], Cristina Di Muri[1], Martina Pulieri[3], Mariantonietta La Marra[3], Davide Raho[1], Francesco De Leo[1], Alberto Basset[2,3],[4]*

1 National Research Council (CNR), Research Institute on Terrestrial Ecosystems (IRET), Lecce, Italy
2 National Biodiversity Future Center (NBFC), Palermo, Italy
3 University of Salento, Department of Biological and Environmental Sciences and Technologies, Lecce, Italy
4 LifeWatch ERIC Service Centre, Lecce, Italy
*Presenter's email: ilaria.rosati@cnr.it

Biodiversity and ecosystems services are declining at an alarming rate, and this trend is expected to intensify due to the human-induced climate change. Addressing this biodiversity crisis requires that intensive data collection or mobilisation initiatives are coupled with efficient methods for data integration, facilitating complex analyses and unveiling appropriate evidence-based solutions. The smooth integration and reuse of research data can only be achieved if they are FAIR, i.e. Findable, Accessible, Interoperable, and Reusable. In this context, national research infrastructures are key in supporting the generation, management and publication of FAIR digital research products. The LifeWatch Italy digital infrastructure supports these tasks, within the ecological domain, by providing services and platforms sustaining the core stages of the research lifecycle, including data collection, curation, publication, analysis and reuse. At the core of the infrastructure lies the Data Portal, used to share and manage data and associated metadata through a curation workflow that include taxonomic validation against national and international taxonomic backbones and the use of controlled vocabularies for metadata annotation. Within LifeWatch, interoperability is achieved through the adoption of international standards, persistent identifiers, model languages and open formats. Usability of provided services and platforms is ensured through helpdesk services and the e-traning platform, whereas discoverability is capitalised through the Metadata Catalogue, the main access point to published datasets, scripts, workflows, services, training materials and other research outputs. These can include citizen science data and bioacoustics information shared by scientists, citizens and amateurs through dedicated web applications. The infrastructure aspires to play a key role as national hub for biodiversity and ecosystem research, supporting the scientific community, and ensuring long-term usability of research outputs.

WEDNESDAY 10 SEPTEMBER 2025

Plenary

Global change and avian biodiversity: Threats, science, and solution

Andrea Santangeli[1*]

1 Institute for Mediterranean Studies (IMEDEA), CSIC-UIB, 07190, Esporles, Spain

*Presenter's email: andrea.santangeli@gmail.com

Global change is reshaping our world at an extraordinary pace. Land-use intensification, pollution, climate change, and the expansion of human activity into wild areas are converging with rapid societal shifts in consumption and technology. These forces pose profound threats to avian biodiversity, but they also offer new avenues for solutions. Birds, as sensitive and visible indicators of environmental change, reveal the deep interconnections between ecosystems, human health, and planetary well-being. This Plenary will explore how global pressures are altering bird populations and communities across biomes, and how avian science is central to understanding and addressing these transformations. I will highlight emerging tools-from robotics and AI-driven avian monitoring and passive/remote sensing to citizen science-that are enhancing our capacity to monitor change and inform targeted conservation. Drawing on real-world examples, I will show how bird conservation can serve as a catalyst for ensuring ecosystems' health and human wellbeing. Finally, this talk will link avian conservation to the transformative change needed to avert the biodiversity crisis, emphasizing the need to address root drivers of biodiversity loss through integrated, cross-sectoral strategies.

Session: Global changes and emerging threats II

Chairs: *Giulia Masoero & Diego Rubolini*

How to live in the city? Responses of a bird of prey to urbanisation

Gianluca Damiani[1*], *Giacomo Dell'Omo[2], David Costantini[1]*

1 Department of Ecological and Biological Sciences, University of Tuscia (Italy)

2 Ornis italica

*Presenter's email: gianluca.damiani@unitus.it

Urbanization is among the most rapidly expanding human-driven changes in land cover globally. Birds of prey, as predators, are particularly sensitive to the novel selective pressures of urban habitats, including altered food availability, nesting opportunities, and exposure to pollutants. The Common Kestrel *Falco tinnunculus* serves as a model species to study the consequences of urban life, due to its widespread distribution, generalist diet, and presence in different habitats. In this multi-year research in Rome (Italy), we assess how kestrels respond to urban environment relying on different key biological metrics including: reproduction, movement ecology, feeding ecology, immunology, stress physiology, transcriptomics, genomics. Our results show that urban kestrels lay earlier than kestrels breeding in natural or rural habitats, without significant differences in reproductive success. Analysis of movement ecology by GPS-data and diet indicate different patterns of habitat use and prey composition. Compared to non-urban kestrels, urban individuals also display different levels of oxidative stress and immune metrics and of several genes linked to metabolism and immunity, possibly reflecting trade-offs associated with city-life. Our findings suggest that urban kestrels are facing new challenges in urban environments but are able to adapt through behavioural and physiological adjustments. Compared to other European cities, the urban area of Rome might not be detrimental for Common Kestrels, possibly due to the abundance of green areas and other features of its urban landscape. Our research contributes to our understanding of how raptors cope with anthropogenic changes of natural habitats, providing insights for conservation and urban wildlife management.

Birds eat disproportionally more invasive insects in cities than in forests

Marco Basile[1], Carolina Cornejo[1], Rosario Balestrieri[2*], *Matthias Tschumi[3], Eckehard Brockerhoff[1]*

1 Swiss Federal Research Institute WSL, Zürcherstrasse 111, 8903 Birmensdorf, Switzerland

2 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Dep. of Integrative Marine Ecology, c. Torre Spaccata 87071, Amendolara (CS), Italy

3 Swiss Ornithological Institute, Seerose 1, 6204 Sempach, Switzerland

*Presenter's email: rosario.balestrieri@szn.it

The potential spill-over of invasive insect species from urban to natural habitats may be mitigated by improving biotic resistance of urban green areas. Biotic resistance is enhanced by predators and other natural enemies of insects, such as insectivorous birds, but they are also affected by altered habitat conditions typical of urban areas. We aimed at understanding the incidence of invasive arthropods in the diet of birds and contrasting diets from urban and forest habitats. By employing high-throughput prey DNA detection from faecal samples, we obtained species composition of prey assemblages from 61 birds of 13 species, including 18 forest birds and 43 urban birds from Switzerland and Italy. We determined the diversity and evenness of the prey assemblages and the contribution of invasive species to overall dissimilarity between urban and forest habitats. We found 259 zOTUs assigned to 221 arthropod species, of which 13 were invasive insects. We found 70.1% less invasive species in forests, and 27.1% more in urban samples than what would be expected by chance. Diversity analysis showed

that prey assemblages in forest habitats were less diverse but with more evenly-distributed species occurrences than prey assemblages in urban habitats. The contribution to unevenness and overall dissimilarity across samples from urban habitats was higher for invasive than native insect species. We provided direct evidence of the role of birds as predators of invasive species and their disproportional reliance on them in urban habitats. Our findings suggest that urban birds may buffer against the establishment of populations of invasive species.

Impact of extreme climatic events on an urban nesting insectivorous bird, the Alpine Swift

Monti Spinas[1,2], *Pierre Bize*[1], Giulia Masoero[1*]

1 Swiss Ornithological Institute, Sempach, Switzerland

2 University of Zurich, Zurich, Switzerland

*Presenter's email:giulia.masoero@gmail.com

Extreme climatic events (ECEs) are changing in frequency and intensity due to climate change, posing significant challenges to wildlife. Understanding their impact on species' reproductive success is critical for conservation efforts. This study aims to assess how ECEs influence Alpine Swifts *Tachymarptis melba* reproduction and nestling development. Alpine swifts are highly aerial insectivorous birds, and the amount of flying insects strongly drops on cold and rainy days. Furthermore, they are cavity breeders and often colonise urban environments by breeding under roofs that can get particularly warm during hot days. First, we defined ECEs as days when the temperature extremes either exceed the 90th percentile or fall below the 10th percentile during critical life stages of Alpine swift nestlings (incubation and growth). Over the past 30 years, the frequency of ECEs has changed; specifically, the number of cold days has decreased, while the number of hot days has increased. Using a long-term dataset (1999-2024), we then examined the impact of ECEs on Alpine Swifts during their reproductive period. We found an effect of ECEs on reproductive success and nestling growth. The number of hot days during incubation was associated with reduced hatching and fledging success, slower body mass and wing development. The number of cold days during nestling growth reduced wing growth. This study highlights the importance of understanding microclimatic variability within urban breeding sites to mitigate the impacts of ECEs on avian populations and underscores the need for long-term monitoring to assess responses to climate change.

Species Distribution Modeling to support urban biodiversity planning: A study in Turin and Milan (Italy)

Enrico Caprio[1,2*], *Giacomo Assandri*[3], *Riccardo Alba*[1,2], *Fabio Marcolin*[1], *Irene Regaiolo*[1,2], *Dan Chamberlain*[1,2]

1 Università di Torino

2 NBFC, National Biodiversity Future Center, Palermo, Italy

3 Università del Piemonte Orientale

*Presenter's email enrico.caprio@unito.it

Urban ecosystems can host significant biodiversity, and Species Distribution Models (SDMs) are increasingly used to inform conservation strategies in cities. In this study, we applied Maxent to model the potential distribution of bird species in two major Italian urban areas: Turin and Milan. Presence data were derived from a combination of standardized point counts and citizen science observations. A total of 56 species were modeled in Turin and 52 in Milan. Land-use composition was used as the main set of predictor variables, calculated as the percentage cover of land-use classes within moving windows of 100, 150, and 500 meters around each 10×10 m pixel. Presence–absence

predictions were obtained by applying species-specific thresholds based on the True Skill Statistic (TSS), ensuring a balanced trade-off between omission and commission errors. All individual species models showed robust performance, with Area Under the Curve (AUC) values exceeding 0.8. The resulting habitat suitability maps were then combined to produce potential species richness maps for each city, providing spatially explicit insights into urban biodiversity patterns. These maps can serve as practical tools to support urban planning and conservation efforts, helping identify biodiversity hotspots and prioritize areas for habitat enhancement or restoration. This study highlights the value of integrating high-resolution environmental data and citizen science in urban SDM applications and offers a replicable framework for data-driven biodiversity management in metropolitan landscapes.

Morph-specific phenotypic changes over time in a colour polymorphic raptor

Arianna Passarotto[1,2,3*], *Moritz D. Lürig[1,4], Patrik Karell[2,5]*

1 University of Glasgow, Glasgow, UK

2 Lund University, Lund, Sweden

3 University of Sevilla, Sevilla, Spain

4 Florida Museum of Natural History, University of Florida, Gainesville, FL, USA

5 NOVIA University of Applied Sciences, Raseborg, Finland

*Presenter's email ariannapassarotto84@gmail.com

Colour polymorphism has been successfully used as a phenotypic (and genetic) marker to identify temporal changes in bird populations' phenotypes in response to climate change. However, many polymorphic species exhibit non-negligible color variation within morphs, which may be subject to different selective regimes. In this study, we used a dataset of colour polymorphic Tawny Owls *Strix aluco* from a Finnish long-term monitored population to investigate changes in within-morph coloration over a 43-year period. In addition, we assessed whether any potential pattern was associated with differences in breeding timing (i.e. laying date) and recruitment success between the morphs. Analyses revealed that morphs have diverged in their respective colorations, however, following markedly different patterns: while color change in the brown morph displays a linear pattern of more pigmented plumage colorations, color change in the gray morph exhibits a dynamic non-linear pattern. We found that a close match between laying date and plumage coloration increased the recruitment success in the brown, but not in grey morph. Additionally, comprehensive analyses of pedigree data showed that changes in coloration likely have different, morph specific drivers: in the brown morph, temperature variation during early life conditions had a stronger effect on recruit coloration, whereas in the gray morph, parental coloration had a stronger effect. Our results suggest the existence of morph-specific agents of selection producing contrasting selection patterns, which lead to rapid adaptive divergence within a polymorphic species. These findings demonstrate the relevance of coloration for the evolutionary potential of populations to respond to environmental change.

30 Years of urban changes: A long-term analysis of breeding bird communities in the city of Milan

Bianca Bondioni[1*], *Paolo Bonazzi[2], Luca Bonomelli[1], Claudio Celada[3], Lorenzo Fornasari[2], Giovanni Gottardi[4], Marina Nova[5], Fabrizio Reginato[2], Marco Sozzi[6], Jacopo Tonetti[2], Dan E. Chamberlain[7], Mattia Brambilla[1], Diego Rubolini[1], Luca Ilahiane[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milano, Italy

2 Associazione FaunaViva, Milano, Italy

3 Lipu/BirdLife Italia, Parma, Italy
4 Gruppo Ornitologico Lombardo (GOL), Milano, Italy
5 Associazione GuardaMI ETS, Milano, Italy
6 Associazione EBN Italia, Torino, Italy
7 Università di Torino, Turin, Italy
*Presenter's email: biancabondioni2003@gmail.com

The increasing human population and the urbanization process are main drivers of environmental changes. Long-term quantitative datasets are crucial for understanding the effects of urbanization on biodiversity, allowing to estimate temporal changes in biological communities. Birds are commonly adopted as ecological indicators in urban ecology, due to several advantages, including the frequent availability of past standardized surveys, allowing analyses of long-term dynamics. We investigated long-term changes in the breeding avian community of Milano by surveying bird communities through 52 line transects, repeated in 1994, 2014 and 2024 and stratified on a grid of 2 x 2 km covering the whole municipality. Results highlight variations in the total abundance of individuals per transect (18% decrease), mean species richness per transect (increased from 14.9 to 17.9) and Shannon diversity index (increased from 1.70 to 1.88). No significant temporal trend in total bird biomass per transect emerged. Most declining species (e.g. *Chloris chloris*, *Passer italiae*, *Alauda arvensis*, *Carduelis carduelis*) are largely declining also at Italian and/or European level. Similarly, the species showing the strongest increases include birds experiencing favourable population trends at broader scales (e.g. *Dendrocopos major*, *Columba palumbus*), and a non-native species (i.e. *Psittacula krameri*). These changes in the avian community of Milan are likely shaped by the combination of species demography at larger scales, and of land-use transformations occurring both in the urban area and its surroundings.

Carry-over effects of non-breeding mercury exposure and influence of age on the breeding success of an endangered gadfly petrel

Alice Dalla Pietà[1,2*], *Joana Romero[1], Roberto Vento[1,2], Francesco Ventura[3], Carina Gjerdrum[4], Paco Bustamante[5], Jeremy Madeiros[6], Letizia Campioni[7,8]*

1 Royal Netherlands Institute for Sea Research (NIOZ)
2 Wageningen University and Research
3 Biology Department, Woods Hole Oceanographic Institution, Woods Hole, MA, USA
4 Canadian Wildlife Service, Environment and Climate Change Canada, Dartmouth, Nova Scotia B2Y 2N6, Canada
5 Littoral Environnement et Sociétés (LIENSs), UMR 7266 CNRS - La Rochelle Université, 2 rue Olympe de Gouges, 17000 La Rochelle, France
6 DENR - Department of Environment and Natural Resources, Ministry of Home Affairs, Botanical Gardens, 169 South Road, Paget DV04, Bermuda
7 Department of Conservation Biology and Global Change, Doñana Biological Station (EBD-CSIC), Seville E-41092, Spain
8 Ornis Italica, Piazza Crati, 15, 00199, Rome, Italy
*Presenter's email alicedallapieta@gmail.com

Ocean pollution from heavy metals, such as mercury, poses a major risk to long-lived migratory seabirds, such as procellariiformes. Many species within this group, including gadfly petrels *Pterodroma spp.*, are marine predators specialized in mesopelagic prey and are therefore particularly exposed to high mercury concentrations. Elevated mercury levels can impair fitness and reduce breeding success. In such species, low breeding success can also result from age-related physiological decline, further hindering the recovery of already small, endangered seabird populations, including many threatened gadfly petrels. In this study, we investigated how parental age and carry-over effects of mercury exposure from the non-breeding season influence the subsequent breeding outcome in the endangered Bermuda Petrel *Pterodroma cahow*. By sampling a significant proportion of the entire breeding population (ca. 30%), we found that hatching success probability declined with parental age and mercury exposure in females during the non-breeding season, suggesting that both factors negatively affect breeding success in such a small population of only 165 breeding pairs. Conversely, mercury concentrations in females did not seem to affect egg size, suggesting that this heavy metal may instead impair reproductive function or embryonic development. Our

findings support previous evidence that sublethal mercury exposure and carry-over effects from the non-breeding season can influence reproductive outcomes in marine predators specialized in a mesopelagic diet, including gadfly petrels and other procellariiform seabirds. This study highlights the urgent need to mitigate mercury release into the environment to support the long-term viability and conservation of vulnerable seabird species.

The impact of land-use change and road traffic on bird communities

Isotta Zanettovich[1*], *Lucia Vita Sastre*[2], *Giulia Bastianelli*[2], *Carlos Rodriguez*[2], *Jacinto Román*[2], *Eloy Revilla*[2], *Marcello D'amico*[2]

1 University of Turin, Department of Life Sciences and Systems Biology, Via Accademia Albertina, 13, 10123 Turin, Italy

2 Department of Conservation Biology, Doñana Biological Station (CSIC), C/Américo Vespucio s/n, E-41092 Seville, Spain

*Presenter's email: isottazan99@gmail.com

Natural environments are gradually being reduced to make room for areas dedicated to land exploitation. Roads are not only a result of this transformation but also a driver of land-use change, and their worldwide spreading has relevant impacts on bird communities. We studied the effects of these impacts by comparing bird communities across the three most common land uses in the Doñana Greater Ecosystem (Spain): natural habitats, extensive farmlands, and intensive farmlands. Within these, a total of 36 sampling plots were selected, representing high and medium traffic levels (both along paved roads) as well as low traffic levels (on unpaved roads). We collected data in the spring of 2025 using passive acoustic monitoring (PAM) with AudioMoth devices, and we analyzed the recordings using the BirdNet automatic detection. Both land use and road traffic had a negative impact on bird communities, which were richer in natural habitats with unpaved roads and more degraded in intensive farmlands with high-traffic paved roads. Nevertheless, a species turnover was also evident, as some specialists found in natural habitats were replaced by generalists in farmlands with high-traffic roads.

Session: Ecology and behavior of birds I

Chairs: *Gianpasquale Chiatante & Samuele Ramellini*

Kentish Plover and conservation: Observation of ringed individuals within the Torre del Cerrano MPA

Francesca Trenta[1*], *Matteo Ferretti[1], Sergio Guccione[1], Graziano Aretusi[1], Stanislao D'Argenio[1]*

1 Torre del Cerrano Marine Protected Area

*Presenter's email: trentafrancesca96@gmail.com

The Kentish Plover *Anarhynchus alexandrinus* is a small wading bird that inhabits coastal areas and wetlands, but its populations are declining due to habitat loss, climate change and human activities. To monitor this species and better understand its ecology, ringing proves to be a key tool, allowing data to be collected on migration, survival, and reproductive success. From October 1, 2022, to March 8, 2025, observations were conducted on ringed individuals in the Torre del Cerrano Marine Protected Area, collecting valuable data on the movements and behavior of Kentish Plovers. All of this enabled the identification of crucial stopover and wintering sites, highlighting the importance of the area for the conservation of the species. Through research, constant monitoring and effective conservation strategies, we can contribute to the preservation of the Kentish plover and the protection of coastal ecosystems where this species nests and winters.

Trophic links in a high elevation bird species: The diet of Northern Wheatear nestlings *Oenanthe oenanthe* follows arthropod availability in alpine grasslands

Camille Mermillon[1,2*], *Dan Chamberlain[1], Christian Miquel[3], David-Emmanuel Coffie[3], Keyvan Dumas[2], Domenico Rosselli[4], Glenn Yannic[2]*

1 University of Turin (Italy)

2 Laboratoire d'Ecologie Alpine (University Savoie Mont-Blanc, France)

3 Laboratoire d'Ecologie Alpine (University Grenoble Alpes, France)

4 Ente di Gestione delle Aree Protette delle Alpi Cozie (Italy)

*Presenter's email: camille.mermillon@unito.it

Mountains are subject to environmental pressures and are considered particularly threatened by climate change. This has caused an expansion of forest and loss of open grasslands, threatening alpine species such as birds and also arthropods, which for many species represent an important food resource in high elevation habitats. However, our knowledge of even the basic ecology of many alpine birds is much lower compared to other habitats, thus hampering our ability to develop conservation strategies for mountain species. In our study, we determined the diet of the Northern Wheatear *Oenanthe oenanthe*, a characteristic species of alpine grasslands. We collected 151 fecal samples in 2023 and 2024 (mainly from nestlings) and assessed diet by DNA metabarcoding. Concurrently, arthropod availability was estimated in the study area throughout the breeding season using two sampling methods (sweep net and pitfall traps). Northern Wheatear nestlings were mainly fed with Diptera, Coleoptera, Lepidoptera and Orthoptera. More than 60 families from 14 arthropod orders were detected in the samples. Most orders seem to show evidence of seasonal peaks for a given elevation, but these peaks were progressively later in the season with increases in elevation. Through the calculation of a selec-

tivity index (based on a compositional analysis of available prey and utilised prey), we found that Wheatears exhibited a generalist foraging strategy at the arthropod order level, suggesting that they may be able to cope with temporal and spatial changes in arthropod community composition, as long as availability is sufficient.

Upscaling species-habitat relationships: Individual fine-scaled habitat suitability predicts landscape-scale breeding density

Corrado Alessandrini[1*], *Valeria Vitangeli[2], Paolo Pedrini[3], Diego Rubolini[1], Mattia Brambilla[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano

2 Dipartimento di Scienze Storiche Geografiche e dell'Antichità, Università di Padova

3 MUSE - Museo delle Scienze di Trento

*Presenter's email: corrado.alessandrini@gmail.com

Modelling species-habitat relationships is a milestone in ecology, allowing us to know species ecological requirements and design effective conservation measures. The hierarchical nature of animal distributions in space has been proposed over 40 years ago (Johnson 1980) and largely accepted since then, yet rarely tested in practice. Here, we used the 9 most-common bird species found in Italian apple orchards to test whether models build on individual habitat use can be upscaled to predict the overall breeding population density observed at the transect level. To do so, we compared transect models with/without upscaled predictions in terms of AICc, Coefficient of Determination (R2), and Root Mean Squared Error (RMSE). In all species, the inclusion of upscaled predictions increased at least one model statistic; in 5 species, all the three statistics were improved, meaning that transect-level patterns of breeding densities strongly correlate with individual patterns of (within-territory) habitat use. Such a good upscaling performance demonstrates Johnson's theory that species distributions come from the interplay of habitat selection processes acting at different scales and on different levels of organization (individuals vs population). Niche breadth, other intrinsic traits, or the ecosystem itself might modulate the upscaling performance, so more species (from other systems) would help in future analyses. By this study, we want to (re)stimulate ornithological discussions on multi-level species distributions, confident of their pivotal contribution in advancing applied ecology and nature conservation.

Within-guild competition affects diet variation among top-predators across the Mediterranean basin

Stefano Lapadula[1*], *Emanuele Crepet[1], Andrea Romano[1], Samuele Ramellini[1,2]*

1 Department of Environmental Science and Policy, University of Milan, Milano, Italy

2 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australia

*Presenter's email: stefano.lapadula@unimi.it

Resource partitioning – whenever species segregate in terms of resource use – plays a crucial role in reducing interspecific competition and provides fitness advantages when more species coexist. While this process is well-known, we lack an understanding of how competition affects diet over large, continental scales. This is due to the challenges of obtaining reliable data on both diet and presence of competitors. Here, we leverage data from an extensive dataset of diet variation (160 studies) at the Mediterranean scale, and compiled diet metrics (diversity, evenness and composition) for a guild of three nocturnal top predators Long-eared Owl *Asio otus*, Tawny Owl *Strix aluco*, Eurasian Eagle-Owl *Bubo bubo*. We combined diet data with state-of-the-art species distribution modelling, obtaining habitat suitability for both each target predator and all its potential competitors, including birds and

mammals, and fitted spatially explicit generalized least squares models to evaluate the main drivers of spatial variation in diet metrics. We show that competitors' presence, as gauged by habitat suitability, can strongly affect the local diet. Indeed, significant shifts in the diet were observed in areas where competitors are abundant compared to regions where they are absent or scarce, with higher competition linked to increased diet diversity and evenness in the target species. This pattern may be explained by a shift to a more generalist diet to buffer interspecific competition costs. In conclusion, integrating ecological modelling and large-scale diet analysis, our findings help unravelling the mechanisms driving trophic segregation and spatial variation in diet among competing predators.

How post-release movement patterns vary in translocated Griffon Vultures *Gyps fulvus* under different social and environmental conditions

Camilla Brunet[1*], *Ron Efrat[2], Ilaria Fozzi[1], Jacopo Cerri[3], Fiammetta Berlinguer[1], Kamran Safi[2]*

1 Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100 Sassari, Italy

2 Department of Migration, Max Planck Institute of Animal Behavior, Radolfzell, Germany

3 Mammal Research Institute, Polish Academy of Sciences, Białowieża 17-230, Poland

*Presenter's email: camilla.brunet18@gmail.com

Griffon Vultures *Gyps fulvus* are social scavengers facing severe threats worldwide, making conservation efforts crucial. In Sardinia (Italy), initiatives aim to restore Griffon Vulture populations, shifting focus from the reinforced northern colony (~400 individuals) to re-establishing a breeding population in the south of the island. This study examines how newly translocated vultures adjust their movements during the first 100 days post-release under varying social conditions. We tracked vultures released in southern Sardinia in April and October 2024, identifying three groups: (1) individuals released in April that remained in the south; (2) individuals released in October that stayed in the south; and (3) individuals from the October release that relocated to the northern colony after 12–25 days. We expected Group 1 to exhibit highly variable movements due to a lack of experienced conspecifics, while Group 2 would show a less extreme pattern, benefiting from prior releases. Group 3 was predicted to stabilize movement after an initial exploratory phase due to interactions with experienced vultures. As predicted, vultures released in spring initially showed unstable movements, which later stabilized. Unexpectedly, Group 2 individuals exhibited more directional movements, likely reflecting routine commutes between roosts and feeding sites. Vultures relocating north, instead, travelled greater distances with reduced movement directionality. These findings suggest that social interactions and environmental conditions influence movement strategies in complex ways. Our results provide insights into how translocated vultures adjust post-release, highlighting the role of social structure in shaping movement. This knowledge can inform conservation strategies for social scavengers.

Responses of coastal seabirds (European Shag, *Gulosus aristotelis*) to fine-scale meteorological variation within a dynamic coastal environment

Claire Carrington[1*]

1 Bangor University, UK

*Presenter's email: afua76@bangor.ac.uk

Extreme weather events are predicted to increase in frequency and severity due to climate change, impacting marine environments and thus seabird communities. However, few studies have examined seabird responses to meteorological variability at fine spatial and temporal scales despite the potential for local (<10km) and acute (daily) environmental conditions to influence individual movement decisions. Our study investigates

the responses of European Shags *Gulosus aristotelis* to fine-scale meteorological variation within the dynamic coastal environment of Conwy Bay and the Menai Strait, North Wales. We explore the extent to which individuals display routine foraging behaviours, aligning with tidal conditions, and if deviations from routine are influenced by meteorological conditions, leading to switches in habitat selection and foraging strategy.

High-altitude flights of Pallid Swifts in the breeding range revealed by GPS trackers

Sara Raj Pant[1,2*], *Marco Cucco[3], Leonardo Mao[4], Gloria Ramello[5], Susanne Åkesson[2], Giovanni Boano[5]*

1 University of Innsbruck (Austria)

2 Lund University (Sweden)

3 Università degli Studi del Piemonte Orientale Amedeo Avogadro

4 Università di Torino

5 Museo Civico di Storia Naturale di Carmagnola

*Presenter's email: sara.raj.pant@gmail.com

During the breeding period parents must move between foraging and nesting sites to collect food and nourish their offspring. Foraging in distant areas is expected to accrue high travel costs and should be balanced by food intake. Swifts can fly continuously at considerably high altitudes in the African wintering quarters, but little data are available on flight activity during the breeding season. Between 2018 and 2022, we equipped 19 Pallid Swifts *Apus pallidus* with GPS trackers (n = 34) to measure flight altitude, home ranges, and to assess how flight patterns are influenced by habitat type and weather variables, including wind speed and direction. Swifts flew on average 6 km from the nest and displayed a home-range size of 481 km2. The flight altitude was on average 920 m a.s.l., 700 m above the colony site. Habitat type and ground wind speed and direction did not influence flight patterns. The continuous high-altitude flights of swifts in the breeding range appear to be an extraordinary adaptation of these aerial insectivores and suggests that aerial arthropods can be abundant at high altitudes in breeding quarters too.

Individual- and group-level responses of Greylag Geese under threat by a raptor-like robot

Irene Vertua[1*], *Marie Ossola[2], Giulia Cerritelli[3], Luca Marinoni[3], Lauren K. Common[2], Andrew C. Katsis[2], Robert Musters[4], Shane C. McPherson[2], Anna Gagliardo[3], Dimitri Giunchi[3], Lorenzo Vanni[3], Claudio Carere[5], Sonia Kleindorfer[2], Diego Rubolini[1], Petra Sumasgutner[2]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, via Celoria, 26, I-20133, Milano, Italy

2 Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna, Grünau im Almtal, 4645 Austria

3 Dipartimento di Biologia, Università degli Studi di Pisa, via Volta 6, I-56126, Pisa, Italy

4 Roflight, Lemselobrink 32, 7544 GD Enschede, The Netherlands

5 Dipartimento di Scienze Ecologiche e Biologiche, Università degli Studi della Tuscia, Largo dell'Università s/n, I-01100, Viterbo, Italy

*Presenter's email: irene.vertua@unimi.it

Group living is recurrent in the animal kingdom, providing individual benefits such as improved foraging efficiency, improved mating chances, and protection from predators. However, individual differences are often overlooked when assessing flock behaviour, despite their potential impact on collective patterns. We interrogated flock and individual-level responses to a simulated aerial threat using the RobotFalcon, a robotic raptor designed to mimic the appearance and flight behaviour of a Peregrine Falcon *Falco peregrinus*. Our study focused on ~100

Greylag Geese *Anser anser*, including both adults and juveniles, at a long-term feeding site. We tracked individuals, previously characterized for personality traits (aggressiveness, boldness, exploration, and activity) , as well as known age, sex, and pairing status, using drone and ground-based footage before, during, and after RobotFalcon exposure. We examined flock-level responses, including cohesion (mean nearest neighbour distance) and mean travelled distance (delta distance, averaged across all individuals), as well as individual-level reactions, measured as centrality, mean and maximum travelled distance, across eight daily exposure trials. The main flock response to the RobotFalcon was freezing, less overall movement at flock-level during exposure than before and after. Less aggressive individuals moved more when exposed to the RobotFalcon, but only during the first exposure day, as repeated exposures rapidly led to habituation. Individuals did not change their relative spatial position (centrality) when exposed to the RobotFalcon. These results show that individual personality traits can predict spatial-level response to a simulated threat within a flock, but also show overall weak reactions to an aerial predator of goslings.

Symposium: Monitoring avifauna for conservation policies: Challenges, methods and perspectives in Italy

Chairs: *Lorenzo Serra & Claudio Celada*

The Farmland Bird Index: 25 years of monitoring farmland birds in Italy

Roberta Righini[1*], *Matteo Fontanella[1], Federica Luoni[1], Laura Silva[1], Paolo Bonazzi[2], Gianpiero Calvi[3], Tommaso Campedelli[4], Simonetta Cutini[4], Guglielmo Londi[4], Claudio Celada[1]*

1 Lipu-BirdLife Italia

2 Studio di Consulenze Ambientali FaunaViva

3 Studio Pteryx di Calvi e Vitulano

4 D.R.E.Am Italia

*Presenter's email: roberta.righini@lipu.it

The Farmland Bird Index (FBI) project has reached a significant milestone, marking 25 years of monitoring farmland bird populations and evaluating the health of the agricultural environment in Italy. Launched in 2000 as MITO2000 (Monitoraggio Italiano Ornitologico), the project was initially funded by the then Ministry of the Environment in the first year, and continued with partial regional funding and voluntary participation in subsequent years. Since 2009, under the coordination of Lipu and with financial support from the Ministry of Agricultural, Food, and Forestry Policies, the project has significantly evolved, establishing a robust framework for standardized annual data collection and analysis. The FBI has become a key indicator within the framework of the Common Agricultural Policy, specifically serving as the C36 context indicator for the 2023-2027 programming cycle. Since its beginning, the project has involved 556 observers (both professionals and volunteers) collecting 1,903,641 bird records in 1,773 10 x 10 km square plots. The standardized monitoring method consists of 10-minute point counts (15 per plot) during the breeding season (15 May - 30 June). Data collected are used to compute two multi-species population indices (using rTRIM, MSI-tools): the FBI, which includes 28 species associated with farmland environments, and the FBIpm, comprising 13 species typical of mountain grasslands. Between 2000 and 2024, both indices show a deep decline: -32,61% for the FBI (with 71% of species declining) and -34,60% for the FBIpm (with 46% of species declining). These alarming trends reinforce the urgent need for action to reverse biodiversity loss, as emphasized by the EU Biodiversity Strategy for 2030.

Monitoring Italian heronries: Methods, results, and limits

Mauro Fasola[1*], *Sara Cioccarelli[1], Daniele Pellitteri-Rosa[2], Marco Gustin[3], Michelangelo Morganti[1]*

1 Istituto Ricerca Acque, CNR, Via del Mulino, Brugherio,

2 Dipartimento Scienze Terra Ambiente, Università, Pavia, Italia

3 Lega Italiana Protezione Uccelli, Parma, Italia

*Presenter's email: fasola@unipv.it

The distribution and population trends of the 12 species of herons, egrets and the allied species in Italy have been investigated in greater detail than those of any other bird group, thanks to citizen science projects. Extensive monitoring has been carried out in northwestern Italy over the past 53 years, with shorter monitoring periods in other regions and three nationwide surveys. This effort allowed the description of notable increases in species range and breeding populations, the detection of drivers of population change and improvements

in the conservation of colony sites. This long-term experience, in line with findings from literature, suggests that nest counts of these waterbirds can be affected by variation in observer accuracy and counting methods. These sources of bias can be mitigated through observer training and the use of correction factors across methods. However, a fundamental source of inaccuracy remains: the asynchronous timing of breeding during extended breeding seasons. We tested this by conducting repeated nest counts in sample heronries. We found that some of the monitored species have active nests over a span of 160 days, whereas any given nest is only detectable for about 40 days, during the period when eggs or semi-nidifugous chicks are present. Consequently, nest counts inevitably underestimate the total breeding population. Nevertheless, counts taken during each species' peak nesting period can serve as accurate indicators of annual population levels. Our findings suggest that reports on colonial waterbird monitoring should always include a detailed description of methods and a discussion of potential biases, in order to ensure the results are scientifically useful.

Italian monitoring of seabirds under the "Marine Strategy" Framework Directive

Francesco Pezzo[1*], *Barbara Amadesi [1], Mario Cozzo[1], Adriano De Faveri[1], Camilla Gotti[1], Alvise Luchetta[1], Luca Melega[1], Massimo Sacchi[1], Marco Zenatello[1], Nicola Baccetti[1]*

1 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)

*Presenter's email: francesco.pezzo@isprambiente.it

Italy is home to a relevant portion of Mediterranean breeding seabirds and several colonies are of international importance. It is vital, therefore, that up-to-date information on their status and health is available. To obtain useful data for the Marine Strategy Framework Directive (MSFD), a National Seabird Monitoring Programme has been developed and implemented throughout all islands and coastal sites suitable for seabirds nesting. The monitoring program is carried out by ISPRA, on behalf of the Ministry of Environment, through a monitoring network that includes several institutional partners (Marine Protected Areas, Universities, Regional Agencies) and professional surveyors, with the aim of providing population estimates on, at least, a six-year basis. Data were collected for MSFD indicators D1C2 (abundance), D1C3 (demographic parameters) and D1C4 (distribution) on target species characterized by a strictly marine ecology (Scopoli's Shearwater, Yelkouan Shearwater; "Mediterranean" Shag; "Mediterranean" Storm Petrel; Audouin's Gull; Sandwich Tern; Common Eider). Sea-ducks were monitored as a part of the International Waterbird Census. As regards population productivity, this was monitored on sample study colonies at key sites. The data were assessed for the purposes of art. 8 of the MSFD and are also the basis for reporting for the purposes of art. 12 of the Birds Directive and the Barcelona Convention.

Thirty-five years and (almost) no signs of ageing! The International Waterbird Census project in Italy

Marco Zenatello[1*], *Emiliano Arcamone[2], Carlo Artese[2], Luca Bagni[2], Antonino Barbera[2], Marco Basso[2], Massimo Brunelli[2], Mara Calvini[2], Carlo Cappuzzello[2], Renato Carini[2], Vincenzo Cavaliere[2], Fabio Cilea[2], Ferdinando Corbi[2], Roberta Corsi[2], Mauro Della Toffola[2], Gabriele Facchin[2], Alessio Farioli[2], Andrea Favaretto[2], Giancarlo Fracasso[2], Egidio Fulco[2], Pierfrancesco Gambelli[2], Egle Gambino[2], Paolo Giacchini[2], Roberto Giagnoni[2], Carlo Guzzon[2], Giuseppe La Gioia[2], Stefano Laurenti[2], Cristiano Liuzzi[2], Violetta Longoni[2], Giorgio Marini[2], Giuseppe Martino[2], Mario Muzzatti[2], Alberto Palmarin[2], Mina Pascucci[2], Paolo Pedrini[2], Giulio Piras[2], Giuseppe Rannisi[2], Romano Romanini[2], Giuseppe Rossi[2], Vincenzo Sciabica[2], Maurizio Sighele[2], Roberto Tinarelli[2], Francesco Velatta[2], Emiliano Verza[2], Manuel Zafarana[2], Nicola Baccetti[1]*

1 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Italia

2 Coordinamento IWC Italia

*Presenter's email: marco.zenatello@isprambiente.it

Since 1991, wintering waterbirds are annually counted in mid-January across Italian wetlands. Size, distribution and trends of native and alien waterbird species are currently available for a long time span. The most recent national counts approach 2 million waterbirds, with a general increase of accuracy of data collection in most of the Country. Data are routinely used for reporting at the national and international (e.g. Birds Directive, Marine Strategy Framework Directive, Ramsar Convention) scale. This project is coordinated by ISPRA (Istituto Superiore Protezione e Ricerca Ambientale) in Italy, and by Wetlands International at the international level. Data collection relies on a huge network of ornithologists (volunteers and professionals) who take care of the organisation of counts at a regional or sub-regional scale. Peculiarities of the Italian IWC scheme (mostly related to the recruitment of counters and to the identification of wetland complexes) are described. Achievements, implementation and management of the network of counters, including future perspectives and needs to improve this long-running citizen-science project are moreover discussed. The talk will also summarise the main changes which took place in the community of Italian waterbirds since the early 90s, including the steady spread of new or previously uncommon species (e.g. Western Cattle Egret, African Sacred Ibis, Common Crane), the marked increase of some ducks and geese (which today represent almost 50% of waterbirds, mostly concentrated in N Adriatic wetlands), the positive trend of waders and cormorants, the stable/decreasing trend of gulls and rails throughout the Country.

Integrating traditional monitoring techniques and state-of-the-art technologies yields accurate population assessments of protected bird species

Emiliano De Santis[1*], *Marco Alberto Bologna[2], Massimo Brunelli[3], Fabrizio Bulgarini[3], Enrico Calvario[3], Luciana Carotenuto[4], Carlo Catoni[5], Stefano Celletti[6], Nicoletta Cutolo[1], Marco De Cicco[1], Egidio Fulco[7], Antonella Palombi[8], Roberto Papi[6], Ivana Pizzol[1], Samuele Ramellini[9], Marco Scalisi[1], Fabio Scarfò[10]*

1 Regione Lazio, Direzione Regionale Ambiente, Cambiamenti Climatici, Transizione Energetica e Sostenibilita', Parchi, Via Rosa Raimondi Garibaldi 5, Roma

2 Università Roma Tre, Via Ostiense, 133B, Roma

3 SROPU Stazione Romana Osservazione e Protezione Uccelli, Piazza Margana 40, Roma

4 ISPRA Istituto Superiore per la Protezione e Ricerca Ambientale, Via Vitaliano Brancati, 48 Roma

5 Ornis Italica, Piazza Crati 15, Roma

6 Parco Naturale Regionale Marturanum, v.le IV Novembre 44, Barbarano Romano (VT)

7 Studio Naturalistico Hyla, www.studionaturalisticohyla.it

8 Riserva Naturale Regionale Monte Rufeno, Piazza Santa Maria 1, Acquapendente (VT)

9 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australian Capital Territory, Australia

10 Riserva Naturale Regionale Monterano, Piazza Tubingen, 1 Canale Monterano (RM)

*Presenter's email: emdesantis@regione.lazio.it

Between 2019 and 2024, the Environmental and Agricultural Departments of Lazio Region (Central Italy) financed, under the framework of Rural Development Programme (Operation 7.6.1), seven projects focused on "studies and investments on environmental protection, cultural heritage and biodiversity conservation". Here, we focus on three projects aimed at estimating the population size of 20 breeding species listed in Annex I of Birds Directive 2009/147/CE in 41 Natura 2000 sites and three large high-value areas. We combined traditional census methods like point counts and transects for songbirds and raptors and playback calls for nocturnal and elusive species, with state-of-the-art GPS tagging of two target species (European Roller and Eurasian Stone-curlew). In addition, we further fitted species distribution models to estimate population size of four elusive or highly scattered species such as the White-backed Woodpecker. Our results showed discrepancies

in population estimates compared to previous assessments reported in Natura2000 Standard Data Forms. For instance, we recorded higher estimates – up to double - for some species like Black Stork, Eurasian Stone-curlew, and White-backed Woodpecker. Conversely other species, including the Kentish Plover and the Lesser Grey Shrike, showed significant declines – even halving previous estimates. GPS-tracking data indicated that breeding European Rollers and Eurasian Stone-curlews are associated with high-heterogeneity patches and wheat crops, respectively. In conclusion, we integrate diverse methods and provide a robust framework to estimate population size, which we further integrated with an expert-based evaluation of species-specific pressures and threats. Our results can thus yield key tools for future conservation policy and management.

The COMBI project as a regional module for reporting under article 12 of the Birds Directive

Gaia Bazzi[1*], *Simona Imperio[1], Riccardo Nardelli[1], Andrea Marcon[1], Stefano Volponi[2], Daniele Baroni[1], Maurizio Odicino[3], Zeno Porro[4], Benedetta Bianchi[5], Pietro Leanza[6], Lorenzo Serra[1]*

1 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)

2 Area per i pareri tecnici e per le strategie di conservazione e gestione del patrimonio faunistico, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)

3 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano

4 Freie Universität, Berlin; Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), Berlin

5 Dipartimento di Biologia, Università di Pisa

6 Associazione Ornitologi dell'Emilia-Romagna (AsOER)

*Presenter's email: gaia.bazzi@isprambiente.it

In recent years, there has been a growing demand for high-quality ornithological data to inform and assess conservation policies at both national and EU levels. The main purpose of the COMBI project was to develop a methodologically robust and structured approach for regional bird monitoring. Developed in Emilia-Romagna, COMBI aligns with the reporting requirements of Article 12 of the Birds Directive, offering a modular framework that can be scaled and adapted across different territorial contexts, and moving beyond traditional expert-based estimates. The project implements a robust sampling design, grouping species to be surveyed together based on their habitat preferences, behaviour, and detectability, with the aim of optimizing field efforts while maintaining methodological rigor. The monitoring framework is also designed to be compatible with existing schemes, allowing integration with ongoing monitoring efforts and optimizing the use of available resources. The integration of environmental suitability models and stratified random sampling enables the estimation of statistically sound abundance values, including detection-corrected abundance for several species. Additionally, the inclusion of known breeding sites for rare or clustered species addresses potential underestimation biases. The COMBI framework demonstrates how regional data collection efforts can be standardized, cost-effective, and applicable to a broader national context. It also fulfills the obligations outlined in the Ministerial Decree of 06/11/2012, assigning responsibility for data provision to regional and autonomous provincial authorities. As such, COMBI represents a valuable model for promoting integration, consistency, and scientific rigor in ornithological monitoring, encouraging broader participation and knowledge exchange within the Italian ornithological community.

Monitoring raptor migration in Italy: Current knowledge, main key bottlenecks, and conservation perspectives

Nicolantonio Agostini[1], *Gianpasquale Chiatante*[2], *Michele Cento*[3], *Giacomo Dell'Omo*[4], Marco Gustin[3*], *Antonio Aluigi*[5], *Luca Baghino*[5]

1 Mediterranean Raptor Migration Network

2 Università della Tuscia

3 Lega Italiana Protezione Uccelli

4 Ornis Italica

5 Ente Parco del Beigua

*Presenter's email: marco.gustin@lipu.it

The monitoring of raptor migration in Italy has significantly advanced in recent decades, providing key insights into the migration strategies, population trends, and conservation needs. Italy represents a crucial transit area within the Western Palearctic, acting as a major bottleneck for raptors migrating between Europe and Africa. Several studies have highlighted the importance of both coastal and mountain corridors, particularly the Channel of Sicily, the Strait of Messina and the Ligurian Apennines, as key passage routes for both soaring and flapping migrants. Long-term monitoring projects have yielded valuable data on species-specific migration patterns, revealing factors shaping raptor movements across Italy. Black Kites and European Honey Buzzards show clear responses to wind drift, adjusting their routes accordingly, whereas species less reliant on soaring flight, such as Western Marsh Harriers, tend to follow broader-front migration strategies. Among most monitored raptors, the Short-toed Snake Eagle stands out for its strong dependence on soaring-gliding flight. The Ligurian Apennines and the Apuane Alps are key migration watchpoints, where large numbers of Short-toed Snake Eagles are observed annually. Monitoring efforts indicate a positive population trend for the species, with a moderate increase possibly linked to climate-driven range shifts and improved habitat suitability. The continued development of collaborative networks and citizen science initiatives—particularly through the effective work of infoMIGRANS, a publication edited by the Maritime Alps Protected Areas in collaboration with raptor monitoring groups in the central Mediterranean—will be essential to furthering knowledge and conservation of migrating raptors in Italy.

Symposium: From coasts to oceans: New research frontiers in the behavioral ecology of seabirds

Chairs: *Letizia Campioni, Rosario Balestrieri & Salvatore Urso*

Seabirds of Europe: Current status, main threats and way forward

Antonio Vulcano[1*]

1 BirdLife International - Europe & Central Asia

*Presenter's email: vulco_88@hotmail.it

BirdLife Europe & Central Asia has compiled an overview of the most recent Red List data, and pinpoint solutions and recommendations for decision makers to tackle threats and enhance seabird conservation. Over one in three species are threatened with extinction according to the latest EU and European IUCN Red List assessments (2020 and 2021 respectively). The main threats in the region are bycatch, overfishing, invasive alien species, hunting/trapping, pollution, climate change, energy infrastructure, recreational activities, and avian influenza. Solutions to such hazards are mostly known and should be scaled up, tackling the cumulative effects of these perils throughout seabird life cycles. Regulations already in place, especially in the EU, can help populations to recover, but higher levels of implementation and enforcement as well as more robust international cooperation are urgently needed.

GPS-tracking reveals strong individual heterogeneity in migratory movements of Mediterranean Gulls throughout Europe

Ioannis Kalaitzakis[1,2*], *Federico De Pascalis[2], Lorenzo Serra[2], Jacopo G. Cecere[2], Simone Pirrello[2], Simona Imperio[2], Aurélien Besnard[3], Jocelyn Champagnon[4], Olivier Duriez[3], Stéphane Hippolyte[5], Frédéric Jiguet[6], Dominik Marchowski[7], Joachim Siekiera[8], Marcin Sidelnik[9], Eric Stienen[10], Diego Rubolini[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, via Celoria 26, I-20133, Milano, Italy

2 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Italy

3 CEFE, Univ Montpellier, CNRS, EPHE, IRD, 1919 route de Mende, 34293, Montpellier, France

4 Tour du Valat, Research Institute for the Conservation of Mediterranean Wetlands, Le Sambuc, 13200 Arles, France

5 Conservatoire d'espaces naturels Centre-Val de Loire, 45000 Orléans, France

6 Centre d'Ecologie et des Sciences de la Conservation, MNHN, CNRS, Sorbonne Université, CP135, 75005 Paris, France

7 Ornithological Station, Museum and Institute of Zoology, Polish Academy of Sciences, Nadwiślańska 108,80-680 Gdańsk, Poland

8 Siekiera, Independent Researcher, Żywocice, Poland

9 Nature Conservation Foundation "Na Skrzydłach", Warszawa, Poland

10 Research Institute for Nature and Forest (INBO), Havenlaan 88, 1000 Brussels, Belgium

*Presenter's email: ioannis.kalaitz@gmail.com

Non-breeding movements, including migration, can vary greatly among and within avian populations. For instance, many species are partial migrants, including individuals that perform long-distance or short-distance migrations, as well as others that reside around the breeding site year-round. The Mediterranean Gull *Ichthyaetus melanocephalus* is an opportunistic feeder and partially migratory species, whose heterogeneity in migratory tactics and year-round habitat use have been poorly investigated. By GPS-tracking more than 50 individuals from populations located in Belgium, France, Italy, and Poland across multiple migration episodes, we investigated the

variability in non-breeding movements within and among populations. We characterized non-breeding movement patterns through several parameters and identified a unified framework for characterizing migrants and residents. Gulls showed heterogeneity within and among populations in the direction and distance travelled, while the main wintering sites of migrants across populations were located along the English Channel and the Iberian Peninsula. Our results, the first spanning across the range of the species, revealed that distinct migration tactics coexist within populations and that their frequency can vary among populations. We argue that such behavioural heterogeneity might increase the species' resilience in the face of rapidly changing environmental conditions.

Exploring the deep blue: Foraging habits of the European Storm Petrels

Sofia Bolumar[1*], *Andreu Rotger[1], Andrea Santangeli[1], Giacomo Tavecchia[1], Alfonso Sola[1], Santi Catchot[2], Daniel Tarry[1], Gotzon Basterretxea[1], Simon Ruiz[1], Ignacio Catalan[1], Ana Sanz-Aguilar[3]*

1 IMEDEA

2 SOM, Sociedad Ornitológica de Menorca

3 UIB

*Presenter's email: sofiabolumar@gmail.com

Seabirds' distribution is generally influenced by the ecological dynamics of marine environments but understanding how oceanographic features shape seabird foraging behavior remains a challenge. We combined GPS tracking locations of 39 European Storm Petrels *Hydrobates pelagicus* breeding in four West Mediterranean colonies during incubation over multiple years (2019-2021) with near-real-time remotely sensed oceanographic drivers. We model habitat selection using GPS tracking data from one colony, Benidorm Island, and use data from other three colonies for validation. We show that suitable foraging areas are strongly characterized by low sea surface temperature, high chlorophyll concentration and eddy kinetic energy. Based on this model, we predict habitat suitability maps for 2018-2022. Cross-validation using data from the other three colonies highlights that the identified suitable areas are consistently applicable across other Storm-petrel colonies in the Western Mediterranean. We identified the Alboran Sea, the North African coast, the Gulf of Lion and the Ebro River Delta as the most suitable regions. These areas coincide with regions of high mesoscale variability, suggesting the importance of dynamic oceanographic features in determining foraging habitat. However, these critical foraging areas are largely unprotected by Marine Protected Areas (MPAs), leaving them vulnerable to anthropogenic threats such as overfishing and energy infrastructure development. Our study underscores the urgent need for expanding and effectively managing MPAs to safeguard these vital habitats.

How sex, breeding success, and migration shape the moulting and non-breeding strategies of a threatened seabird

Roberto Vento[1*], *Joana Romero[2], Alice Dalla Pietà[3], Francesco Ventura[4], Carina Gjerdrum[5], Jeremy Madeiros[6], Letizia Campioni[7,8]*

1 Behavioural Ecology Group, Department of Animal Sciences, Wageningen University and Research, 6708 WD Wageningen, The Netherlands

2 Netherlands Institute for Sea Research (NIOZ), Department of Coastal Systems (COS), P. O. Box 59, 1790 AB Den Burg, Texel, The Netherlands

3 WUR – Wageningen University and Research – Department WEC Wildlife Ecology and Conservation, Wageningen, Droevendaalsesteeg 3a, 6708 PB Wageningen, The Netherlands

4 Biology Department, Woods Hole Oceanographic Institution, Woods Hole, MA, USA

5 Canadian Wildlife Service, Environment and Climate Change Canada, Dartmouth, Nova Scotia B2Y 2N6, Canada

6 DENR - Department of Environment and Natural Resources, Ministry of Home Affairs, Botanical Gardens, 169 South Road, Paget DV04, Bermuda

7 Department of Conservation Biology and Global Change, Doñana Biological Station (EBD-CSIC), Seville E-41092, Spain

8 Ornis Italica, Piazza Crati, 15 00199, Rome, Italy

*Presenter's email: roberto.vento@wur.nl

To optimise survival and breeding success, migratory birds must schedule significant life events such as breeding, moulting, and migration within the annual cycle in a way that reduces energetic costs while aligning with environmental conditions. Due to it, many seabirds moult their feathers on the non-breeding ground. However, the moulting phenology of pelagic seabirds during this period remains largely unknown. This study focuses on the Bermuda Petrel, *Pterodroma cahow*, an endangered gadfly petrel endemic to the western North Atlantic. Using GLS and emersion logger deployed on 37 individuals, we described the migration and phenology of the species. The P. cahow has two main non-breeding areas, one located in the middle of the North Atlantic and the other in the western North Atlantic, partially overlapping with its at-sea breeding distribution. Similarly to other Pterodroma species, the Bermuda Petrel does not show sexual spatial segregation. Reproductive success affects the species non-breeding phenology, with failed breeders leaving the breeding ground earlier than successful ones. In contrast, failed breeders anticipated the arrival dates on the nests more than successful conspecifics. Reproductive success had an effect also on the phenology of moulting, with successful breeders starting later and taking more days than failed ones. Similarly, migratory birds started earlier than residents and took longer, possibly to trade off the energy expenditure needed to accomplish both life events. These findings highlight how the timing of life-history events in the Bermuda Petrel is shaped by several factors, reflecting adaptive response to the constraints of the annual cycle.

Decoding diving species' behaviour and energy with bio-logging and machine learning

Marianna Chimienti[1*]

1 School of Ocean Sciences, Bangor University, Menai Bridge, LL59 5AB, United Kingdom

*Presenter's email: m.chimienti@bangor.ac.uk

The advancement of high-resolution bio-logging technology, including camera loggers, accelerometers, and Time Depth Recorders (TDR) combined with techniques in ecophysiology, have significantly enhanced our ability to study the behaviours, movements and energetics of diving species (e.g., penguins and seabirds), particularly underwater. However, the large and complex datasets generated by these technologies require analysis tools, such as machine learning and deep learning algorithms, to classify behaviours accurately. To ensure consistency and reliability in these results, there is a critical need to standardise both the data and the analytical methods applied across species. This study demonstrates how both supervised and unsupervised machine learning techniques can be used to classify behavioural states in diving species from accelerometer and TDR data. These methods successfully identify key behaviours, including flying, floating, walking, porpoising, diving, searching, and prey-chasing, providing new insights into underwater foraging dynamics. Camera loggers are being integrated into the analytical workflow to validate these classifications and offer further details on prey species capture. Additionally, time-activity budgets are calibrated to estimate energy expenditure, providing a more comprehensive view of the energetic costs associated with these behaviours. By applying and testing these methods across multiple species within ecosystems, I use behaviour—and thus energy—as a common currency to improve our understanding of predator-prey interactions, individual trade-offs, and broader ecosystem responses. These advancements enhance our ability to monitor foraging ecology, inform conservation strategies, and refine predictions of how diving species respond to environmental changes.

From calls to conservation: Using vocal behaviour to monitor African Penguin populations over time

Francesca Terranova[1*], *Xavier Forte[1], Lorenzo Betti[2], Anna Zanoli[1], Nicolas Mathevon[3], Katta Ludynia[4], David Reby[3], Livio Favaro[1]*

1 Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy

2 Department of Network and Data Science, Central European University, Vienna, Austria

3 ENES Bioacoustics Research Lab, CRNL, University of Saint-Etienne, CNRS, Inserm, Saint-Etienne, France

4 Department of Biodiversity and Conservation Biology, University of the Western Cape, Robert Sobukwe Road, Bellville, South Africa

*Presenter's email: francesca.terranova@unito.it

Seabird vocalisations provide valuable information on species presence, population structure, and behavioural states, such as breeding activity and territorial conflicts. Their spectro-temporal features can also encode key biological traits, including sex, age, and individual identity, making bioacoustics a powerful tool for ecological monitoring. The African Penguin *Spheniscus demersus* has experienced a drastic 70% population decline since 1970 and was recently (October 2024) uplisted to Critically Endangered. This species relies strongly on vocalisations to mediate social interactions. To explore the potential of Passive Acoustic Monitoring (PAM) for this species' conservation, we collected around 17,395 hours of soundscape recordings from the African Penguin colony at the Stony Point Nature Reserve, South Africa, using Autonomous Recording Units. These recordings were analysed using a Convolutional Neural Network to automatically detect and classify penguin vocalisations. Our results demonstrate that vocal activity patterns can be used to infer population presence, census estimates, and habitat use. This study demonstrates that PAM, combined with cutting-edge analyses, offers a robust, non-invasive method for long-term population monitoring. By offering reliable insights into species distribution and behaviour, this approach can support decision-making processes for African Penguin conservation, especially in remote colonies.

Symposium: Italian Ornithological Commission: From the routine assessment to the national check-list

Chairs: *Cristiano Liuzzi & Egidio Fulco*

Approach to the analysis of vagrant reports: Three COI case studies

Egidio Fulco[1*], *Cristiano Liuzzi*[1], *Ottavio Janni*[1]

1 Commissione Ornitologica Italiana

*Presenter's email: egidiofulco1@gmail.com

The approach to the study and examination of records of vagrants has evolved over time, following the discovery of new criteria for the identification of "problematic" species, i.e. groups of species or pairs of phenotypically very similar species. The increasing use of digital photographic tools and sound recorders now allows for the production of detailed analyses of characteristics that were extremely difficult to evaluate in the past, such as the progression of moulting in some species of large gulls or the study of sonograms obtained from the vocalizations of some species of Silvidae or Acrocephalini. Finally, the development of genetic studies has been decisive in relation to some historical or museum reports. Three case studies are presented, each of which is difficult to identify: "Heuglin's Gull", Eastern/Western Olivaceous Warbler, Kittlitz's Plover.

Il "Comitato di Omologazione Italiano": A quarter of a century of quiet work

Pierandrea Brichetti[1*]

1 CISO

*Presenter's email: pierbrichetti@gmail.com

Between the mid-1970s and the beginning of the following decade, the national ornithological environment was shaken by a series of events whose effects would be felt for many decades. Among these, the most significant were the rebirth of CISO, the establishment of the Italian Ornithological Society (SOI), the death of Edgardo Moltoni, and the creation of the Italian Ratification Committee (COI), which would later become a working group of the CISO under the name of the Italian Ornithological Commission in 2007. The birth of the Committee was made public in 1981, and a group of about ten ornithologists immediately began to evaluate the reports of vagrant or breeding species in Italy for the first time. In this way, we joined the other European organizations that in the early 1990s would coagulate into the Association of European Rarities Committees (AERC). I personally coordinated the COI from 1981 to 2007, assisted by some colleagues, organizing 21 working meetings, which involved a total of 28 ornithologists, allowed us to examine over 280 reports and led to the publication of 20 reports in the Italian Journal of Ornithology and in Avocetta.

Not dusky skins, but valuable scientific specimens. The revival of bird museum collections

Giovanni Boano[1*]

1 Museo Civico di Storia Naturale di Carmagnola, Carmagnola (TO), Italy

*Presenter's email: g.boano@gmail.com

Ornithological collections have long been the only reliable source of data for documenting avian biodiversity. Ever since ornithology developed based essentially on observations in nature and the wide availability of audio-visual documentation, they have been neglected and seen as dusty repositories of specimens. On the contrary, advances in analytical techniques and the diversification of specimens make them once again central to modern ornithological research, from ecology to palaeontology, from systematics to genomics. Furthermore, revisiting our old collections often leads to interesting and unexpected discoveries.

From the COI reports to a 'living' national checklist: An endless affair

Nicola Baccetti[1,2*], *Giancarlo Fracasso*[1]

1 Commissione Ornitologica Italiana (COI)

2 ISPRA

*Presenter's email: nicola.baccetti@isprambiente.it

Keeping a national check-list up-to-date is one of the Commission's tasks and this is by definition an endless affair. Additions and modifications to taxa and/or their status originate solely from the submission and assessment of records, that are discussed in the course of the annual meetings and later published as 'COI reports' in the journal Avocetta. This is a continuous process, carried out on a voluntary basis, somewhat mechanical in its organization but not really hard to fulfill. What is becoming an increasingly demanding task is recently another endless activity i.e. keeping the pace to taxonomic and nomenclatural changes, which are no less stressful for the commission members than for the general users. In this talk we'll attempt to explain our current difficulties, in the hope that awareness will allow users to forgive some of our faults.

Session: BirdLab: Laboratory studies relating to genetics, parasitology, microbiota, contamination

Chairs: *Alessandra Costanzo & Gloria Ramello*

Reproductive ageing and age-dependent parental effects on offspring in a long-lived seabird

Beatrice Berardi[1*], *Giacomo Dell'Omo[2], Gianluca Damiani[1], Silvia Filippi[1], Gabor Czirjak[3], Katja Pohle[3], Claudio Carere[1], David Costantini[1]*

1 Department of Ecological and Biological Sciences, University of Tuscia, Largo dell'Università s.n.c., 01100 Viterbo, Italy

2 Ornis italica, piazza Crati, 15, 00199 Rome, Italy

3 Department of Wildlife Diseases, Leibniz Institute for Zoo and Wildlife Research, 10315 Berlin, Germany

*Presenter's email: beatrice.berardi@unitus.it

Patterns of ageing and their underlying mechanisms remain poorly understood in natural animal populations, particularly in long-lived species. Even less is known about the intergenerational consequences of parental age on offspring fitness. In this study, we examined age-specific changes of reproductive parameters – specifically, individual reproductive success and body mass during the breeding season – in a long-lived seabird, the Scopoli's Shearwater *Calonectris diomedea*, using a longitudinal dataset spanning multiple years. In addition, we investigated the intergenerational effects of parental age (F0 generation) on the oxidative status and immune system of the offspring (F1 generation). To this end, we collected blood from chicks of young and old parents at two developmental stages, measuring the number of white blood cells and four biomarkers associated with oxidative stress and immune response. We found that, while reproductive success does not decrease with advancing age, male body mass showed a significant negative association with age. In offspring, parental age influenced innate immunity, but this effect was only evident at fledging. Our findings support the asynchronous (or mosaic) theory of ageing, which posits that different traits decline at varying rates within individuals. Moreover, our study provides empirical evidence for the non-genetic transmission of parental ageing phenotype, potentially mediated by the modulation of immune function during early development.

Two-year study on Common Swifts as bioindicators of environmental Antimicrobial Resistance (AMR): Comparison between Africa and Italy

Erika Esposito[1*]

1 Dept. of Veterinary Medical Sciences, University of Bologna, Bologna – Italy

*Presenter's email: erika.esposito6@unibo.it

Antimicrobial resistance (AMR) is a global threat requiring a One Health approach. In this context, environmental AMR surveillance is essential to understand its dynamics and ecosystem interactions. Wild migratory birds, moving across different ecological niches and geographical areas, could act as sentinels of AMR. Among them, the Common Swift *Apus apus*, a long-distance migratory bird, moving from sub-Saharan Africa to Europe, represents an unexplored model for AMR monitoring. This study investigates the potential of swifts as bioindicator of environmental AMR. Four sampling sessions were conducted over two years (2023-2024) at a wildlife rehabilitation centre in Trieste, Italy. Buccal and cloacal swabs were performed on each bird and cultured on selective media; colonies identified using using the matrix-assisted laser desorption–ionization

time- of-flight mass spectrometry method (MALDI-TOF MS); antimicrobial susceptibility assessed through the Kirby-Bauer method and genotypical analysis. Birds and sampling data were statistically evaluated in relation to AMR percentages. From 46 swifts (10 sampled at their arrival in Italy, considered representative of Africa, and 37 sampled before their autumn migration, representative of Italy), a total of 185 bacterial strains were isolated (34 strains associated to Africa and 151 to Italy). AMR prevalence was 64.7% related to African derived strains, with the highest non-susceptibility percentages towards clindamycin, rifampicin and tetracycline, while Italian derived strains exhibited 58.9% of AMR, mainly to clarithromycin and erythromycin. These findings highlight significant differences in environmental AMR contamination between two different continents, suggesting a possible role of migratory birds, particularly swifts, as potential bioindicators in AMR surveillance.

Telomere dynamics in relation to sexual selection, longevity and fitness: A case study on a small migratory passerine

Andrea Novelli[1*], *Manuela Caprioli[1], Roberto Ambrosini[1], Alessandra Costanzo[1], Diego Rubolini[1], Marco Parolini[1], Andrea Romano[1]*

1 University of Milan

*Presenter's email: andrea.novelli@unimi.it

Unraveling the molecular mechanisms driving individual variation in longevity, reproductive performance, and sexually selected traits is key to understand life-history evolution. Telomere length (TL) and its rate of change (ΔTL) have been seldomly suggested as potential biomarkers of physiological condition and cellular maintenance. However, most studies have focused on short-term associations between telomeres, survival, and fitness, while their long-term effects and role in sexual selection remain unclear. We examined TL and ΔTL in nestling and adult Barn Swallows *Hirundo rustica* to assess: (1) environmental and parental influences on early-life TL; (2) annual survival and lifespan, as well as seasonal and lifetime reproductive success in relation to nestling and adult TL and ΔTL; (3) the link between TL and a sexually selected trait (i.e., outermost tail feathers length). Nestling TL declined with increasing brood size and paternal age, indicating developmental constraints and paternal aging effects. Individuals with longer TL early in life had higher longevity, supporting the hypothesis that selection favors longer telomeres early in life. In adults, TL declined with age, but neither TL nor ΔTL predicted annual survival or reproductive success. Similarly, TL at one year was unrelated to lifespan or lifetime reproductive output. However, in females, shorter TL correlated with longer tail feathers, suggesting a sex-specific reproductive cost on telomeres. Our results indicate that TL may predict survival early in life but not in adulthood, where it may instead reflect trade-offs between reproduction and physiological maintenance.

Genetic insights into Osprey *Pandion haliaetus* migration and population differentiation

Anna Padula[1], Chiara Mengoni[1], Francesco Pezzo[1], Licia Calabrese[2], Carmen Biondo[2], Lorenzo Serra[1], Flavio Monti[3], Andrea Sforzi[4], Giampiero Sammuri[5], Pertti Saurola[6], Nadia Mucci[1*]

1 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)

2 Red Sea Global

3 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

4 Maremma Natural History Museum

5 Tuscan Archipelago National Park

6 Finnish Museum of natural History

*Presenter's email: nadia.mucci@isprambiente.it

The Osprey *Pandion haliaetus* is an iconic and cosmopolitan bird of prey found worldwide except Antarctica. Of the four recognized subspecies, *Pandion haliaetus haliaetus* is found in the Palearctic, and most Osprey populations in this vast region are fully migratory, migrating directly south during the non-breeding season. However, some populations breeding at more southerly latitudes are sedentary (e.g. Red Sea) or partially migratory, making small-scale movements (e.g. Mediterranean Region). While gene clocks have been shown to play a role in the migratory behaviours of several bird species, their potential influence on Osprey populations has not been previously investigated. To explore this correlation, we analysed individuals from three distinct Osprey populations: Finnish, Italian and Arabian Red Sea. DNA was extracted from feathers collected from newborns at their nesting sites, and 19 autosomal microsatellite loci, along with 4 gene clocks implicated in migratory behaviour, were examined. We assessed the genetic composition and variability both within and among populations, and we used multivariate and Bayesian analyses to describe their genetic structure. Preliminary results revealed genetic differentiation between the populations, suggesting a link between gene composition and migratory behaviour. These findings provide initial evidence of the role genetics may play in determining migratory patterns in Ospreys. Further research, involving a larger sample size, additional populations, and a broader range of gene clocks, will allow us to gain a deeper understanding of the genetic foundation behind these migratory processes, potentially uncovering important insights into the adaptation of this species.

Genetic diversity and conservation perspectives of the reintroduced Griffon Vulture *Gyps fulvus* in the central Apennines

Nicolò Borgianni[1,2*], *Mario Posillico[3], Lorenzo Attili[4], Paolo Ciucci[1], Luisa Garofalo[5], Rita Lorenzini[4]*

1 Department of Biology and Biotechnologies “Charles Darwin”, Sapienza University of Rome, Rome, Italy

2 Rewilding Apennines ETS, 67055 Gioia dei Marsi (AQ), Italy

3 Reparto Carabinieri Biodiversità Castel di Sangro, 67031 Castel di Sangro (AQ), Italy

4 Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana “M. Aleandri”, Centro di Referenza Nazionale per la Medicina Forense Veterinaria, Grosseto, Italy

5 Istituto Zooprofilattico Sperimentale del Lazio e della Toscana “M. Aleandri”, Roma, Italy

*Presenter’s email: nicolo.borgianni@rewilding-apennines.com

Limiting the loss of genetic diversity in reintroduced populations maximizes the chances of long-term restoration success. Indeed, maximizing genetic diversity among founder individuals is crucial, as well as to possibly ensure connectivity with other populations at the landscape scale. Accordingly, assessing the conservation status of reintroduced populations requires long-term, post-release genetic monitoring. The Griffon Vulture *Gyps fulvus* population of the central Apennines originated from 93 birds translocated from wildlife rehabilitation centers in Spain (1994-2002). While no genetic information had been unfortunately recorded for such founders, data are available for a post-release genetic assessment of the reintroduced population. To this aim, between 2013 and 2018, 155 feather samples of free-living vultures were collected (141 from live and 8 from dead animals, 6 at the feeding station) and genetically analyzed. DNA was extracted and PCR-amplified at 9 biparental Short Tandem Repeat loci (STRs). Genetic diversity parameters—mean number of alleles (Na), effective number of alleles (Ae), expected heterozygosity (He), and observed heterozygosity (Ho)—were estimated using GenAlEx software and compared with other native and reintroduced Griffon Vulture populations to assess their genetic status. Preliminary results indicate that the genetic diversity of the reintroduced Griffon Vultures in the central Apennines (Na = 7.89, Ae = 3.70, He = 0.64, Ho = 0.63) is comparable to that reported for other populations, both native and reintroduced, providing reassurance on the long-term genetic viability of this population.

Molecular screening of haemosporidian parasites in the vulnerable Italian Sparrows *Passer italiae*

Luca Ilahiane[1*], *Mattia Brambilla[1], Joan Ferrer Obiol[1], Samuele Ramellini[1], Susan E. McKinlay[1], Irene Vertua[1], Corrado Alessandrini[1], Enrico Caprio[2], Fabio Marcolin[2], Riccardo Alba[2], Alessandro Sacchetti[3], Linda Colligiani[3], Iacopo Corsi[3], Gabriele Raiser[3], Mauro Del Sere[3], Alessandro Montemaggiori[4], Fulvio Fraticelli[4], Giuseppe Landucci[4], Emiliano De Santis[4], Rosario Balestrieri[5], Daniela Campobello[6], Mario Lo Valvo[6], Marie Claire Gatt[7], Benjamin Metzger[7], Elisa Fesce[8], Nicola Ferrari[8], Alessandra Costanzo[1], Roberto Ambrosini[9], Dan E. Chamberlain[9], Gentile F. Ficetola[9], Andrea Galimberti[9], Luca Gianfranceschi[9], Carlo Polidori[9], Diego Rubolini[9], Martina Ferraguti[10]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milan, Italy

2 Department of Life Sciences and Systems Biology, Università degli Studi di Torino, Turin, Italy

3 COT - Centro Ornitologico Toscano, Livorno, Italy

4 SROPU - Stazione Romana Osservazione e Protezione Uccelli, Rome, Italy

5 Stazione Zoologica “Anton Dohrn” – CRIMAC, Calabria Marine Centre, Department of Integrative Marine Ecology, Amendolara (CS), Italy

6 Department of Biological, Chemical and Pharmaceutical Sciences and Technologies, University of Palermo, Palermo, Italy

7 Independent Researcher, Gżira, Malta

8 Department of Veterinary Medicine and Animal Science, Wildlife Health Lab, Università degli Studi di Milano, Lodi, Italy

9 National Biodiversity Future Center (NBFC), Palermo, Italy

10 Department of Conservation Biology and Global Change, Estación Biológica de Doñana (EBD), CSIC, Seville, Spain

*Presenter’s email: luca.ilahiane@unimi.it

Infectious diseases and parasites play a key role in wildlife population dynamics by affecting host fitness. Avian haemosporidians are vector-borne parasites widespread among bird species; nevertheless, some lineages are highly pathogenic and may threaten populations or entire species. Plasmodium relictum has been suggested as a contributing factor to the decline of the House Sparrow *Passer domesticus*, yet no haemosporidian screening has been conducted on the Italian Sparrow *Passer italiae*, a closely related, near-endemic species considered vulnerable. To fill this gap, we performed a molecular screening on 388 Italian sparrows sampled during the 2023–2024 breeding seasons across 37 sites, encompassing the species’ latitudinal range from northern Italy to Malta. We detected 177 infected individuals (prevalence: 45.6%) and identified 16 unique lineages: 11 from 108 Plasmodium infections, 3 from 69 Haemoproteus infections, and 2 from 2 Leucocytozoon infections. Three lineages of Plasmodium are described here for the first time, while the remaining 13 have previously been reported in other bird species. The most frequent lineage was SGS1 (Plasmodium relictum), accounting for 45.8% of all infections. No significant differences in prevalence were found between sexes. Juveniles showed a markedly lower infection rate (4.7%, n = 43) than adults (50.7%, n = 345). Statistical analysis revealed negative associations between infection probability and both impervious land cover and human population density, suggesting reduced parasite transmission in densely urbanized areas. This study provides a first comprehensive assessment of haemosporidian infections in the Italian sparrow, offering valuable insight into the host–parasite ecology of the species.

Round table: Invasive alien bird species in Italy: Challenges, management, and best practices

Organizers:
Enrico Caprio, *Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università di Torino*
Stefano Costa, *Ente Di Gestione Delle Aree Protette Del Po Piemontese, Centro di Referenza Avifauna Planiziale, Regione Piemonte*
Stefano Volponi, *Istituto Superiore Protezione e Ricerca Ambientale (ISPRA), Dip.to BIO – Monitoraggio e Tutela dell'Ambiente per la Conservazione della Biodiversità*

Invasive Alien Species (IAS) pose an increasing threat to biodiversity and ecosystems in Italy. This round table brings together experts to discuss control strategies, management approaches, and best practices in addressing the impact of invasive bird species. Key topics include monitoring methods, containment measures, and regulatory implications, with a focus on case studies. The discussion will also explore challenges related to public acceptance and coordination between local and national authorities. The goal is to share effective solutions to mitigate the impact of invasive species, promoting an integrated approach to the conservation of native wildlife.

THURSDAY 11 SEPTEMBER 2025

Plenary

From individuals to populations, how atmospheric dynamics govern flight, migration and species composition in birds

Kamran Safi[1*]

1 Max Planck Institute of Animal Behavior Dept. of Migration, Radolfzell, Germany

*Presenter's email: ksafi@ab.mpg.de

Understanding avian flight and migration requires a nuanced appreciation of the dynamic atmospheric environment in which birds operate. Birds have evolved to navigate these ever-changing airflows, with fitness and survival closely tied to their ability to conserve energy during flight. Recent advances in remote sensing and earth observation now allow us to document atmospheric dynamics with unprecedented spatial and temporal resolution, revealing how transient airflows intimately affect avian movement. Birds' unique capacity to exploit the aerial environment distinguishes them among vertebrates. To unravel their movement ecology, it is essential to integrate high-resolution tracking data with detailed atmospheric information. At the individual level, young birds learning to navigate airflows – such as Golden Eagles mastering the thermals of the European Alps – demonstrate how flight skills are acquired and refined. The ability to harness rising air columns directly influences the energetic cost of transport, shaping individual energy budgets and, at the population level, giving rise to migration flyways that challenge traditional views on the costs of intercontinental movement. At the species level, atmospheric conditions play a pivotal role in determining spatial and temporal patterns of habitat use, ultimately influencing which species can persist in particular environments. While the concept of the ecological niche often focuses on terrestrial factors, the atmospheric dimension is frequently overlooked. However, the aeroecology of birds encompasses a vast three-dimensional space, and atmospheric dynamics are fundamental in shaping species distributions, community diversity, and abundance.

Symposium: Movement ecology offers new perspectives on ecological barriers, connectivity and energy trade offs

Chairs: *Martina Scacco & Jacopo Cerri*

Sea crossings by non-migratory vultures: More common than previously thought?

Jacopo Cerri[1*], *Martina Scacco[2], João Guilherme[3], Fiammetta Berlinguer[4]*

1 Mammal Research Institute, Polish Academy of Sciences, Stoczek 1, Białowieża, 17- 230, Poland
2 Department of Migration, Max Planck Institute of Animal Behavior, Radolfzell, Germany
3 Vulture Conservation Foundation Sandstrasse 2, CH-8003 Zürich, Switzerland
4 Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100, Sassari
*Presenter's email: j.cerri@ibs.bialowieza.pl

GPS telemetry is revealing that those that were once considered ecological barriers for large soaring species, under certain atmospheric conditions can become more permeable, with consequences for population connectivity and gene flow. While soaring birds avoid crossing large bodies of water, due to the absence of thermals, recent studies demonstrate that soaring at sea is possible in specific atmospheric conditions. This behaviour has been investigated only in smaller soaring species, and significant knowledge gaps still exist for larger species, such as vultures. Recent evidence from GPS telemetry indicates that vultures occasionally fly over the open sea, sometimes far away from migratory routes, as for the case of movement to and from islands. Here, we aim to provide a comprehensive overview of sea-crossing behaviour in vulture species in the Mediterranean basin. We collected complete GPS tracks from individuals Griffon (n = 20), Cinereous (n = 1) and Bearded Vulture (n = 1) that had been released in conservation translocations and which were reported to have crossed the sea outside of the migration period and routes. Then, for these animals we i) mapped sea crossings, ii) quantified their number, iii) explored differences between young and adults and iv) identified the dominant weather conditions when these movements occurred. Sea crossings by dispersing, non migratory, individuals are crucial to ensure connectivity in non-migratory populations of the Mediterranean. Accounting for sea crossings is crucial to develop meta-population models for European vultures and design conservation strategies for small insular populations.

Changes in wind regimes establish a new route and a new wintering area for a migratory top predator

Ugo Mellone[1*], *Luca Baghino[2], Alejandro Onrubia[3], Guido Premuda[4], Gianpasquale Chiatante[5]*

1 Vertebrates Zoology Research Group, University of Alicante, 03690, Alicante, Spain
2 Parco Naturale Regionale del Beigua, Piazza Beato Jacopo 1-3, 17019, Varazze (SV)
3 Fundación Migres, CIMA, 11380, Tarifa, Spain
4 Viale Venezia, 41, 61121, Pesaro, Italy
5 Department of Ecological and Biological Sciences, University of Tuscia, 01100, Viterbo, Italy
*Presenter's email: u.mellone@gmail.com

The Booted Eagle *Hieraaetus pennatus*, once rare in Italy, has now established wintering grounds on the Peninsula, 3000 km away from its traditional distribution range. We show how these are accessed through a novel, detoured flyway, which in the last decade has been used by a yearly average of 458 individuals (range:

123-1218). Our analysis reveals a significant correlation between observation counts in Italy and long term changes in wind patterns at the Strait of Gibraltar, a critical bottleneck on the species' main migratory route. We suggest that altered wind patterns may increase energetic costs and mortality risk during the sea crossing, pushing eagles to avoid the strait and follow instead the Mediterranean coastline north-east. This study links for the first time changes in wind regimes with shifts in migratory routes and colonisation events, highlighting environmentally-driven movement cost as an important determinant of species' distribution.

Fine scale flight behaviour of Golden Eagles in a topographically complex region: The use of thermals, orographic uplifts and mountain waves

Francesca Frisoni[1,2*], *Tom Carrard[3], Martin U. Grüebler[4], Julia Hatzl[4], Kamran Safi[1], Michael A. Sprenger[3], Petra Sumasgutner[5], Martin Wikelski[6], Martina Scacco[7]*

1 Max Planck Institute of Animal Behavior, Department of Migration, Radolfzell, Germany
2 University of Konstanz, Department of Biology, Konstanz, Germany
3 Institute for Atmospheric and Climate Science, Department of Environmental Systems Sciences, ETH Zürich, Zürich, Switzerland
4 Swiss Ornithological Institute, Sempach, LU, Switzerland
5 University of Vienna, Department of Behavioural and Cognitive Biology, Vienna, Austria
6 Max Planck Institute of Animal Behavior, Radolfzell, Germany
7 Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland
*Presenter's email: ffrisoni@ab.mpg.de

Soaring birds are highly dependent on rising air currents (uplifts) to fly long distances at very low energetic costs. Previous studies, based on observations and low-resolution atmospheric data, have shown that they mainly use two types of uplifts, orographic and thermal uplifts, to which they respond using two typical flight modes: linear and circular soaring. However, a recent study revealed that soaring birds can also exploit a third type of uplift, namely mountain waves, combining circular and linear soaring, hence challenging the traditional view that associates binary flight modes with specific uplift sources. In this project, a high-resolution behavioural dataset is combined with a high-resolution weather model to investigate the detailed behavioural response of a highly efficient soaring flyer, the Golden Eagle *Aquila chrysaetos*, to fine-scale atmospheric dynamics in the Alps and Apennines. In collaboration with meteorologists at ETH Zürich, we developed an automated uplift classification algorithm that categorized 13,421 soaring events into orographic, thermal uplift, and mountain waves for 2020 and 2023. After classifying the atmospheric context in which the eagles flew, we used a random forest algorithm to analyse their behavioural response to the three uplift sources based on several flight metrics. Our results suggest that eagles fly very flexibly in their aerial environment and can use a similar range of behavioural patterns in all uplift sources encountered. Finally, we mapped uplift availability throughout 2023, exploring how eagles opportunistically make use of the atmospheric sources available at any given time, further highlighting their flight adaptability.

What is the currency of route optimisation? An example from migrating waterfowls

Martina Scacco[1*], *Silke Bauer[1]*

1 WSL, Swiss Federal Institute for Forest, Snow and Landscape Research, ETH Domain
*Presenter's email: martina.scacco@wsl.ch

Birds connect ecosystems across continents by migrating thousands of kilometers every year. Migration is costly, and decisions about when to start, and whether and where to stop, are the product of a trade-off between energy expenditure, energy gain, survival and fitness. This complex decision-making is strongly influenced by external factors: the resource availability at stop-over sites and at the final destination, as well as the atmospheric conditions en route, which affect the energetic cost of flight. Years of movement data are building empirical knowledge about the environmental correlates of migration timing, abundances, stop-over selection and flight cost. At the same time, theoretical models are investigating which of these factors are key to reproduce the spatio-temporal distribution of flyways, and how fluctuations in these factors due to climate changes will shape future migratory routes, affecting the connectivity and transport of nutrients, seeds, microorganisms and viruses between ecosystems that are continents apart. However, despite the demonstrated importance of atmospheric condition for flight cost and route selection, this factor is mostly neglected in theoretical migration models. Based on empirical knowledge, we parametrised a behaviour-based optimisation model to simulate the migratory routes and stop-over sites of Greater White-fronted Geese *Anser albifrons* across the East-Atlantic flyway, while accommodating changes in flight cost. By comparing our simulations with simulations assuming a constant flight cost, we highlight the importance of atmospheric energy in shaping migratory routes and provide a framework that could be easily expanded across species, flyways and future climate change scenarios.

Do birds have knowledge about future environmental conditions in breeding or wintering grounds prior to migration?

Elisa Perinot[1*], *Bjorn Stevens[2], Martin Wikelski[1], Kamran Safi[1]*

1 Department of Migration of Max Planck Institute of Animal Behaviour

2 Department of Climate Physics of the Max Planck Institute of Meteorology

*Presenter's email: eperinot@ab.mpg.de

Although birds fatten up to meet the energetic demand, migration journeys are long and exhausting and represent a challenge, increasing also mortality rate among individuals. Besides this, environmental conditions play a key role both during migration and at arrival. In fact, if depleted birds arrive at destination and weather conditions have not been and/or are not favourable, they might struggle to find food, recover and potentially die. From a meteorological point of view, climatic events can be related or linked between separated and distant locations, a phenomenon that is called teleconnections. Variation in one region results in a change in the other as well, mainly in the opposite sense and either contemporaneously or delayed in time. In addition, teleconnections are recursive. It follows that climatic events in a geographically distinct area can be predicted in advance. As such, it seems plausible that birds might have evolved a way to estimate environmental conditions at the breeding or wintering grounds prior to migration. What if birds evolved to perceive teleconnections? This study explores the possibility that birds can use teleconnections to their advantage. We use movement data from long distance migrants between Africa and Europe and compare it with climatic data from the same regions, looking at weather links between departure and arrival date. If this were the case, birds could anticipate weather conditions at destination and use it to decide when to migrate.

Fine-scale movement data of a gadfly petrel highlights primarily surface foraging and greater nocturnal flight activity

Letizia Campioni[1*], *Paolo Becciu[2], Allison Patterson[3], Carina Gjerdrum,[4], Jeremy Madeiros[5]*

1 Department of Conservation Biology and Global Change, Doñana Biological Station (EBD-CSIC), Seville E-41092, Spain

2 Department of Ecology and Evolution, University of Lausanne, Lausanne, Switzerland

3 Environment and Climate Change Canada, Dartmouth, Nova Scotia B2Y 2N6, Canada
4 Canadian Wildlife Service, Dartmouth, Nova Scotia B2Y 2N6, Canada
5 Department of Conservation Services, Ministry of the Environment, PO Box FL588, Flatts, FL BX, Bermuda
*Presenter's email: letiziacampioni@hotmail.com

Foraging behaviour is crucial for animal fitness and population dynamics, particularly in central place foragers like breeding seabirds, which must balance energy expenditure with the need to return to the nest for incubation shifts or provisioning their offspring. Among Procellariform seabirds, petrels exhibit diverse foraging strategies adapted to patchy, unpredictable resources. However, the foraging and flight strategies of small petrels remain understudied compared to those of larger seabirds, such as albatrosses and shearwaters. We deployed miniaturized multi-sensor biologgers to investigate the at-sea behaviours of the endangered Bermuda Petrel *Pterodroma cahow*, a mesopelagic prey specialist. GPS data revealed extensive foraging trips in consistent directions over remote oceanic regions. Time-depth recorders indicated that petrels rely on prey near the water's surface, with over 99% of dives shallower than 0.1 m. Like other congeners, but not all, Bermuda petrels do not rely on dive foraging. A supervised random forest model classified accelerometer-derived behaviours into three flight-related and three water-associated states. As expected, petrels spent over 75% of their time in flight, predominantly in dynamic soaring and flap-gliding flight modes. A behaviour identified as "flight intensive", though rare, may indicate aerial dipping which is a distinctive *Pterodroma* feeding technique. Water behaviours ("active", "inactive", and "intensive") were more frequent during the day, whereas flight activity increased at dusk and night. These findings suggest petrels optimize their foraging efficiency by targeting prey at specific times and locations. While further validation is needed, our study provides valuable insights into Bermuda petrel foraging ecology and the potential risks posed by nocturnal offshore human activities.

The cost of crowding: How breeding birds modulate foraging behaviour according to colony sizes and environmental conditions

Jacopo G. Cecere[1*], *The Scopoli's shearwater Consortium*[2], *The Lesser Kestrel Consortium*[2]

1 ISPRA
2 various affiliations
*Presenter's email: jacopo.cecere@isprambiente.it

In colonial breeders, individual foraging behaviour is influenced by a complex interplay between reproductive constraints and colony size. These factors often force individuals to adjust their spatial ecology to meet both their energetic demands and those of their offspring. Using two model species, the Scopoli's Shearwater *Calonectris diomedea* and the Lesser Kestrel *Falco naumanni*, we investigated how colony size and environmental variability shape foraging ranges across multiple breeding populations distributed along broad geographic gradients. To do this, we analyzed tracking data from 714 breeding Scopoli's Shearwaters and 144 Lesser Kestrels. In both species, larger colony sizes were associated with larger foraging ranges, likely reflecting more extensive local prey depletion around densely populated colonies. Environmental drivers, such as wind patterns, solar radiation, and primary productivity, further modulated this pattern, either by altering the energetic costs of movement or by affecting prey availability. In shearwaters, foraging effort increased with primary productivity, a pattern likely driven by the inverse relationship between productivity and prey abundance in the Mediterranean. In kestrels, solar radiation and seasonal degree-days were important predictors of foraging range, particularly in interaction with sex and offspring age. Overall, our findings reveal that colonial breeding imposes density-dependent costs that are magnified by environmental conditions, requiring individuals to adjust their movement strategies accordingly. This comparative approach highlights convergent behavioural responses across taxa and underscores the ecological costs of sociality in spatially constrained breeders.

Effectiveness of Protected Areas Networks in safeguarding colonies and key foraging areas of the Scopoli's Shearwater across its breeding range

Federico Tossani[1*], *Nicola Baccetti[2], Federico De Pascalis[3], Camilla Gotti[2], Francesco Pezzo[2], Marco Zenatello[2], Scopoli's shearwater Consortium[4], Marco Parolini[1], Diego Rubolini[1], Jacopo G. Cecere[3]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milan, Italy

2 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano dell'Emilia, Italy

3 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano dell'Emilia, Italy

4 various affiliations

*Presenter's email: federico.tossani@unimi.it

Protected areas (PAs) are essential tools for biodiversity conservation, yet their effectiveness in safeguarding wide-ranging marine species, such as seabirds, remains underexplored. This study evaluates how well PAs protect both breeding colonies and marine foraging grounds of Scopoli's Shearwater *Calonectris diomedea* across its global breeding range (the Mediterranean basin). To assess land-based threats, expert-driven questionnaires were used to collect data on invasive species, light pollution, and human disturbance at colonies. At sea, we applied the track2KBA framework to GPS data from 1,091 individuals tracked at 31 colonies across the entire Mediterranean, from Spain in the west to Greece in the east, covering 17 years of monitoring (between 2007 and 2024). This standardized approach identified Important Conservation Areas (ICAs) at colony level, which were then overlaid with PAs boundaries and spatial data on human pressures such as fishing effort, oil tanker traffic, and offshore infrastructure. This allowed us to evaluate threat exposure and protection effectiveness both on land and in marine PAs. We also assessed transboundary conservation responsibilities by quantifying each country's contribution to the overall protection of the tracked population through ICA representativeness. This analysis revealed gaps in international collaboration and highlighted opportunities for more coordinated management efforts. Ultimately, our findings support more effective spatial planning and inform policy decisions for seabird conservation in the Mediterranean, contributing to the achievement of the EU Biodiversity Strategy target of protecting at least 30% of EU seas by 2030.

Session: Global changes and emerging threats III

Chairs: *Nicola Baccetti & Marco Gustin*

A forestry lesson from post-disturbance monitoring of Black Woodpecker *Dryocopus martius* nests: Not everything we lose is a loss, but salvage logging can throw away anything

Chiara Bettega[1,2*], *Luigi Marchesi[2], Piergiovanni Partel[3], Paolo Pedrini[2], Alessandro Franzoi[2], Mattia Brambilla[1]*

1 Università degli Studi di Milano, Dipartimento Scienze e Politiche Ambientali

2 Museo delle Scienze, Trento

3 Parco Naturale Paneveggio-Pale di S. Martino

*Presenter's email: chiara.bettega@gmail.com

Ecosystem engineers, like woodpeckers, and large-scale disturbances, like windstorms and bark beetle outbreaks, are main factors influencing the composition and structure of temperate forests. When disturbance hits production forests, salvage logging is practised to mitigate economic losses and the spreading of insect pests, impacting many species and ecosystem processes. In October 2018, the windstorm Vaia hit spruce-dominated forests in the eastern Italian Alps. The storm was followed by an outbreak of the European spruce bark beetle Ips typographus. Forest managers harvested a huge amount of wood after the storm, and then large forest patches have been salvage-logged to face the beetle outbreak. Here, we focused on nests of Black Woodpecker *Dryocopus martius* in the Natural Park Paneveggio-Pale di S. Martino, severely hit by Vaia and the bark beetle outbreak. Nests have been monitored since 2011 and from 2021 a post-Vaia monitoring has started, both to monitor the breeding biology of active nests and to assess the legacy of post-disturbance management. Half of the trees with Black Woodpecker cavities were destroyed by Vaia, but the species' population remained stable, and in 2024 60% of the breeding pairs have moved from cavities excavated on living trees to dead stands. Ongoing salvage-logging operations are removing all the woodpecker cavities, with likely long-term consequences on biological communities. We started a new management in the State Forest inside the Park, preserving from cutting 20-30 trees around the trees with Black Woodpecker cavities. This would promote biodiversity by making available tens of cavities for decades.

Towards a biodiversity-friendly agriculture: Parcel-scale ground vegetation management affects densities of avian functional groups in vineyards

Maurizio Odicino[1*], *Giacomo Assandri[2], Mattia Brambilla[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milano, Italy

2 Dipartimento di Scienze e Innovazione Tecnologica, Università del Piemonte Orientale "Amedeo Avogadro", Alessandria, Italy

*Presenter's email: maurizio.odicino@unimi.it

Wild species provide many ecosystem services in farmed areas, supporting production. Vineyards are often highly intensive crops, and management practices strongly affect biodiversity and birds in particular. Implementing fine-scale sustainable management should be more feasible compared to landscape-scale policies, but the impact of management actions at the parcel scale has been seldomly addressed by previous research. In this study, we investigate the effects of parcel-scale management practices on different avian functional groups in an isolated hill located in Southern Lombardy (N Italy). We show the positive effects of practices that increase habitat heterogeneity compared to intensive practices. Inter-row alternate mowing shows a positive relation with the abundance of seed eaters and a negative relation with the abundance of potential grape eaters. Patches of bare ground promoted seed eaters'

abundance and the overall number of species, while irrigation has a negative effect on different variables. Moreover, our results suggest that vineyards may act as a surrogate habitat for insectivore birds. Our study shows that easy to implement fine-scale measures can be an effective tool to support bird communities and the associated ecosystem services. Combining these practices with landscape-scale management policies will help maximize the balance between ecosystems services and disservices mediated by biodiversity and also meet the targets of EU's policies.

Rapid expansion of an invasive alien species of European Union concern: The case of the African Sacred Ibis in Tuscany

Luca Puglisi[1*], *Emiliano Arcamone[1], Luigi Malfatti[1], Lorenzo Vanni[1], Dimitri Giunchi[2]*

1 Centro Ornitologico Toscano "Paolo Savi" - ETS

2 Department of Biology, University of Pisa

*Presenter's email: direttore@centrornitologicotoscano.org

The African Sacred Ibis *Threskiornis aethiopicus*, one of the invasive exotic species of EU concern, has only recently become a regular presence in Tuscany. It has shown a dramatic increase in winter presence since 2015, with an average annual increase of 72%, leading to around 6,500 individuals in 2025, and established a breeding population in 2017. An in-depth study of the species' presence in the region was launched in 2024 with the aim of describing its abundance, phenology, habitat use and spatial and temporal distribution throughout the year. The breeding population increased from 3 pairs in 2017 to 232 in 2024, with an average annual increase rate of 70%. Breeding sites are in various situations and are shared with 5-8 species (Ardeidae, Threskiornithidae and Phalacrocoracidae). Monthly censuses carried out from May 2024 in 100 sample areas, including wetlands, reclamation areas and lowland agricultural areas, and in over 70 roosts, showed a decrease in the abundance of the species during the summer months and a subsequent increase from October onwards, indicating a direct link between the Tuscan and Po Valley populations. The highest numbers are recorded from December to February, with a decline from March onwards, when the birds also begin to reoccupy the breeding colonies. The species feeds in groups, even very large ones, in a wide variety of situations, including dry open areas, with seasonal variations probably influenced by soil moisture/flooding conditions.

Microplastic ingestion and diet analysis in migratory shorebirds at Bahía Lomas, Chile

Ludovica Giovinazzi[1,2*], *Heraldo Norambuena Ramírez[2] , Carmen Espoz Larraín[2], Erik Sandving Coleman[2], Cristina Coccia[1,2,3], Massimiliano Scalici[1,3]*

1 Department of Science, Roma Tre University, Rome, Italy

2 Bahía Lomas Research Centre, Universidad Santo Tomás, Av. Ejército Libertador 146, 8370003 Santiago, Chile

3 National Biodiversity Future Center (NBFC), Università di Palermo, Piazza Marina 61, 90133 Palermo, Italy

*Presenter's email: lud.giovinazzi@stud.uniroma3.it

Microplastic (MP) pollution represents one of the most significant emerging threats to marine and coastal taxa, including shorebirds, with potential negative effects on the health of organisms. Studying MP pollution in shorebirds is crucial, as these species often occupy high trophic levels in coastal ecosystems and can serve as effective bioindicators of environmental contamination. In this study, we used stable isotope analysis of C and N alongside microplastic (MP) examination to assess microplastic ingestion and examine its relationship with the diet of three species of migratory shorebirds in Bahía Lomas wetland, a Ramsar site of critical ecological importance in Tierra

del Fuego (Chile). The species analyzed include *Anarhynchus falklandicus* – Two-banded Plover and *Haematopus leucopodus* – Magellanic Oystercatcher, considered short-distance migrants as they move primarily from southern Chile up to Uruguay, and *Limosa haemastica* – Hudsonian Godwit, a long-distance migrant that undertakes one of the most extensive migratory routes from North America, reaching Tierra del Fuego from its breeding area in Alaska. We collected feces of the three species, sediments, and their potential macroinvertebrate prey in the main foraging and nesting areas within Bahía Lomas once during the austral spring. We found varying levels of MPs contamination in all species and prey, providing the first evidence of the presence of microplastics in Bahía Lomas. Moreover, our data will contribute to a deeper understanding of the relationship between the diets of the studied species and MP ingestion. These results will serve as a crucial starting point to promote and advance future research on this topic in an area of high ecological relevance, essential for the breeding and wintering of numerous bird species.

Spring snowmelt on ski-pistes shapes foraging opportunities for mountain bird communities

Riccardo Alba[1], Andrea Fragomeni[1*], *Domenico Rosselli*[2], *Dan Chamberlain*[1]

1 Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università di Torino, Turin, Italy

2 Ente di Gestione delle Aree Protette delle Alpi Cozie, Salbertrand, Italy

*Presenter's email: fragomeniandrea@gmail.com

Mountainous regions represent some of the most biodiverse ecosystems on Earth, but face growing threats from climate and land-use change. In Europe, the Alps stand out as a key mountain range, where biodiversity is affected by both altered snow phenology and skiing. Hence, understanding snow dynamics and the effects of the ski industry on mountain ecosystems is crucial for developing conservation strategies. Ski-pistes generally have a negative impact on mountain biodiversity, yet they retain considerable snow throughout spring. Snow-related habitats provide suitable foraging conditions for some bird species, but their community-level effects are still poorly understood. Therefore, spring snowmelt on ski-pistes may create favorable foraging opportunities for mountain birds. This study aims to investigate whether ski-pistes offer suitable foraging conditions for mountain birds by examining the effect of melting snow on pistes at the community level. During spring 2023, in the Western Italian Alps, we recorded 167 individuals from 17 bird species using melting snow on ski-pistes as a foraging habitat. GLMM results showed that birds systematically selected areas with intermediate snow cover interspersed with muddy patches, a microhabitat that likely provides high prey availability. Due to greater snow retention over time compared to surrounding habitats, ski-pistes can provide a useful food source for mountain birds in spring. However, this benefit must be weighed against the broader negative impacts that skiing exerts on mountain biodiversity. Understanding these effects is essential to ensure that future conservation strategies support mountain bird communities, while reducing the negative effects of ski industry growth.

Context-dependent foraging habitat selection of breeding Kentish Plover in a human-dominated environment

Simona Imperio[1*], *Jacopo G. Cecere*[1], *Marco Picone*[2], *Marco Basso*[3], *Lucio Panzarin*[4], *Claudio Sebastianelli*[5], *Francesca Morici*[5], *Lisa Treccani*[6], *Lorenzo Serra*[1]

1 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Area Avifauna Migratrice, Via Ca' Fornacetta 9, 40064 Ozzano Emilia (BO) Italy

2 Department of Environmental Sciences, Informatics, and Statistics, Ca' Foscari University Venice, Via Torino 155, 30172, Venezia-Mestre, Italy

3 Via Gianbattista Verci, 25/4, 35128, Padua, Italy
4 Via Giacomo Leopardi 5, 30020, Torre di Mosto, VE, Italy
5 Ornitologi Marchigiani ETS, Via Giuseppe Verdi 10/A, 62100, Macerata, Italy
6 Department of Biosciences, University of Milan "La Statale" - Italy
*Presenter's email: simona.imperio@isprambiente.it

During breeding, foraging movements are constrained in space and time by the need to guard eggs and rear chicks at the nesting site. Additionally, foraging behaviour can vary among different populations of the same species depending on the ecological context, and even among individuals of the same population due to intrinsic and extrinsic factors. Using individual GPS tracking, we investigated the foraging behaviour of egg-incubating Kentish Plovers nesting on sandy beaches in two study areas along the Adriatic coast, namely Cavallino-Treporti (Veneto Region), a beach bordering the Venice lagoon, and the beaches of Fano and Senigallia (Marche Region), which have built-up and agricultural areas behind them. In both areas, males forage mainly at daytime and females mainly at night, travelling up to 16 km from the nest. In Cavallino-Treporti, males modulate their behaviour according to tide, foraging in the lagoon at low tide and on the beach at high tide. Conversely, females primarily foraged in the lagoon, regardless of tidal conditions. Moreover, individuals utilized foraging areas that were significantly distinct from those of other tagged conspecifics, likely reducing intra-specific competition. In Fano and Senigallia, both sexes exclusively foraged along the beach, with a positive selection for the areas near river mouths. However, only males showed a preference for foraging closer to ditches or boat storages, possibly to avoid human disturbance during the day. Overall, this study uncovered unexpected sexual differences in foraging behaviour of Kentish Plovers, with each sex likely facing different environmental pressures related to diurnal and nocturnal foraging.

A storm of ecological opportunities: European Nightjars *Caprimulgus europaeus* breeding in wind-disturbed forests

Alma De Angelis[1*], *Chiara Bettega[2,3], Mattia Brambilla[3,4], Luigi Marchesi[2], Paolo Pedrini[2], Andrea Augusto Pilastro[1]*

1 Università degli Studi di Padova, Dipartimento di Biologia
2 MUSE Museo delle Scienze di Trento, Biologia della Conservazione
3 Università degli Studi Milano, Dipartimento di Scienze e Politiche Ambientali
4 CRC Ge.S.Di.Mont., Università degli Studi di Milano
*Presenter's email: alma.deangelis@hotmail.com

Large-scale natural disturbances are essential elements in forest ecosystem dynamics, influencing their composition, structure and functions. In European temperate forests, windstorms and insect outbreaks are the main disturbance agents. Their frequency and intensity are expected to increase due to climate change and a correct post-disturbance management will be essential to maintaining sufficient levels of biodiversity. Here, we investigated the occupancy patterns of the European Nightjar *Caprimulgus europaeus* in a forested area in Trentino (Italy), damaged by Vaia windstorm in 2018 and by the subsequent bark-beetle outbreak. We surveyed 52 points, encompassing a range of vegetation belts and different types of environments, i.e. forest, clearings and windthrows. We used the method of acoustic point counts and each point was surveyed twice during the breeding season. For each point, we collected data about land cover, topographic, and meteorological variables. We found a significant positive effect of shrub coverage on nightjar occupancy probability - a vegetation type widely spread in the semi-open habitats created by the windstorm. Other storm related features like the presence of rocks, roots and bare ground had a positive, though marginal, effect on nightjar occupancy probability. The mosaic of landscape features emerged after the storm and the beetle outbreak and the resulting higher environmental heterogeneity may have favoured the presence of nightjars in this area, which was previously dominated by a closer conifer canopy. Present and future management of the area should consider the ecological opportunities deriving from disturbance and the importance of maintaining clearings with dead-wood legacies.

Session: Migration II

Chairs: *Flavio Monti & Ugo Mellone*

Global patterns of migratory connectivity in Barn Swallows

Susan Ellen McKinlay[1*], *Jouke Altenburg[2], Yury Anisimov[3], Emi Arai[4], Javier Balbontín Arenas[5], Juan I. Areta[6], Juan Arizaga[7], Marc Bastardot[8], Vojtech Brlík[9], Jocelyn Champagnon[10], Renato Casagrandi[11], Alessandra Costanzo[1], Paul Dufour[12], Olivier Duriez[13], Facundo Gandoy[14], Masaru Hasegawa[15], Wieland Heim[16], Barbara Helm[12], Frédéric Jiguet[17], Hakan Karaardıç[18], Kevin Kardynal[19], Petr Klvaňa[20], Felix Liechti[12], Yu Liu[21,22], Christoph Meier[12], Piotr Matyjasiak[23], Mattia Pancerasa[11], Andrea Romano[1], Rebecca Safran[24], Chiara Scandolara[1], Ichiro Tayasu[25], Li Tian[22], Sheela Turbek[24], Henk van der Jeugd[26], Irene Vertua[1], David Winkler[27], Yang Wu[22], Zhengwang Zhang[22], Martins Briedis[12,28], Diego Rubolini[1], Roberto Ambrosini[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Via Celoria 26, Milano, Italy

2 Birdlife Netherlands, PO BOX 925, 3700 AX, Zeist, Netherlands

3 Ulaanbaatar, Mongolia

4 Fundamental Research Department, Research Institute for Humanity and Nature, 457-4 Motoyama, Kamigamo, Kita-ku, Kyoto, Japan

5 Department of Zoology, Faculty of Biology, Green Building, Avenue Reina Mercedes, E-41012, Seville, Spain

6 Laboratorio de Ecología, Comportamiento y Sonidos Naturales (ECOSON), IBIGEO-CONICET, Rosario de Lerma - Salta, Argentina

7 Department of Ornithology, Aranzadi Sciences Society, Zorroagagaina 11, 20014, Donostia, Spain

8 Lausanne, Switzerland

9 Department of Ecology, Charles University, Viničná 7, Prague, Czech Republic

10 Institut de Recherche de la Tour du Valat, Le Sambuc, Arles, France

11 Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico Di Milano, Via Ponzio 34/5, 20131, Milano, Italy

12 Swiss Ornithological Institute, Department of Bird Migration, Seerose 1, 6204, Sempach, Switzerland

13 CEFE, Univ Montpellier, CNRS, EPHE-PSL University, IRD, Montpellier, France

14 Instituto de Ecología Regional, Universidad Nacional de Tucumán (UNT) - Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Tucumán, Argentina

15 Department of Environmental Science, Ishikawa Prefectural University, 1-308 Suematsu, Nonoichi-city, Ishikawa Prefecture, 921-8836, Japan

16 Institute of Biology and Environmental Sciences, University of Oldenburg, Oldenburg, Germany

17 Conservation des Espèces Restauration et Suivi des Populations-MNHN, Paris 75005, France

18 Department of Math and Science Education, Education Faculty, Alanya Alaaddin Keykubat University, 07400, Alanya, Turkey

19 Environment and Climate Change Canada, Saskatoon, Saskatchewan, Canada

20 Bird Ringing Centre, National Museum, Prague, Hornoměcholupská 34, 102 00, Prague, Czech Republic

21 State Key Laboratory of Environmental Criteria and Risk Assessment, Chinese Research Academy of Environmental Sciences, Beijing, 100107, China

22 Key Laboratory for Biodiversity Sciences and Ecological Engineering, Ministry of Education, College of Life Sciences, Beijing Normal University, Beijing 100875, China

23 Institute of Biological Sciences, Cardinal Stefan Wyszyński University in Warsaw, 01-938 Warsaw, Poland

24 Department of Ecology and Evolutionary Biology, University of Colorado, Boulder, Colorado 80309, USA

25 Fundamental Research Department, Research Institute for Humanity and Nature, 457-4 Motoyama, Kamigamo, Kita-ku, Kyoto, Japan

26 Dutch Centre for Avian Migration and Demography, NIOO – KNAW, Wageningen, Netherlands

27 Department of Ecology and Evolutionary Biology, Museum of Vertebrates and Laboratory of Ornithology, Cornell University, Corson Hall, Ithaca, NY 14853, USA

28 Institute of Biology, Faculty of Medicine and Life Sciences, University of Latvia, Riga 1004, Latvia

*Presenter's email: susan.mckinlay@unimi.it

Migratory connectivity defines the degree of mixing of individuals from multiple breeding populations in their non-breeding areas. It can vary across populations and may depend on migration distance and the availability of suitable land in non-breeding areas. Migratory spread — the average distance between individuals from the same breeding population in non-breeding areas — has been proposed as a measure of migratory connectivity. It has been

hypothesised that migratory spread increases with migration distance due to increasing effects of random deviations from genetically predetermined routes, as well as with greater availability of suitable habitats. To test these hypotheses, we analysed a global dataset of nearly 300 geolocator-tracked Barn Swallows *Hirundo rustica* from 12 populations, spanning from Argentina to eastern China. To our knowledge, this study is the first to examine migratory connectivity patterns within a single passerine species on a global scale. Barn Swallows show broad variation in migratory behaviour, with some populations travelling short distances and others migrating long distances. Such variability was well captured by our global dataset, with migration distances ranging from 2559 to 8474 km and migratory spread from 675 to 2189 km across populations. Migratory spread increased significantly with greater availability of land masses in non-breeding areas but was unrelated to migration distance. Our results suggest that geography, rather than migration distance, drives intraspecific patterns of migratory spread. Historical and biogeographical factors, such as landmass distribution, likely shaped current connectivity patterns in this migratory species.

High flexibility in migratory traits of Lesser Kestrels

Sara Cioccarelli[1*], *Jacopo G. Cecere[2], Giacomo Assandri[3], Alessandro Berlusconi[4], Alejandro Corregidor-Castro[5,6], Andrea Romano[4], Nikos Tsiopelas[7], Samuele Ramellini[8], Diego Rubolini[4], Michelangelo Morganti[1,6]*

1 Consiglio Nazionale delle Ricerche – Istituto di Ricerca sulle Acque (CNR-IRSA), Brugherio, MB, Italy

2 Area per l'Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano Emilia, BO, Italy

3 Dipartimento di Scienze e Innovazione Tecnologica, Università del Piemonte Orientale "Amedeo Avogadro", Alessandria, Italy

4 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Italy

5 Dipartimento di Biologia, Università di Padova, Via U. Bassi 58/B, I-35131 Padova, Italy

6 NBFC, National Biodiversity Future Center, Palermo 90133, Italy

7 Hellenic Ornithological Society/BirdLife Greece, Athens, Greece

8 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australia

*Presenter's email: cioccarelli.c@gmail.com

Characterising individual behavioural consistency offers valuable insight into the mechanisms beyond the selective pressures that have shaped animal migration strategies. For trans-Saharan migratory birds, crossing ecological barriers is likely the most dangerous life stage. In this context, high inter-annual repeatability in migratory traits should reduce the risks of exposure to novel and potentially unfavourable ecological conditions. However, in a rapidly changing environment, low repeatability in these traits may be interpreted as flexibility, potentially offering key selective advantages. We analysed 40 repeated migration trips of 14 adult Lesser Kestrels *Falco naumanni*, a small trans-Saharan falcon, to assess the individual repeatability of migratory traits such as departure and arrival dates, duration, distance, and non-breeding spatial distribution. Overall, we found low repeatability (<0.4) across all traits, except for non-breeding latitude which remained relatively consistent within individuals across years. Most migrating routes showed substantial detours from the shortest path between breeding and non-breeding areas. This was most likely due to wind drift experienced during sea and Sahara crossing. This was also confirmed by the analysis of drift direction, which was reflected in a corresponding shift in the same direction of the non-breeding area. Overall, we found that Lesser Kestrels from different colonies exhibit behavioural flexibility in their migration traits. This flexibility is likely influenced by environmental conditions experienced during the post-breeding and migration phases. Since ecological conditions in the Sahel have huge inter-annual variability, the behavioural flexibility of Lesser Kestrels may confer adaptive advantages in an increasingly dynamic environment.

Biotic and abiotic factors drive circadian migration patterns in Northern Pintails across the Eurasian flyway

Devon Cevenini[1,2*], *Daniele Baroni[2], Marco Basso[3], Jacopo G. Cecere[2], Federico De Pascalis[2], Alessandro Franzoi[2,4], Simona Imperio[2], Lucio Panzarin[5], Andrea Pilastro[1,6], Simone Pirrello[2], Fernando Spina[2,7], Lorenzo Serra[2]*

1 Università degli Studi di Padova, Dipartimento di Biologia (DiBio), Padova (PD), Italy

2 Area per l'Avifauna Migratrice (BIO-AVM), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano Emilia (BO), Italy

3 Via Gianbattista Verci 25/4 35128, Padova (PD), Italy

4 Ufficio Ricerca e Collezioni museali, Muse – Museo delle Scienze, Trento (TN), Italy

5 Via Giacomo Leopardi 5 30020, Venezia (VE), Italy

6 National Biodiversity Future Center, Palermo (PA), Italy

7 Via Francesco Verrotti 32 65126, Pescara (PE), Italy

*Presenter's email: devon.cevenini@phd.unipd.it

Birds may exhibit significant plasticity in their circadian migration patterns, adapting to diverse environments encountered along flyways. In dabbling ducks, conflicting evidence supports their classification as either nocturnal or facultative diurnal-nocturnal migrants, with limited understanding of the factors driving such substantial behavioural variation. We investigated how biotic (e.g. across biomes) and abiotic (daylight variation) factors influenced individual movement patterns during pre-breeding migration of GPS-tracked Northern Pintails *Anas acuta* tagged in late winter in the Adriatic (Italy). Complete tracks were retrieved for 26 pintails (n=28 migration events) migrating along the Eurasian flyway to their breeding areas (spread between ca. 46°–70° N and 23°- 73° E). Our study revealed remarkable variability in migration distance, duration, and speed. Pintails covered distances from 2'400 up to 7'800 km between February and June, averaging 65 km/day (maximum 830 km/d for active migration segments). Earlier departing birds travelled longer distances, with timing and stopover behaviour primarily influenced by season. While active migration was predominantly nocturnal overall, we observed a marked shift to strictly diurnal (higher sun altitude) migration within the tundra biome (beyond the boreal forest treeline). This shift was not solely due to the steep reduction in dark hours as individuals migrated northeast. Rather, it likely stemmed from factors such as the increasing urgency to reach breeding grounds and an adaptation to ecological contexts favouring daytime migration.

Session: Other topics

Chairs: *Alessandro Montemaggiori & Enrico Bassi*

13 years of change: How wind energy development has transformed raptor habitats in Sardinia

Chiara Costantino[1*], *Jacopo Cerri[1,2], Ilaria Fozzi[1], Davide De Rosa[1], Fiammetta Berlinguer[1]*

1 Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100, Sassari, Italy

2 Mammal Research Institute, Polish Academy of Sciences, Stoczek 1, Białowieża, 17-230, Poland

*Presenter's email: chiara.costaco@gmail.com

The rapid expansion of wind energy across the Mediterranean region calls for more advanced tools to assess and mitigate its impacts on biodiversity. In this study, we propose an innovative approach that integrates historical satellite imagery and ecological modelling to assess the spatiotemporal overlap between wind energy development and habitat suitability for multiple vulnerable raptor species. We reconstructed a 13-year time-series of wind turbine distribution using high-resolution satellite images. We then applied species distribution models (SDMs) to eight raptor species of conservation concern and investigated how the overlap between wind turbine and species' SDM changed over the years. Our analysis revealed a marked increase in wind energy infrastructures, with a high degree of overlap between newly developed areas and suitable habitats for multiple species. This approach highlights the potential of combining geospatial data, predictive modelling, and a multi-species perspective to complement traditional assessment methods. Our results offer useful insights for identifying priority areas for monitoring and mitigation and suggest a transferable framework that could support more biodiversity-informed energy planning in Mediterranean ecosystems.

Country-scale shifts in habitat use of 35 bird species due to wind turbines

Jaad Besse[1*], *Jean Nabias[1], Alexandre Robert[1], Isabelle Le Viol[1], Christian Kerbiriou[1]*

1 Centre d'Ecologie et des Sciences de la Conservation

*Presenter's email: jaad.besse@edu.mnhn.fr

Mitigating the local impacts of wind energy on biodiversity requires a clear understanding of how wind turbines influence bird spatial distribution. However, avian responses vary depending on taxonomic group, temporal context, and spatial scale. Key knowledge gaps remain regarding the spatial extent of turbine proximity effects, the role of wind direction relative to turbines, and the intermittence of these effects. Using nationwide citizen science data collected during the breeding season, we modeled the effects of proximity to the nearest onshore wind turbine on the local abundance of 35 bird species. Species were selected based on observation frequency and potential vulnerability to turbine collisions. We assessed the presence, directionality, and intermittence of distance and wind direction effects for each species. We also quantified the intensity and spatial extent of the distance effect. In 23 species, we detected significant responses to turbine proximity, which were largely species-specific in direction, intensity, and range. The spatial extent of the effect often exceeded 5 km and occasionally 7.5 km. Most responses were either continuous or occurred only during rotor activity. Eight species exhibited sensitivity to wind direction relative to the nearest turbine. These effects were consistently intermittent: four species responded only during rotor activity, while the others responded only during rotor stoppage. Our findings highlight the need to assess turbine proximity effects on birds at spatial scales of several kilometers. Wind direction relative to turbines should also be considered in avian impact assessments. This study supports species-specific risk evaluation for sustainable wind energy development.

Impact assessment of powerlines on birds of prey in Northern Italy: Risk assessment and solutions applied to reduce the threat

Enrico Bassi[1*]

1 CISO - Centro Italiano Studi Ornitologici

*Presenter's email: enrico.bassi76@gmail.com

Between 2022 and 2024, the companies A2A and Unareti supported a study to assess the impact of their powerlines on five raptor species (*Bubo bubo*, *Aquila chrysaetos*, *Falco peregrinus*, *Circaetus gallicus*, *Milvus migrans*) in the Alto Garda Bresciano Regional Park. Within a 1027 km² area (Area 2), historical data (1985-2024) on species presence and mortality were compiled, while field monitoring was carried out in a 289 km² subarea (Area 1). In Area 2,43 breeding pairs of target species were identified, and 60.4% of injury/mortality cases (64 out of 106) were attributed to powerlines. The most affected species was Eurasian Eagle-Owl, with 34 of 67 cases (50.7%). Using the criteria from Bassi (2018), 253.4 km of uninsulated medium-voltage and 4.4 km of uninsulated low-voltage lines were classified at very high risk. Mortality along seven transects was evaluated, resulting in an IKA (Index of Kilometric Abundance) of 0.44 carcasses/km. Camera traps deployed on 126 carcasses revealed heavy potential underestimation of powerline mortality: 75% were entirely removed within 10 days (median persistence: 34.5 hours). Since 2017, 732 km of MV and LV powerlines have been removed or buried in Area 2; 445 km of these would have been classified as very high risk. Of these, 248 km were within 0-2 km of a nest of a target species, benefiting 41 breeding pairs. Additionally, 284 km of lines have been retrofitted with elicord insulation. Based on our data, an estimated 8.3 Eurasian Eagle-Owls were saved between 2011 and 2023 (0.7/year) thanks to mitigation actions.

Who gets to enjoy urban nature? A meta-analysis of socioeconomic disparities in biodiversity access

Francesca Cochis[1,2*], *Irene Regaiolo[1,2], Riccardo Alba[1,2], Enrico Caprio[1,2], Péter Batáry[3], Arjun Amar[4], Dominic A. W. Henry[5,6], Chevonne Reynolds[5], Dan Chamberlain[1,2]*

1 Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy

2 NBFC, National Biodiversity Future Center, Palermo, Italy

3 Landscape and Conservation Ecology, Institute of Ecology and Botany, HUN-REN Centre for Ecological Research, Alkotmány U. 2-4, 2163 Vácrátót, Hungary

4 Fitzpatrick Institute of African Ornithology, University of Cape Town, Cape Town, South Africa

5 School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Braamfontein 2000, South Africa

6 Statistics in Ecology, Environment and Conservation, Department of Statistical Sciences, University of Cape Town, Rondebosch, South Africa

*Presenter's email: francesca.cochis@unito.it

Although urban habitats are often depauperate of wildlife, urban biodiversity plays a crucial role in sustaining ecosystem functions and providing essential benefits to city dwellers, such as supporting environmental health and enhancing human well-being. However, growing evidence suggests that access to urban biodiversity—whether in the form of vegetation, wildlife, or other natural elements—is often linked to socioeconomic status (SES), a phenomenon known as the "luxury effect". In simple terms, wealthier individuals are more likely to access biodiversity and its associated benefits than those with lower-incomes, highlighting a form of environmental and social injustice. In this context, we conducted a meta-analysis to systematically assess the evidence for the biodiversity-SES correlation across urban areas worldwide. Our analysis includes various measures of biodiversity, such as street tree cover and counts of synanthropic species, as well as key factors influencing this relationship, including economic context and urban matrix composition (e.g., green space area and distribution, private gardens, and public parks). Identifying cities where this correlation is weaker or absent may offer valuable insights into how urban planning can help mitigate these disparities. Ultimately, this research aims to inform strategies for

making biodiversity more accessible and equitably distributed across different socioeconomic and geographical contexts, contributing to sustainable development goals and promoting equal access to nature on a global scale.

Fine-scale habitat features drive taxonomic diversity and ecosystem service provision in urban bird assemblages

Fabio Marcolin[2*], *Riccardo Alba[1], Giacomo Assandri[3], Enrico Caprio[1], Dan Chamberlain[1]*

1 Department of Life Sciences and System Biology, University of Turin, Via Accademia Albertina 13, 10123 Turin, Italy

2 Forest Research Centre and Associated Laboratory TERRA, School of Agriculture, University of Lisbon, Lisboa, Portugal

3 University of Eastern Piedmont, Alessandria, Italy

*Presenter's email: fabio.marcolin89@gmail.com

Urban green spaces are essential for sustaining biodiversity and the ecosystem services that support human well-being in cities. However, fine-scale habitat features shaping these dynamics remain poorly understood. Here, we analyse the relationships between habitat structure and human-built infrastructures with bird-mediated ecosystem services, including taxonomic diversity, cultural values (e.g., attractiveness, aesthetic appeal), and regulating functions (e.g., seed dispersal, pest control), across six Italian cities. We found that grass cover and water bodies were key predictors of avian diversity and ecosystem service provision. Grass-rich areas supported more diverse bird communities, while aquatic features not only enhanced species richness, but also strengthened critical regulating services. Conversely, species richness and cultural services were lower in highly impervious areas, highlighting the negative impact of extensive built surfaces on urban biodiversity. Cultural service hotspots were associated with the presence of informational signage, suggesting a societal preference for biodiverse spaces. Additionally, intermediate canopy and shrub heights maximized taxonomic diversity, emphasizing the role of structural heterogeneity in influencing bird communities. Our results underscore the need to prioritize vegetation diversity and integrate blue-green infrastructure in urban landscapes to foster resilient bird communities and multifunctional ecosystems.

Round table: Monitoring and conservation of Kentish Plover in Italy

Organizers:
Alessandro Sartori, *Comitato Nazionale Conservazione Fratino*
Roberto Tinarelli, *Comitato Nazionale Conservazione Fratino*

Il Comitato Nazionale per la Conservazione del Fratino, nato nel 2013 per tutelare il fratino, si prefigge come obiettivi principali il coordinamento delle associazioni che operano sulla specie, la realizzazione di censimenti e l'elaborazione di strategie di conservazione. La popolazione di fratino in Italia ha registrato negli ultimi anni un preoccupante calo in relazione soprattutto all'impatto delle attività antropiche; la tavola rotonda vedrà la partecipazione delle realtà che operano nelle varie regioni e il confronto su diverse tematiche, quali i risultati del censimento 2025, l'andamento della popolazione, le esperienze locali di monitoraggio, le criticità rilevate e le strategie di tutela.

FRIDAY 12 SEPTEMBER 2025

Plenary

Research and conservation of migratory landbirds at a flyway scale

Ivan Maggini[1*]

1 Konrad Lorenz Institute of Ethology, University of Veterinary Medicine, Vienna, Austria

*Presenter's email: ivan.maggini@vetmeduni.ac.at

Migratory landbirds in the Eurasian-African flyway are declining, and this is particularly evident in long-distance migrants, such as those who cross the Sahara Desert when traveling between their breeding and non-breeding areas. Understanding the causes of this decline is challenging, mostly due to the vast area covered by the species. We need to understand the needs of each species at each stage of their yearly cycle, but we still lack fundamental knowledge about them, especially in understudied regions where research capacity is limited. Although technological advances have increased our capacity of tracking birds along their yearly movements, we still need to integrate this information with local studies to understand the importance of the areas visited and how to best protect them. The EUFLYNET COST Action CA22117 (www.euflynet.eu) was launched by a large group of experts to address these issues and enhance the conservation status of migrant landbirds. The Action has three main aims: 1. Identify and involve relevant stakeholders from non-ornithological fields to address the societal issues connected with landbird migrant conservation; 2. Build capacity in areas where research effort on migrants is lacking or underrepresented; 3. Coordinate research across flyways to provide a global approach to knowledge on migratory species. The Action started in November 2023 and will continue for four years. So far, it involves over 300 researchers from 50 countries, but we hope to keep the network growing. In this talk, I will outline the work done by the Action so far and the goals that it aims to reach within its lifetime and beyond. This should be an example of how networking is essential to address fundamental challenges of research and conservation.

Session: Conservation evidence and measures I

Chairs: *Corrado Battisti & Maurizio Sarà*

Shelter or traps? Microclimatic-dependent effectiveness of nest boxes in a raptor of conservation concern

Alejandro Corregidor-Castro[1*], *Alessandro Berlusconi[2], Jacopo G. Cecere[3], Sara Cioccarelli[4], Claudia De Battisti[1], Andrea Romano[2], Diego Rubolini[2], Andrea Pilastro[1], Michelangelo Morganti[4]*

1 Università degli studi di Padova

2 Università degli studi di Milano

3 ISPRA

4 CNR-IRSA

*Presenter's email: alecorregidor@gmail.com

Anthropogenic land conversion has significantly altered ecosystem structure and resource availability, leading to a reduction in natural nesting sites for birds. Artificial nest boxes have been widely implemented as a conservation strategy to mitigate these impacts. However, their influence on breeding parameters remains complex, with potential risks of becoming ecological traps, particularly in the context of climate warming. In this study, we examined fledging success and overall breeding failure among natural nests and artificial nest boxes in two populations of Lesser Kestrel *Falco naumanni*, respectively located in Matera (40°N; southern Italy) and the Po Plain (45°N; northern Italy), where summer external mean maximum temperatures differ by ~3°C. While in both areas, natural nests were significantly cooler than nest boxes, fledging success had opposite patterns in the two areas. In Matera, natural nests fledged 91% of the chicks, whereas nest boxes only fledged 45%. In the Po Plain, natural nests fledged 45% of the chicks, while nest boxes 94%. Nonetheless, natural nests at both sites exhibited higher failure rates (50–63%) compared to nest boxes (10–50%) likely due to predation and/or nest abandonment, even when nest boxes in Matera were exposed to extreme high temperatures, especially during a heatwave event, leading to increased nest failure. These findings show that the effectiveness of artificial nesting structures may dramatically depend on local climatic and ecological conditions, underscoring the need for a site-specific approach in conservation planning in the face of rapid global change.

Involvement of key stakeholders in long-term concrete conservation actions: The example of the livestock farmers in the sustainable management of supplementary feeding for vultures

Davide De Rosa[1*], *Ilaria Fozzi[1], Chiara Concetta Costantino[1], Luciano Mandas[2], Marco Muzzeddu[2], Mauro Aresu[3], Dionigi Secci[2], Fiammetta Berlinguer[1]*

1 Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100, Sassari, Italy

2 Agenzia forestale regionale per lo sviluppo del territorio e l'ambiente della Sardegna (Fo.Re.S.T.A.S.), Viale Luigi Merello 86, 09123 Cagliari, Italia

3 Via Crispi 5, 08015, Macomer, Italy

*Presenter's email: derosadavide@yahoo.it

Farm feeding stations offer a sustainable, win-win solution for managing animal by-products while actively supporting the conservation of scavenger birds. In Sardinia, during the projects LIFE Under Griffon Wings (LIFE14/NAT/IT/000484) and LIFE Safe for Vultures (LIFE19 NAT/IT/000732), these sites have proven essential

for sustaining populations of conservation concern like the Griffon Vulture *Gyps fulvus* and the Egyptian Vulture *Neophron percnopterus*, as well as opportunistic species like the Red Kite *Milvus milvus*. This study explores the practical experiences gained in managing farm feeding stations, addressing the challenges of their implementation and identifying opportunities for collaboration with the livestock sector and local authorities. Integrating these feeding sites into broader conservation policies may play a key role in preserving biodiversity while also offering farmers an additional source of income. The potential long-term benefits of feeding stations include increased food availability and reduced risk of poisoning from contaminated carcasses. At the population level, such measures may lead to improved breeding success, higher survival rates, and more stable habitat use, ultimately contributing to a long-term sustainable conservation of scavenger bird species.

The evolution of Bonelli's Eagle population in Sicily as a consequence of a nest surveillance programme

Angelo Scuderi[1*]

1 Gruppo Tutela Rapaci

*Presenter's email: scuderi.angelo@yahoo.it

In 2010, a wide illegal trade targeting the Bonelli's Eagle *Aquila fasciata*, was uncovered in Sicily. In response to this discovery, surveillance camps (involved volunteers coming from different European countries) and GPRS camera traps were set up, at Bonelli's eagle breeding sites, where illegal harvest was reported by volunteers and technician of a working group named Gruppo Tutela Rapaci (G.T.R.). From 2017 to 2021, the LIFE Project "ConRaSi" (LIFE14 NAT/IT/001017), focused on the Conservation of Raptors in Sicily, was implemented. This project led to a significant increase in conservation efforts, including intensive population monitoring, the tagging of chicks with GPS/GSM devices, and the establishment of rabbit farms to provide supplementary food. Through continuous surveillance and close collaboration between G.T.R. volunteers, LIFE project staff, and the Carabinieri Forestali-who carried out several police operations and seized illegal specimens later used in international conservation projects-illegal harvesting of Bonelli's Eagles in Sicily was sharply reduced. As a result, the population size increased significantly, with an average annual growth rate of nearly 9%, rising from about 30 breeding pairs in 2010 to the 70 pairs recorded for the island in 2024. In fact, in those sites that were subject to the nearly constant harvest of chicks before the surveillance activities, the average productivity increased significantly. Our results highlight the importance of direct actions conducted by motivated volunteers, such as nest surveillance, for the conservation of endangered species.

Plover's conservation on coastal dunes: Applying project management tools and focus on human dimension make the difference - a case study in central Italy

Corrado Battisti[1*], *Francesca Marini*[1]

1 'Torre Flavia' Long Term Ecological Research station - Servizio 1 "Aree Protette tutela della biodiversità", Città metropolitana di Roma Capitale

*Presenter's email: c.battisti@cittametropolitanaroma.it

Since 2017, the 'Città metropolitana di Roma Capitale' Agency has organized conservation camps involving over 100 volunteers, institutions, rangers, and professionals dedicated to protecting the nesting sites of two plover species (*Anarhynchus alexandrinus* and *Charadrius dubius*). In this regard, we applied a set of tools belonging to logic of project management to a local set of actions focused on plover conservation (CNR – CARA DUNE

- NBFC_S8P1_0073) carried out in the 'Palude di Torre Flavia' nature reserve (Special Protection Area; ZPS IT6030020, central Italy). The use of specific tools such as SWOT and Salafsky's threat analysis, stakeholder's analysis and the selection of DPSIR indicators for monitoring has enabled us to define the 'Risiko' strategy, targeting specific (and often creative) actions (e.g., fences and cages placement, direct control and surveillance, communication by children, artistic events, plover's gardens, fishing lines-focused clean ups). In addition to the technical and scientific expertise of professional ornithologists, an invaluable asset has been the years of field experience from many volunteers who, familiar with the specific social dynamics, can propose tailored local actions in certain circumstances. These insights are crucial and should not be overlooked. Moreover, the human dimension at these 'conservation front lines' (i.e., the dynamics between various social groups such as fishermen, dog owners, bathers and beach resort operators, volunteers, professional ornithologists, and administrators) is a strategic factor that can determine the success or failure of plover conservation efforts.

East is Best: Audouin's Gull as a tool for marine conservation on both sides of the heel of Italy

Nicola Baccetti[1], Barbara Amadesi[1], Adriano De Faveri[1], Caterina Dibitonto[2], Maria Fiore[2], Camilla Gotti[1], Luca Melega[1], Francesco Pezzo[1], Paola Pino d'Astore[3], Massimo Sacchi[1], Marco Zenatello[1], Cristiano Liuzzi[4*]

1 ISPRA, Bologna

2 Regione Puglia, Bari

3 Provincia di Brindisi

4 Centro Studi De Romita APS, Bari

*Presenter's email: cristiano.liuzzi@gmail.com

Since the very first discovery of a breeding colony back in 1874, as well as in current population assessments, the Audouin's Gull is a typically west Mediterranean seabird. Apulian settlements represent a recent phenomenon (since 1992) and have little in common with the historical breeding range in Italy, for both population trends (decreasing in N Tyrrhenian) and un-relevant exchange of individuals. Seven islands hosted colonies in the last 10 yrs, with up to 617 total pairs (2020) and 340 fledged young (2021). The conservation of these colonies has been the subject of a fruitful long term co-operation between scientists, local authorities and associations, that has recently been shaped under the umbrellas of 1) the N2K site identification process and 2) the MSFD monitoring programmes of Italian seabird populations. New breeding sites were turned into SPAs within record-breaking times (for the Italian standard) and the designation of the off-shore foraging areas is currently well under-way. In this presentation we aim to analyze data showing how Apulian gulls differ from any others and why their conservation is important, basing upon positive population trends, CMR and demography approaches, and the study of birds' movements according to GPS telemetry from Brindisi and Gallipoli colonies. The LIFE Project MareNatura in which ISPRA is a partner together with Greek institutions and NGOs, is providing resources, assistance and manpower in order to identify important conservation areas on our side of the Adriatic/Ionian basins, according to the demands of a presently thriving Audouin's Gull population.

Ex-situ conservation and reintroduction of the Italian Grey Partridge (LIFE Perdix project): Three years of monitoring

Francesco Riga[1*], *Gaia De Luca[1], Chiara Gabbrielli[2], Claudia Greco[1], Nadia Mucci[1], Paolo Montanaro[1], Davide Senserini[2], Alberto Sorace[1], Cristiano Tabarroni[1], Daniel Tramontana[2], Stefania Volani[1]*

1 ISPRA
2 Federcaccia
*Presenter's email: francesco.riga@isprambiente.it

The main objectives of the LIFE Perdix project are the ex-situ conservation of the Italian Grey Partridge *Perdix perdix italica*, now extinct in the wild, and its reintroduction into the "Valle del Mezzano", which until the mid-1980s hosted a large population of over 12,000 individuals. In 2019, starting from a captive stock still breeding and carrying haplotypes identified in wild Italian museum specimens, genetic selection of breeders was carried out at CUFA's breeding farm in Bieri (Lucca), following protocols developed by the ISPRA Unit for Conservation Genetics. Birds aged 90 days were released into fenced enclosures during August and September (2022: 5,250 birds; 2023: 9,900; 2024: 9,000). A subset was fitted with collar radio tags (2022: 43; 2023: 130; 2024: 71), each weighing 4.5 g with an estimated battery life of 240 days. Survival rates were low in the first two years (2022: 14.63%; 2023: 23.08%), but improved significantly in 2024 (70.4%). Playback counts of calling males per 100 ha yielded: March 2022: 2.04; April 2022: 1.90; March 2023: 1.68; April 2023: 1.90. In July-August 2023, brood surveys based on direct observations found 40 pairs, of which 8 (20%) had chicks, averaging 2.25 chicks per breeding female. In July-August 2024, surveys using both direct observations and trained dogs again found 40 pairs, 13 of which (32.5%) had one or more chicks, with an average of 3.25 chicks per breeding female.

A tale of tails: Barn Swallows regulate fly activities and reduce fly-induced stress in dairy cows

Alessandra Costanzo[1*], *Alice Elisea Lazzarin[1], Mattia Brambilla[1], Manuela Caprioli[1], Susan Ellen Mckinlay[1], Andrea Novelli[1], Andrea Romano[1], Francesca Roseo[1], Diego Rubolini[1], Roberto Ambrosini[1]*

1 Department of Environmental Science and Policy, University of Milan
*Presenter's email: alessandra.costanzo@unimi.it

Insectivorous birds provide essential ecosystem services, benefiting farmers by reducing pest species and saving costs. However, their populations have sharply declined in agroecosystems due to pesticide use, climate and land-use changes, farming practices, and reduction of potential nesting sites. Evaluate the ecosystem services that insectivorous birds provide in farmed landscapes, and promoting their conservation, represent a win-win strategy that both support Nature-Based Solutions, enhancing farming sustainability, and tackle one of the most urgent conservation challenges. The present study seeks to evaluate the filth fly regulation service provided by the rapidly declining Barn Swallow *Hirundo rustica* and the potential benefits for the welfare of dairy cows. Weekly data on fly activity and Barn Swallow presence were collected from April to July 2024 inside 23 cattle sheds in the Parco Adda Sud, Northern Italy. Simultaneously, cow stress was assessed by monitoring ear and tail movements as indicators of disturbance. The results reveal that Barn Swallows effectively regulate fly activity and reduce cow stress, providing pest control. The presence of the Barn Swallow can lead to economic benefits for farmers by reducing pesticide use for fly control and potentially improving milk quantity and/or quality by lowering the level of stress due to flies experienced by cows. Future efforts should quantify the economic benefits brought by swallows, and possible risks of pathogen transmission from them to livestock, to improve the current legislation that excludes this species from barns. Such aspects would further promote the sustainability of cattle farms and biodiversity conservation in agroecosystems.

Restoration of mountain heathlands for breeding bird populations: Results from the GRANATHA LIFE Project

Guglielmo Londi[1*], *Tommaso Campedelli[1], Simonetta Cutini[1], Davide Ridente[1], Gianpiero Calvi[2], Guido Tellini Florenzano[1]*

1 D.R.E.Am. Italia, Stia Pratovecchio (Arezzo)

2 Studio Pteryx, Basiano (Milano)

*Presenter's email: londi.guglielmo@gmail.com

The LIFE15 NAT/IT/000837 GRANATHA Project aimed to improve the conservation status of bird species typical of the heathlands in the Pratomagno massif (inner Tuscany, Italy), by restoring a total of 172 ha (159 ha through shrub clearance and 13 ha through prescribed burning) on both private and public lands. As the natural succession heavily alters unmanaged heathlands, about half of the restored heathland was classified as productive, with a 5-years cutting cycle, and designated to the traditional production of brooms. We monitored the effect of intervention on *Caprimulgus europaeus*, (playback point counts methods), and shrubland passerines *Lullula arborea*, *Anthus campestris*, *Saxicola rubicola*, *Curruca undata*, *C. melanocephala*, *C. subalpina*, *C. communis*, *Linaria cannabina*, *Emberiza cirlus*, *E. cia*, (territory mapping method, 3–5 visits per site). Differences between intervention and control areas were tested. *C. europaeus* increased by 75% in the intervention areas (no change in the control areas). *L. arborea* showed a significant increase in the project area after the interventions (13 breeding pairs between 2017 and 2022). *S. rubicola* and *E. cia* exhibited significantly more positive trend in intervention areas. Additionally, *A. campestris* and *L. collurio*, although remaining very localized, increased their number of breeding pairs. *C. undata* colonized the intervention areas starting from the third year after the interventions, reaching higher density in the fourth year (33% in the number of pairs), compared to the pre-intervention period. *C. melanocephala*, *C. subalpina*, and *C. communis* showed similar trends, although they did not reach their initial densities after five years.

Session: Ecology and behavior of birds II

Chairs: *Jacopo Cecere & Dimitri Giunchi*

Sympatric, but not friendly: Niche partitioning and interspecific territoriality drive coexistence among Tit species

Alessandro Berlusconi[1*], *Giulia Castiglione[1], Stefania Martini[2], Erminio Clerici[3], Alessio Martinoli[4], Adriano Martinoli[4], Lucas Wauters[4], Diego Rubolini[1], Andrea Romano[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milano (MI)

2 Ambiente s.p.a., Milano (MI)

3 LIPU-Birdlife Italia, Parma (PR)

4 Unità Analisi e Gestione delle Risorse Ambientali, Dipartimento di Scienze Teoriche e Applicate, Università degli Studi dell'Insubria, Varese (VA)

*Presenter's email: alessandro.berlusconi@unimi.it

Understanding how ecologically similar species can coexist and which dynamics emerge to maintain biodiversity over evolutionary times are central goals in evolutionary ecology. To investigate these ecological questions, we focused on a guild of 5 species of tits living sympatrically in a mixed lowland forest in Lombardy. By using a multi-scale approach with different sampling methods over three years (2021-2023), we examined how coexistence of the guild is maintained in the area in different phases of their circannual cycle. Both in non-breeding and breeding periods, we found consistent differences between two main ecological groups according to tree-type use: "broad-leaf species" (Blue Tit, Great Tit, Marsh Tit) and "conifer species" (Coal Tit, Crested Tit). In winter, when species are not territorial and forage in flocks, foraging microhabitat partitioning within each group was observed, with each species showing complementary exploitation of the tree canopy. Conversely, during breeding, each species foraged using the canopy in its entirety, thus overlapping with the others sharing the same habitat. Nevertheless, coexistence was maintained through interspecific spatial segregation of breeding territories. A playback experiment revealed that this segregation was driven by interspecific aggression in "broadleaf species". Indeed, these species exhibited greater territorial aggression towards other species from the same habitat compared to "conifer species", indicating an adaptive heterospecific song recognition driven by competition. In contrast, "conifer species" did not show such patterns, suggesting possible resource partitioning at a microhabitat scale. This study enhances our understanding of ecological and behavioural mechanisms driving co-occurrence of sympatrically similar bird species.

Seasonal habitat use by Kentish Plover *Anarhynchus alexandrinus* in the Torre del Cerrano Marine Protected Area

Francesca Trenta[1], Matteo Ferretti[1], Sergio Guccione[1], Graziano Aretusi[1], Stanislao D'Argenio[1]*

1 Torre del Cerrano Marine Protected Area

*Presenter's email: matteoferretti18@gmail.com

The Kentish Plover *Anarhynchus alexandrinus* is a wading bird of conservation interest widespread throughout the Italian peninsula. In the Torre del Cerrano Marine Protected Area, its space use varies between the spring and summer and the fall and winter seasons, in response to habitat availability and environmental conditions. During spring and summer, the Kentish Plover prefers the sandy beaches and coastal dunes that characterize Zone B of the MPA. These areas offer optimal conditions for spawning due to the presence of suitable substrates and the proximity of food resources. However, intense anthropogenic visitation and tourist activities pose a significant threat, increasing

the risk of disturbance and loss of nests. In winter, the species mainly uses the outer areas for feeding and resting. These environments offer an abundance of invertebrates on which the Kentish Plover feeds, providing the necessary resources to get through the harsher period. The lower anthropogenic pressure during this season allows for greater tranquillity, encouraging the species to stay in areas occupied by bathing establishments in summer. Understanding the plover's seasonal use of habitats is critical to implementing effective management strategies. Protecting beaches during nesting and preserving dune environments are key actions to ensure the survival of the species.

Temporal shifts in environmental drivers of Barn Swallow population dynamics revealed by 26-year monitoring

Roberto Ambrosini[1*], *Manuela Caprioli[1], Alessandra Costanzo[1], Davide Fugazza[1], Susan Ellen McKinlay[1], Andrea Novelli[1], Andrea Romano[1], Diego Rubolini[1]*

1 Università degli Studi di Milano

*Presenter's email: roberto.ambrosini@unimi.it

Population dynamic models are usually produced under the unproven assumption that the effects of environmental variables on populations are invariable over time. Here, we used data from a 26-year-long standardized monitoring project of Barn Swallows *Hirundo rustica* in northern Italy to identify the environmental variables in the areas and times occupied by this species during its annual life cycle that affect the year-to-year rate of population variation. Overall, the population has declined by 63.9% over these years, and the most important variable explaining this trend was the Normalized Difference Vegetation Index (NDVI) in the wintering grounds of our population in October, i.e. when Barn Swallows arrive there from post-breeding migration. However, the effect of this variable decreased over time. Other important variables reflected climate and environmental conditions in the breeding ground and EU agricultural policies. Then, we used the population growth rates estimated based on the model parameters and environmental variables to reconstruct the population trajectory in 2001–2024 and predict future trends. The reconstructed population trajectory closely matched the observed values confirming the accuracy of our model. Future trends predict a further decrease of the population up to 2035. Overall, these results confirm the need for a long series of standardized data to disentangle the complex set of relationships between population trajectories and environmental conditions and to consider the possibility that these relationships change over time. Temporal shifts in environmental drivers of Barn Swallow population dynamics revealed by 26-year monitoring.

Diet composition and food hoarding behaviour plasticity in Eurasian Pygmy Owls in the Alps

Gloria Ramello[1*], *Sofia Koliopoulos[2], Massimo Bocca[2], Pietro Semprebon[3], Leonardo Balma[4], Daniele Baroni[5]*

1 Gruppo Piemontese Studi Ornitologici "F.A. Bonelli", ONLUS - Museo Civico di Storia Naturale, Via San Francesco di Sales 188, 10022 Carmagnola TO, Italy

2 Société de la Flore Valdôtaine - Associazione valdostana di Scienze naturali, Via J.-B. De Tillier n. 3, 11100 Aosta AO, Italy

3 MARE - Marine and Environmental Sciences Centre, Dept of Life Sciences, University of Coimbra, PT-3004-517 Coimbra, Portugal

4 Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università degli Studi di Torino - Via Accademia Albertina 13, 10123 Torino TO, Italy

5 Area per l'Avifauna Migratrice (BIO-AVM), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Via Cà Fornacetta 9I, 40064 Ozzano Emilia BO, Italy

*Presenter's email: gloriaramello@gmail.com

Eurasian Pygmy Owls are generalist predators of small mammals and passerines year-round, and are known to hoard prey in tree cavities. Although the food hoarding behaviour and the diet during breeding season have been extensively studied in the boreal region, a lack of knowledge remains for southern Europe. We investigated the diet during the breeding season as well as in autumn and winter in the Aosta Valley (Western Italian Alps). Between 2020 and 2025, we inspected 320 woodpecker excavated tree cavities in autumn and winter for food hoards (1242 checks), and analyzed the breeding season diet collecting prey remains from 14 nests, identifying a total of 432 prey items. In both seasons, Eurasian Pygmy Owls specialized in bank voles, but avian prey differed. Winter food hoards were dominated by Eurasian Siskins, Goldcrests, Coal Tits and Crested Tits, while parids, chaffinches and Wrens were more prevalent during the breeding season. Moreover, birds increased in frequency over small mammals during winters when fringillid abundance peaks. Regarding food hoarding behaviour, we found that, on average, only 2% of tree cavities were used, and, contrary to our expectations, prey items were stored after the onset of heavy snowfalls, rather than in anticipation of them. Our findings also show that in the Alps, Eurasian Pygmy Owls prey more on birds than in the boreal forest, probably as a result of the differences in prey availability, and that food hoarding in the Alps peaks later in the season. These differences highlight the species' plasticity in adapting to contrasting environments.

Breeders vs. non-breeders: Spatial behaviour of a diving seabird across three Baltic Sea coastal colonies

Paolo Salvador[1*], *Rasa Morkune[1], Marianna Chimienti[2], Akiko Kato[3], Vytautas Eigirdas[4], Julius Morkunas[1]*

1 Marine Research Institute, Klaipėda University, Universiteto Al. 17, 92295 Klaipėda, Lithuania

2 School of Ocean Sciences, Bangor University, Menai Bridge LL59 5AB, UK

3 Centre d'Études Biologiques de Chizé (CEBC), UMR 7372, CNRS La Rochelle Université, 79360 Villiers-en-Bois, France

4 Ventes Ragas Ornithological Station, 99361 Ventė, Lithuania

*Presenter's email: paolosalvador83@gmail.com

Investigating animal spatial behaviour is fundamental for defining population habitat requirements. Intra-population movements may vary across individual life stages and colonies, impacting habitat use. The Great Cormorant *Phalacrocorax carbo* is a central-place forager found globally across various habitats, but its movement ecology remains poorly studied. This study applied GPS/GSM tracking data to investigate the foraging movements of breeding (n=23) and non-breeding (n=12) adults of great cormorant from 2018 to 2024 across three colonies along the Lithuanian coastal area, SE Baltic Sea. We investigated the differences in home ranges, habitat use, and spatial fidelity between breeders and non-breeders within and among colonies. At the population level, the average home range covered by a breeder is smaller than a non-breeder. Breeders target distinct foraging grounds at the colony level, resulting in a sea-lagoon gradient of habitat use. Non-breeders showed dissimilar spatial movement patterns, with different habitat use, characterised by more exploitation of roosting areas. The spatial fidelity is high within colonies, suggesting similar foraging strategies. Spatial segregation is partial among colonies, likely to avoid interspecific competition. Non-breeders show lower within-colony spatial fidelity, indicating more variable movement patterns, due to the lack of reproductive duties. A higher degree of spatial overlap is displayed among colonies between non-breeders, probably due to reduced competition for food resources. This study provides novel insights into the spatial behaviour of the Great Cormorant, revealing differences between breeders and non-breeders. It emphasises the need to integrate different life stages when describing population spatial dynamics.

Uncovering the role of the energy landscape in shaping nest-site selection in Golden Eagles *Aquila chrysaetos*

Giulia Cenzi[1*], *Julia Hatzl[2], Tom Carrard[3], Gieri Derungs[4], David Jenny[2], Kamran Safi[5], Martin Wikelski[5], Michael Sprenger[3], Martina Scacco[6]*

1 University of Turin, Department of Life Sciences and Systems Biology, via Accademia Albertina 13, Turin, 10123, Italy

2 Swiss Ornithological Institute, Sempach, Switzerland

3 Institute for Atmospheric and Climate Science, ETH Zurich, Zurich, Switzerland

4 Ufficio Caccia e Pesca dei Grigioni

5 Max Planck Institute of Animal Behavior, Department of Migration, Am Obstberg 1, Radolfzell, 78315, Germany

6 Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Zurich, Switzerland

*Presenter's email: giulia.cenzi@edu.unito.it

Animals' distribution in the environment is shaped by habitat selection, a complex decision-making process that operates at different scales, and is influenced by climate and resource availability. However, accessing resources requires movement, and while movement cost and the environmental factors shaping this cost (the energy landscape) are known to influence movement patterns, their role in habitat selection remains largely unexplored. This is especially true at fine-scale habitat selection, as in the case of nest site selection within an animals' territory. Here, we investigated how the energy landscape influences nest site selection in Golden Eagles, a soaring bird species that exploits atmospheric uplifts to minimise movement costs. Using conditional logistic regressions, and a combination of high-resolution atmospheric and remote sensing data, we predicted nest locations within 23 breeding territories in the Alps: first as a function of surface landscape variables alone, and then with the addition of atmospheric information. This study provides the first insight into how energy landscape, particularly atmospheric flows, shape nest selection in a soaring raptor. Particularly, our results suggest that nests are more likely to be located in areas with steeper slopes and higher surface sensible heat flux, both indicative of uplift formation and energy-efficient flight, while areas of high turbulence are avoided, likely to facilitate the first flights of the fledglings. These findings highlight that incorporating energy landscapes into future habitat selection studies at different spatio-temporal scales could provide deeper insights into drivers shaping habitat selection and animal distribution.

Habitat selection of *Larus michahellis* during breeding season in an urban colony

Giacomo Grosso[1*], *Luca Nelli[2], Davide Dominoni[2], Giacomo Dell'Omo[3], Claudio Carere[1]*

1 Department of Ecological and Biological Sciences, University of Tuscia, Viterbo, Italy

2 School of Biodiversity, One Health & Veterinary Medicine, University of Glasgow, Glasgow, United Kingdom

3 Ornis italica, Rome, Italy

*Presenter's email: giacomo.grosso@unitus.it

In this study, we analysed the movement and habitat selection of the Yellow-legged Gull in the city of Rome during the 2024 breeding season. We equipped six individuals from the Roman Forum colony with a solar-powered GPS device, which recorded the gulls' position and speed every five minutes. We identified foraging and nesting sites by creating clusters using DBSCAN and minimum convex polygon on QGIS. We then extracted landcover data for each GPS point using CORINE Land Cover dataset (Level 2). To investigate habitat selection, we fitted a Generalized Additive Model (GAM) with binomial distribution, classifying GPS points inside clusters as 'presence' (1) and those outside as 'absence' (0). Predictor variables included time of day (modelled with a cubic spline), gull speed, individual ID, distance from the nest, landcover type, number of surrounding buildings, and weather conditions (rain/no rain). We also included an interaction between time of day and landcover type to account for diurnal variation in habitat use. Our results show a higher probability of gull presence in foraging sites during early morning and early evening — times of day when human activity is reduced but

light is still available. Dumps, urban areas and agricultural fields were the landcover types most associated with gull presence. Gulls showed different temporal patterns of use across landcover types, while rain did not significantly affect foraging activity. These results confirm the generalist ecology of *Larus michahellis*, a bird that has adapted to living in urban environments by avoiding predators and securing stable food resources.

Intermediate levels of urbanization and home farming foster the abundance of the Italian Sparrow *Passer italiae* in Sondrio Province

Alessandro Mazzoni[1*], *Mattia Brambilla[1], Diego Rubolini[1], Luca Ilahiane[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milano, Italy

*Presenter's email: ale.mazzoni2000@gmail.com

In recent decades, while several bird species considered rare have shown population increases, many common species are undergoing significant declines. An emblematic example is the Italian Sparrow *Passer italiae*, whose population has decreased by 64% since 2000. This vulnerable species, formerly considered a subspecies of the House Sparrow *Passer domesticus*, occurs almost exclusively in Italy. Population declines are most severe in highly urbanized areas, due to multifactorial causes (e.g., loss of green spaces, scarcity of insects for rearing nestlings). In farmland landscapes, declines are mainly attributed to agricultural intensification. We investigated the ecological factors influencing Italian Sparrow abundance along the urban gradient in Sondrio Province, an alpine area characterized by a low-density urban landscape and the spread of domestic rural activities (such as horticulture and poultry farming). Abundance data were collected by surveying 51 plots of 9 ha during the 2024 breeding season. Repeated counts were analyzed using N-mixture models, which estimate latent abundance while accounting for detection probability. Results show that sparrow abundance is primarily influenced by urbanization intensity and the number of chicken coops within each plot. Peak abundance values occur at intermediate levels of residential landcover (50–60%). Furthermore, both the richness and abundance of other building-nesting species are positively correlated with sparrow abundance, while no significant negative effect was observed from potential corvid predation. In a global context characterized by urban densification and rural abandonment, these findings highlight the importance of low-density urbanization combined with small-scale farming for the conservation of synanthropic species.

Session: Conservation evidence and measures II

Chairs: *Alessandro Berlusconi & Giulia Masoero*

Towards the conservation of the Apennine Rock Partridge *Alectoris graeca graeca*: Preliminary results from a reintroduction pilot action

Paolo Viola[1], Pedro Girotti[1], Daniel Tramontana[2], Livia Lucentini[3], Chiara Palmerini[1], Michele Croce[4], Alessandro Rossetti[5], Silvia Cesaretti[4], Federico Morandi[5], Riccardo Primi[1]*

1 Dept. of Agriculture and Forest Sciences, University of Tuscia, Viterbo, Italy

2 Italian Hunting Federation (FIdC), Rome, Italy

3 Dept. of Chemistry, Biology and Biotechnologies, University of Perugia, Italy

4 Umbria Region, Forestry, Mountain, Natural Systems, and Wildlife-Hunting Service, Perugia, Italy

5 Sibillini Mountains National Park, 62039, Visso, Italy

*Presenter's email: daniel.tramontana@fidc.it

In 2024, the Umbria region launched a Rock Partridge reintroduction project in the Apennines, where close genetic affinity with the nominal subspecies *Alectoris graeca graeca* was demonstrated by genetic studies in the early 21st century. These did not support the taxonomic validity of *A. g. orlandoi*, previously proposed based on phenotypic traits. However, due to its demographic independence, the Apennine population warrants treatment as a distinct management unit. Based on a feasibility study by DAFNE (Unitus), the project was implemented in Monte Coscerno Protection Oasis (739 ha, 1684 m a.s.l.), within Natura 2000. The three-year program (2024–2026) includes annual releases of 100 individuals with a balanced sex ratio, as suggested by a Population Viability Analysis. Founders, from eggs collected in the wild in Monti Sibillini National Park, were identified as haplotypes H3 and H10. Operations began in late autumn with four aviaries (3.9 × 3.9 × 2 m), equipped with feeders, drinkers, and camera traps. In early December, 25 birds were placed in each aviary, protected by an electric fence, and released after one week. Two individuals per aviary were monitored via VHF telemetry. Only two (25%) died within the first 60 days. After four months, residual signals came from the mountain's southwestern aspect, a rugged, hard-to-access area. Telemetry, faecal groups, and sightings confirmed presence on both slopes. Preliminary findings indicate strong resilience and adaptability to the wild, even under adverse weather. Monitoring will continue via playback in spring and post-breeding counts with pointing dogs to assess survival and reproduction.

The role of the Apulian Regional Wildlife Rescue Centre in Lesser Kestrel *Falco naumanni* conservation: Insights from eight years of activity

Michela Prioletti[1*], *Roberto Lombardi[1], Gaia Casalino[1], Dalila Salierno[1], Elena Circella[1], Francesco Paolo D'onghia[1], Vincenzo Perna[1], Antonella Bove[1], Diana Romito[1], Nicola Pugliese[1], Maria Teresa Carone[1], Domenico Campanile[2], Antonio Camarda[1]*

1 Department of Veterinary Medicine – University of Bari "Aldo Moro"

2 Regione Puglia – Osservatorio Faunistico Regionale - Sezione Gestione Sostenibile E Tutela Delle Risorse Forestali E Naturali

*Presenter's email: michela.prioletti@uniba.it

The Lesser Kestrel *Falco naumanni* is a key species for conservation in the Mediterranean region. This study analyses admission data from the Apulian Regional Wildlife Rescue Center between 2017 and 2024. During this period, 3,255 Lesser Kestrels were admitted for clinical evaluation and rehabilitation. Admissions peaked in 2017 (841 individuals) during a LIFE project, then stabilized at 300–400 per year. Most admitted individuals were chicks or immature birds

(2,825), with 77% (2,174) successfully rehabilitated and released. Nearly all released kestrels were ringed, allowing post-release monitoring that confirmed survival and reproduction. Compared to the estimated 2016 population in the project area (7,000–9,800 reproductive birds), annual admissions represented a significant proportion of the population, underscoring the Centre's role in species conservation. Beyond rehabilitation, the Centre acts as a critical link between the public and the scientific community. Public engagement, fostered through awareness campaigns, has been instrumental in conservation efforts. The integration of clinical care, monitoring, outreach, and citizen participation emerges as an effective strategy for protecting this flagship species of Apulia's wildlife heritage.

Rising admissions of Common Swift *Apus apus* at the Puglia Wildlife Rescue Center: A sign of increased human-wildlife interaction and environmental awareness?

Roberto Lombardi[1*], *Michela Prioletti[1], Dalila Salierno[1], Gaia Casalino[1], Elena Circella[1], Francesco Paolo D'onghia[1], Vincenzo Perna[1], Antonella Bove[1], Diana Romito[1], Nicola Pugliese[1], Maria Teresa Carone[2], Domenico Campanile[2], Antonio Camarda[1]*

1 Department of Veterinary Medicine – University of Bari "Aldo Moro"

2 Regione Puglia – Osservatorio Faunistico Regionale - Sezione Gestione Sostenibile E Tutela Delle Risorse Forestali E Naturali

*Presenter's email: roberto.lombardi@uniba.it

Wildlife Rescue Centers (WRCs) serve as vital resources, not only for the care and rehabilitation of distressed wildlife but also as key drivers for public awareness and environmental education. Their role extends beyond animal welfare, catalyzing shifts in public perception and fostering increased trust in conservation institutions. This retrospective study analyzes the activities of the Regional Apulian Wildlife Rescue Center (2017-2024), aiming to evaluate the evolution of public awareness and sensitivity towards wildlife through the analysis of submission trends of the Common Swift *Apus apus* due to its vulnerability in anthropized environments and close association with urban contexts, rendering it an effective gauge of citizen-wildlife interactions. Swift admissions exponentially increased from 168 in 2017 to 650 in 2024 (totaling 4358), suggesting both potential species vulnerability and growing public attention. Most were juveniles (63%) found in urban settings, indicating increased human-wildlife interaction. Therapeutic success was higher in young swifts (74%) than adults (29%), where trauma was the main issue. This study underscores the crucial role of WRCs as environmental sentinels in anthropized contexts. While the increased swift influx might indicate worsening species health, the fact that citizens directly rescue them suggests rising public awareness and sensitivity. Establishing a robust trust relationship between scientific institutions and the local community is essential for initiating virtuous processes that promote sustainable coexistence and biodiversity protection. In this context, WRCs function not only as care centers but as pivotal educational outposts, fostering greater respect for wildlife and encouraging active citizen engagement in its conservation.

Bird-friendly greenhouse solutions: The case of the Botanic Garden of the University of Pisa

Leonardo Cocchi[1*], *Chiara Bernardini[2], Marco D'Antraccoli[1], Linda Moretti[2], Lorenzo Peruzzi[1,3]*

1 Pisa Botanic Garden and Museum, University of Pisa, Via Luca Ghini 13, 56126 Pisa, Italy

2 Building management, University of Pisa, Via Fermi 8, 56126 Pisa, Italy

3 Department of Biology, University of Pisa, Via Derna 1, 56126 Pisa, Italy

*Presenter's email: leonardo.cocchi@unipi.it

Birds do not perceive transparent glass as an obstacle, which instead becomes an invisible wall for them. Among the structures at risk of collision are greenhouses, where the use of glass plays a key role in maintaining the proper thermal and lighting conditions necessary for growing some plant species. The Botanic Garden of the University of Pisa (BGM-PI) is a green space of significant public and scientific interest, located within the urban center of the city. It is subject to the provisions for the protection and conservation of cultural heritage. Approximately 50 bird species have been recorded at BGM-PI due to favorable ecological and trophic conditions, though many birds have died from colliding with greenhouse windows. Birds crash into windows due to reflections of the sky, vegetation, or artificial light, or because they perceive plants on the other side of the glass. Since recent studies have shown that marking glass surfaces is an effective method to reduce the collision risk, in 2023 BGM-PI implemented a project combining the protection of its historical asset, the functionality of the greenhouses and the protection of birds. White adhesive films were applied to the glass of the two largest greenhouses (surface = 640 m2). A mesh grid of Ø 2.5 cm discs, spaced 20 cm apart diagonally, was added to the surfaces, then combined with BGM-PI institutional logo and the greenhouses names. After two years, the results show that the number of collisions has essentially dropped to zero.

Biodiversity and coastal wetland planning and management: A case study in the Gulf of Manfredonia

Michela Ingaramo[1,2*], *Vincenzo Rizzi[2,3], Marco Alfonso Rizzi[2], Anna Rita Bernadette Cammerino[1], Maurizio Gioiosa[1,2,3], Massimo Monteleone[1]*

1 Department of Science of Agriculture, Food, Natural Resources and Engineering, University of Foggia

2 Centro Studi Naturalistici

3 Natural History Museum of Foggia

*Presenter's email: michela.ingaramo@unifg.it

Coastal wetlands are key ecosystems for biodiversity, providing essential habitats for numerous resident and migratory bird species. However, many of these areas have been degraded by human activities, making their restoration a priority in global conservation efforts. The EU's Nature Restoration Law emphasizes the recovery of such ecosystems, underlining the importance of science-based strategies to enhance their ecological functionality. This study focuses on a coastal wetland of approximately 40 hectares in the Gulf of Manfredonia, located within the Gargano National Park. The site is the result of an environmental restoration project completed in 2019, which combined the conservation of natural habitats with regenerative agricultural practices. A land cover map was created, classifying the area into four categories: WET (wetlands), NAT (natural areas), AGR (agricultural land), and BUILT (built-up areas). The study area was divided into 67 cells, each measuring 100 × 100 meters, encompassing both the restored wetland and some adjacent areas. For each cell, Shannon diversity indices were calculated for both bird communities and land cover. Between 2023 and 2024, a total of 100 bird species were recorded. Biodiversity analysis revealed an increase in the correlation coefficient between habitat diversity and bird diversity (both expressed through the Shannon index) from 2023 to 2024, suggesting a positive effect of renaturalisation actions. These findings highlight the importance of wetland restoration and integrated land management in promoting biodiversity recovery and support the implementation of restoration policies aligned with the EU's conservation goals.

Biometry and demography of the Common Kingfisher *Alcedo atthis* in the Brusà Marsh (Verona, Italy): Insights from long-term capture and ringing data (1993–2025).

Roberto Pollo[1*], *Elena Varalta[1], Luigi Bazzani[1], Elvio Balasso[1], Veronica Rossetti[1]*

1 Associazione Naturalistica Valle Brusà

*Presenter's email: robi.pollo55@gmail.com

Biometric and demographic data obtained through capture and ringing techniques were analyzed for the Common Kingfisher *Alcedo atthis* population of Brusà Marsh. Biometric analyses are based on data collected from 1993 to 2025. Discriminant analysis was conducted on individuals of known sex, considering variables most relevant for sex differentiation, including bill length, maximum wing chord, and body weight. Results indicate that it is possible to accurately determine the sex of most adult individuals, while sexing first-year birds remains considerably less reliable (ca. 50%). It is concluded that, in adults, in addition to lower mandible coloration and plumage intensity, bill length and body weight represent valid parameters for sex determination, whereas these variables are not reliable indicators in juveniles. Demographic analysis incorporated capture-recapture data from the MonITRing project (2020–2025) and census data obtained through territory mapping. Findings reveal a substantial stability in the number of breeding pairs and in the annual capture rates of both adults and juveniles. A medium to high natal site fidelity and a very low breeding site fidelity were observed. Future research will focus on disentangling the relative contributions of mortality and permanent emigration to the disappearance of adults from the study area, and on identifying the ecological and environmental factors driving these processes.

Bird communities in neophyte-dominated riparian habitats of the Po basin

Leonardo Siddi[1*], *Giacomo Assandri[1]*

1 Dipartimento di Scienze e Innovazione Tecnologica, Università del Piemonte Orientale "Amedeo Avogadro", 15121 Alessandria (AL), Italy

*Presenter's email: leonardo.siddi@uniupo.it

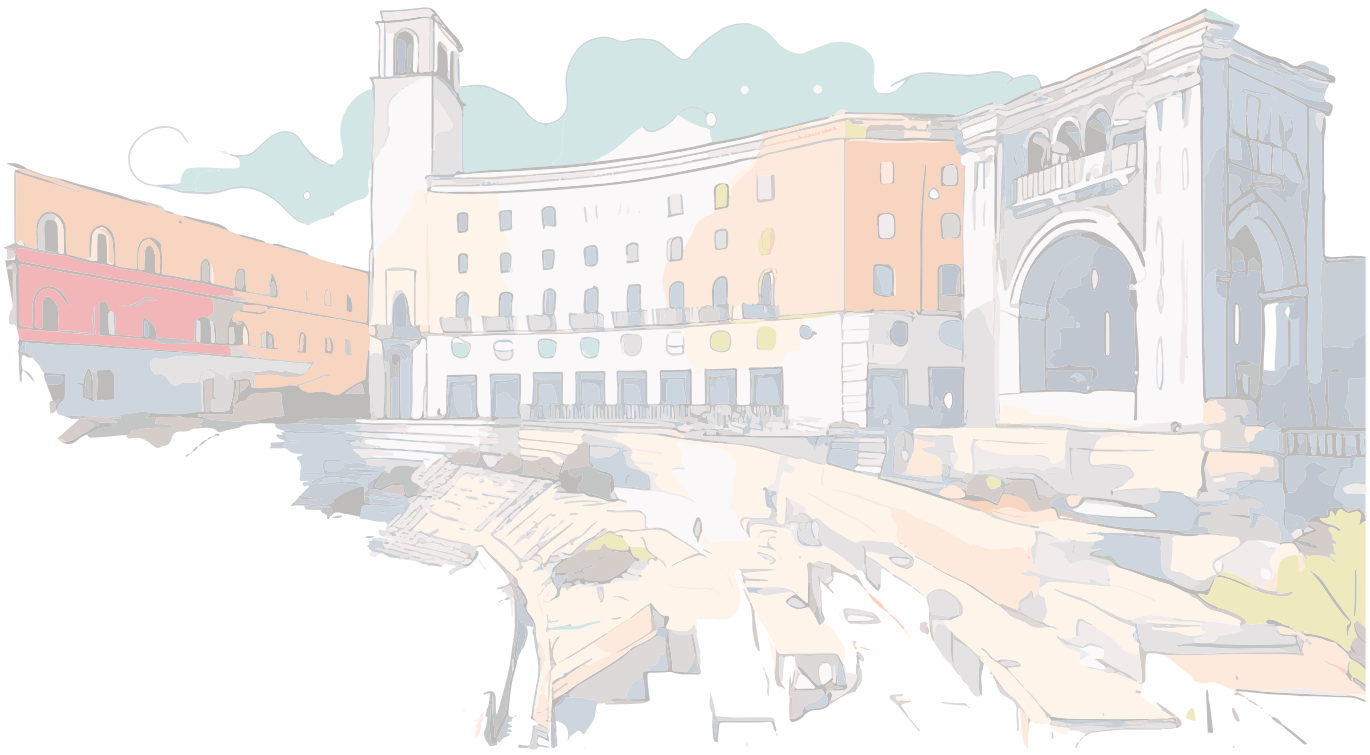
Rivers are among the most threatened ecosystems worldwide, facing pressures from pollution, channelization, damming, water abstraction, invasive species, and land-use changes. As part of the project "Monitoraggio ecosistemico multidisciplinare del progetto rinaturazione dell'area del Po", we investigated how the composition and structure of riparian vegetation influence breeding bird assemblages along the Po River, with a particular focus on the impact of invasive neophytes. We conducted 100 point counts along the Po River in Piedmont and Lombardy, covering a gradient from grassland to shrubland and woodland, with increasing levels of invasion. Each point count was repeated twice during the 2025 breeding season, recording all bird species detected within a 100 m radius over 10 minutes. We also assessed vegetation composition and structural variables at each site. In total, we recorded 80 bird species. Bird diversity increased with woodland cover, though woodland specialists (e.g., Lesser Spotted Woodpecker, Willow Tit) were restricted to less fragmented native forests. Open habitats supported species-poor assemblages, yet some species of conservation concern (e.g., Common Whitethroat, European Turtle Dove) were found in Amorpha-dominated shrublands. The Po River's riparian ecosystems are profoundly affected by invasive plants, with some assemblages constituted by neophytes. However, these altered habitats provide no or limited functional replacement for native vegetation in supporting bird communities. Conservation efforts should prioritize native plant restoration and invasive species control, though these actions present significant challenges.

Round table: Urban Avifauna: Ornithological atlases and urban ecosystem management

Organizers:
Marco Dinetti, *Lipu*

Lo studio dell'avifauna urbana ha interessi scientifici, culturali e gestionali. In fatto di atlanti ornitologici urbani, l'Italia è al vertice della produzione internazionale. Al Workshop di Cremona, novembre 2024, è stato aggiornato il panorama (a oggi conta 71 indagini per 47 aree urbane) ed è stato deciso di aggiornare le linee guida metodologiche. La tavola rotonda sarà l'occasione per discutere di questa revisione, anche alla luce dell'importanza che i dati sull'avifauna urbana hanno nel contribuire alla definizione di percorsi legislativi quali il piano nazionale della Restoration Law, nonché la gestione del verde urbano e il contrasto al consumo di suolo.

The study of urban birdlife has scientific, cultural, and management-related importance. When it comes to urban bird atlases, Italy is at the forefront of international production. At the Cremona Workshop in November 2024, the current situation was updated (there are now 71 surveys covering 47 urban areas), and it was decided to revise the methodological guidelines. The roundtable will be an opportunity to discuss this revision, also in light of the importance that data on urban birdlife have in contributing to the development of legislative measures such as the national plan for the EU Restoration Law, as well as the management of urban green spaces and the fight against land consumption.



POSTERS

Exploring sex ratio biases at fledging in the Scopoli's Shearwater: Insights from 10 years of data

Agustina Gomez-Laich[1,2*], *Eleonora Dell'Omo[2], Vittoria Roatti[2], Marcello Tagliavia[3], Giacomo Dell'Omo[2]*

1 Departamento de Ecología, Genética y Evolución and Instituto de Ecología, Genética y Evolución de Buenos Aires (IEGEBA), CONICET, Intendente Guiraldes 2160, C1428EGA CABA, Argentina

2 Ornis Italica, Piazza Crati 15, 00199 Rome, Italy

3 Institute for Biomedical Research and Innovation-National Research Council (IRIB-CNR); Via Ugo La Malfa 153, 90146 Palermo, Italy

*Presenter's email: agomezlaich@gmail.com

According to Fisher's theory of equal investment in male and female offspring, a 1:1 sex ratio is expected when there are no differences in the cost of raising each sex. However, in sexually dimorphic species, differences in the cost of raising males and females could lead to skewed offspring sex ratios at the population level. To investigate this, we analyzed the annual sex ratio at fledging from a sexually dimorphic seabird, the Scopoli's Shearwater *Calonectris diomedea* during a 10-year period (2012-2021). The sex of each chick was determined using DNA-based techniques. The difference between the observed sex ratios and the 1:1 sex ratio was analyzed using the Chi-squared (χ^2) test. Molecular sexing of fledglings revealed a slightly male-biased sex ratio, with an average of 52.2% males over the 10 breeding seasons. However, this result did not differ significantly from parity ($\chi 29=14.1$, $p=0.12$). When examining the fledging sex-ratio by year, we found slight biases in favor of males in seven years and in favor of females in three years. The most pronounced bias occurred in 2015, when 57.7% of the sampled chicks were males ($\chi 21=3.83$, $p=0.05$). Our results suggest that factors influencing sex allocation in this population were not affected by rearing costs or other environmental factors during the examined breeding seasons.

Supplementary feeding buffers thermoregulatory growth costs but does not reduce heatwave-induced mortality in nestlings of a bird of prey

Alejandro Corregidor-Castro[1], Alessandro Berlusconi[2], Erica Figus[2], Jacopo G. Cecere[3], Michelangelo Morganti[4], Diego Rubolini[2], Andrea Pilastro[1], Andrea Romano[2*]

1 Università degli Studi di Padova

2 Università degli Studi di Milano

3 Istituto Superiore per la Protezione e la Ricerca Ambientale

4 CNR - IRSA Istituto di Ricerca Sulle Acque

*Presenter's email:andrea.romano@unimi.it

Climate change is increasing average temperatures as well as the frequency and intensity of extreme meteorological phenomena, like heatwaves. These changes pose significant risks particularly to offspring of altricial species, that are confined to nests during development and face limited opportunities to behaviourally avoid thermal stress. High nest temperatures can impair growth and provoke elevated mortality, particularly when they exceed critical thresholds. To investigate whether compensatory feeding offsets the negative effects of high nest temperatures on growth and pre-fledging survival, we conducted an experiment on Lesser Kestrel *Falco naumanni* nestlings using three groups of nest-boxes: control (ambient temperatures), shaded (reduced temperatures), and supplemented (ambient temperatures but doubling the usual food). Control nestlings exhibited lower body size compared to both supplemented and control nestlings, that in turn did not differ, indicating that increased food provisioning can

offset the energetic costs of thermoregulation under elevated, but sub-critical, temperatures. Mortality during development did not differ among groups when temperatures remained below critical thresholds. However, during a naturally occurring heatwave, mortality in control and supplemented nests was similarly high (~40%), contrasting with the significantly lower mortality of shaded nests (~4%). Our findings experimentally demonstrated that an increased parental food supply can mitigate the thermoregulatory costs of elevated temperatures during development, improving growth. However, considering that fresh food is the only source of water for nestlings in this species, during heatwaves, mortality is likely driven by hyperthermia rather than dehydration. This underscores the critical role of nest microclimate, behind overall environmental quality, in conservation strategies.

Winds of Risk: Forecasting birdstrikes at the airport

Alessandro Montemaggiori[1*]

1 ICAO wildlife strike expert

*Presenter's email:alessandro.montemaggiori@gmail.com

Wildlife strikes represent a major threat to aviation safety, with significant operational and economic impacts. This study examines the influence of meteorological variables on wildlife strike risk at Rome Fiumicino Airport over a 16-year period (2009–2024), using a dataset that includes local daily weather data, over 52,000 wildlife observations, 4,562 confirmed strikes, and monthly aircraft movements. Analyses include Pearson correlations, partial correlations controlling for wildlife presence and traffic volume, and multiple regression models to evaluate the relative contribution of each variable. Results indicate that wind speed and recent precipitation (within 24–48 hours) are the most reliable meteorological predictors of strike risk. Higher wind speeds are associated with a significant reduction in strike probability, while risk increases by 57% in the 24–48 hours following rainfall events. This suggests behavioral responses in wildlife not solely explained by changes in abundance. Temperature shows a weaker effect after controlling for presence and air traffic, implying an indirect influence mediated by wildlife activity. A normalized risk index reveals consistent seasonal variation, with peaks in late spring and autumn. These patterns persist even when adjusting for changes in wildlife abundance and air traffic, pointing to the presence of "meteorological risk windows" independent of these factors. The findings support the integration of meteorological forecasting into airport wildlife risk management, with special attention to low-wind periods following rainfall. Future research should explore species-specific behavioral responses and interactions with landscape features to enhance predictive models and mitigation strategies.

Crowded Economy, empty First Class: The decline of avian diversity in Rome's airports

Alessandro Montemaggiori[1*]

1 ICAO wildlife strike expert

*Presenter's email: alessandro.montemaggiori@gmail.com

Airports create unique habitats for birds: extensive open areas with regularly maintained low vegetation, reduced predation pressure, and anthropogenic disturbance limited to specific zones. However, wildlife strikes necessitate continuous monitoring and mitigation strategies. This study analyzes continuous monitoring data collected at Rome's Fiumicino (FCO) and Ciampino (CIA) airports from 2009 to 2024, examining avian community evolution in terms of abundance, species richness, and diversity. It is hypothesised that anthropogenic pressure and control measures have promoted a "trivialization" of the bird community, with numerical increases in few generalist

species. Data were collected through standardized daily inspections by trained personnel (Bird Control Unit). To assess diversity, we calculated species richness, abundance, Shannon-Wiener index, dominance index (percentage of the three dominant taxa), and mean number of individuals per species (trivialization indicator). Temporal trend analysis showed a significant increase in species richness at Fiumicino ($r = 0.88$, $p < 0.001$), while both airports demonstrated extremely high dominance indices (74.9 ± 6.1% at FCO, 89.9 ± 7.9% at CIA), indicating highly unbalanced communities dominated by Common Starling *Sturnus vulgaris*, Yellow-legged Gull *Larus michahellis*, and Northern Lapwing *Vanellus vanellus*. The trivialization indicator showed fluctuations without significant trends, suggesting the community simplification process was already underway at the study's outset. Rome's airports host increasingly numerous bird communities characterized by low diversity and high dominance of few generalist species—reflecting a biotic homogenization process affecting contemporary anthropized ecosystems.

"Messy" is better: The importance of vegetation in drainage channels for breeding bird communities

Alessandro Pavesi[1*], *Davide Aldi[1], Matteo Di Nardo[1], Guido Lupi[1], Davide Meggiorini[1], Chiara Sartori[1]*

1 G.N.M. - Gruppo Naturalistico Mantovano

*Presenter's email: ale.pavesi18@gmail.com

Wetlands are among the most important ecosystems, serving as freshwater reservoirs and, especially when rich in vegetation, providing multiple ecosystem services. Nowadays, in many agricultural landscapes, the only remaining aquatic habitats are drainage channels or irrigation canals. Between March and July 2024, nine field surveys were conducted to assess the breeding bird community along a 1.92 km stretch of riverbank, including a 70 m buffer on each side of the Bogina Channel, a large land reclamation canal rich in tree and shrub belts and marsh vegetation. A total of 70 bird species were recorded, 38 of which were considered breeding within the study area according to national atlas codes. Seven species are listed in Annex I of the Birds Directive. Excluding colonial nesters (approx. 540 nests), territories of non-colonial species were mapped. Among the 28 species recorded (139 territories), nine were dominant: *Columba palumbus*, *Streptopelia turtur*, *S. decaocto*, *Cettia cetti*, *Sylvia atricapilla*, *Sturnus vulgaris*, *Luscinia megarhynchos*, *Passer italiae*, and *P. montanus.* The Shannon-Weiner diversity index (H') was 3.00, Pielou's evenness index (J) was 0.90, and the percentage of non-passerines species (nP%) was 42.9. On a provincial scale, the presence of 9 territories of *S. turtur* (4.69 IKA) and 3 of *Fulica atra* (1.56 IKA) is noteworthy. Despite dense vegetation cover, the Bogina Channel maintains its primary function as a drainage system while simultaneously supporting a diverse community of breeding birds.

Waterfowl in mountain freshwater sites of Volturno, Sangro and Sagittario rivers basin

Andrea Mancinelli[1], Maurizio Di Marco[1], Filippo La Civita[1], Mario Romano[1], Mario Posillico[1*]

1 Reparto Carabinieri Biodiversità Castel di Sangro

*Presenter's email: m.posillico64@gmail.com

From September 2009 to August 2012, waterfowl occurrence was assessed in 6 water bodies in southern Abruzzo and Molise. On average, sites were sampled 148 times (14± SD, range 133-167), i.e., 4.1 times/month, each. Excluding accidentally released, allochthonous or hybrid (N=3) and unidentified taxa (N=3), 40 species were detected (site mean: 17.8; SD ±8.6), totalling 3,078 occurrences. The highest species richness was recorded in Pantano di Montenero (Isernia province) (N=34 species), the lowest in Lago di San Domenico (L'Aquila province)

(N=9 species). Both Shannon's H (diversity) and Simpson's 1-D (heterogeneity) indexes yielded significant differences when comparing waterfowl communities across sites, but for Lago di San Domenico vs. Quarto Santa Chiara and Lago di Barrea vs. Lago della Montagna Spaccata, and, limited to Shannon's index, for Lago di Scanno vs. Quarto Santa Chiara. The average number of waterfowl species per sampling occasion, pooling observations across sites, was 3.4 (SD ±1.6; range 0.5–5.4). Ten species (25%) accounted for 88% of the total occurrences, whilst twelve (30%) were detected just once. The Mallard *Anas platyrhynchos*, the Eurasian Coot *Fulica atra* and the Great Crested Grebe *Podiceps cristatus* each had a total frequency of occurrence >10%, though their highest total prevalence was not consistent across sites. Indeed, other species such as the Little Grebe *Tachybaptus ruficollis*, the Eurasian Teal *Anas crecca*, the Common Pochard *Aythya ferina*, the Eurasian Wigeon *Mareca penelope*, the Grey Heron *Ardea cinerea* and the Great Egret *A. alba*, could occur more frequently in some water bodies.

Survey data on the of the Grey Partridge in the Gran Sasso and Monti della Laga National Park

Andrea Scappi[1*], *Luca Giardini*[2]

1 Istituto Superiore per la Ricerca e la Protezione Ambientale

2 Società Italiana per la Storia della Fauna

*Presenter's email: andrea.scappi@isprambiente.it

The Grey Partridge *Perdix perdix* population in the park, along with that of the Monti Sibillini National Park, is among the few self-sustaining populations in Italy. This report presents four years of data on the presence of territorial males in spring and late-summer family groups. The study area (57 km² approximately) is located in the southern part of the park (Calascio, Barisciano, S. Stefano di Sessanio, and Castel del Monte). Territorial male abundance was assessed in spring using the playback-call technique at 52 listening points. In late summer, the number of individuals per family covey was recorded to evaluate reproductive success, with the support of trained pointing dogs. Between 2021 and 2024, the number of calling males ranged from 7 to 17. The number of detected family coveys varied between 6 and 7 in 2020 and in 2023, while the juvenile-to-adult ratio fluctuated between 4 and 3,4 over the same period. Partridge presence extended beyond the designated study area, though recorded densities remained very low. Reproductive success varied annually. This study highlights the presence of a naturally occurring population in a mountainous environment (1200–2000 m), a phenomenon also observed in other European regions. The distinctive characteristics of this population emphasize the importance of ongoing research and monitoring.

An accessible breeding site of Yelkouan Shearwaters on Lampedusa: Monitoring, reproductive output, and invasive predator risk

Antonella Di Gangi[1*], *Federico Ottoveggio*[1], *Tommaso La Mantia*[2], *Bruno Massa*[2], *Giacomo Dell'Omo*[3]

1 Berta maris, via Mannarazza s.n.c., 92031 Linosa, IT

2 Department of Agriculture, Food and Forest Sciences, University of Palermo, Palermo, IT

3 Ornis italica, Piazza Crati, 15 cap 00199 Rome, IT

*Presenter's email: ipomeaviolacea.adg@gmail.com

Despite the regular presence of hundreds of Yelkouan Shearwaters *Puffinus yelkouan* around Lampedusa Island, information on the number of breeding pairs and specific nest locations remained unknown, primarily due to the species' tendency to nest on inaccessible coastal cliffs. In 2018, a local elder led us to a previously undocumented but accessible breeding site on the island's northern coast. The site consists of a concealed cave approximately 15 meters deep

and 3 meters wide, with an entrance formed by a narrow, tunnel-like passage of about 2 meters in length, situated roughly 10 meters above sea level on a vertical cliff face. Inside the cave, shearwaters have excavated burrows into the accumulated guano layer covering the floor. Monitoring has been carried out almost annually since 2018 during the pre-fledging period. In both 2023 and 2024, we confirmed the presence of 20–25 eggs each season; however, fledging success was low, with fewer than half of the eggs yielding fledglings. Camera traps placed at the cave entrance revealed that adults begin returning to the site for breeding as early as mid-October. Notably, evidence of the invasive Black Rat Rattus rattus was recorded, prompting targeted mitigation efforts to reduce predation pressure on eggs and chicks. Continued monitoring and predator management are essential to secure the viability of this breeding site.

Monitoring of breeding birds using autonomous recording units in the Beigua Natural Park (Genoa - Savona, Liguria, Italy): First experiences

Antonio Aluigi[1], Sergio G. Fasano[1*]

1 Ente Parco del Beigua - Piazza Beato Jacopo 1 e 3 - 17019 Varazze SV

*Presenter's email: fasanosg@gmail.com

As part of the project "Monitoraggio Avifauna ConseRvazIone delle praterie MONTane - MACRIMONT" (PNRR id. n° NBFC_S8P1_0054), implemented in the Beigua Natural Park (Genoa - Savona, Liguria, Italy) and aimed at the conservation and improvement of habitat 6210 (Festuco-Brometalia), included in Annex I of Directive 92/43/EEC, the monitoring of the ornithological component linked to the interventions was also implemented through autonomous recording units. In the breeding season of 2024, the first year of the survey, seven Wildlife Acoustics Song Meter Micro devices were deployed, which recorded daily from one hour before dawn for six hours (alternating 10 minutes of recording with a 40-minute break) and from dusk for 70 minutes (alternating 10 minutes of recording with a 20-minute break), with a total of 110 minutes of recording per day (80 minutes in the morning and 30 minutes in the evening). The audio files were subjected to an initial selection through automatic sound detection and classification, adopting the BirdNET v2.4 model, and testing different acoustic analysis software; the results were then manually checked in order to identify any false positives or negatives (performed on a sample basis for the most common species). Overall, approximately 631,6 hours of recordings were obtained, of which 91,1 hours of audio events attributable to birds belonging to at least 54 species. Among the target species of the project, good quantitative results were found for *Alectoris rufa*, *Caprimulgus europaeus*, *Alauda arvensis*, *Anthus trivialis* and *Anthus campestris*.

The urbanization of the Mistle Thrush *Turdus viscivorus* in the province of Bari

Antonio Sigismondi[1*]

1 Strada Santa Teresa dei Maschi 19.70122 BARI

*Presenter's email: sigismondi53@gmail.com

The urban colonization of the Mistle Thrush began in traditional olive groves where the first known nesting dates back to 1971. In 1992, however, the first urban nesting was detected in Trani on a Chamaerops excelsa in the garden of a villa 30 m from the sea. Nesting is currently known in at least 23 urban centers. For the city of Bari the first known nesting was in 1998, in the absence of competitors, the species has colonized all the green areas settling both in parks and in small gardens. Between 2021 and 2025, specific surveys were carried out in the city of Bari to define aspects of behavior in the urban environment. 25 nestings were followed, recording a reproductive success rate of 1.96 (n=25), out of 740 feedings 92% were earthworms, 4% berries, 4% unidentifiable,

the time elapsed between feedings was a few minutes, therefore, the adults fed in the immediate vicinity of the nest, a behavior also detected by sight. In accordance with its ecology, it feeds on meadows; in cities it seems to depend heavily on the availability of earthworms, probably due to the low diversity of invertebrates in urban green areas.This resource is made available not only by rainfall, but also by green care practices such as irrigation, which keep the soil of lawns moist and soft by bringing earthworms to the surface and by grass clippings that make the vegetation low. Another resource that has been shown to be used significantly, when available, are ivy berries.

Bone content in pellets and calcium assimilation vary during growth in Tawny Owls *Strix aluco*

Arianna Passarotto[1,2,3*], *Patrik Karell*[2,3], *Chiara Morosinotto*[2,3,4,5]

1 University of Glasgow, Scotland, UK
2 Lund University, Lund, Sweden
3 NOVIA University of Applied Sciences, Raseborg, Finland
4 Università di Padova, Padova, Italy
5 National Biodiversity Future Center (NBFC), Palermo, Italy
*Presenter's email: ariannapassarotto84@gmail.com

Owls can expel indigestible parts of their prey in the form of pellets, which have traditionally been used to study diet preferences by identifying prey remains. However, pellets may also provide a larger set of information on physiological processes, such as growth, since they are produced by both juveniles and adults. In this study, we used captive-reared Tawny Owls Strix aluco to investigate whether the bone content of pellets changes over time and how it relates to (skeletal) growth. To this end, we collected pellets and measured wing (arm) length at different ages post-fledging, and analyzed the relationship between the proportion of bones and calcium (Ca) content in pellets, given that Ca is a vital element during growth. We hypothesized that younger owls would digest more bones to assimilate the Ca required for growth, regurgitating pellets with lower bone content. In contrast, older owls -no longer in active skeletal growth- would eject more undigested bones to reduce Ca absorption, as excess Ca can be toxic. In line with our expectations, we found a positive relationship between bone content in pellets and age: older owls produced pellets containing higher proportion of bones. Moreover, the proportion of bones in the pellets was associated with both the increase in arm length and the amount of Ca content in pellets, suggesting that bone content may serve as a proxy for Ca assimilation during growth. Our findings show that pellet analysis allows getting novel insights into key physiological aspects of owl development, broadening the scope of what this traditional method can reveal.

When monitoring bird species for hunting and protection purposes becomes a joke: The case of the Abruzzo Region

Augusto De Sanctis[1*]

1 Stazione Ornitologica Abruzzese, Pescara, Italy
*Presenter's email: augustodesanctis@gmail.com

European countries have several obligations to monitor bird populations and hunting pressure for reporting purposes under the EU 147/2009 "Bird Directive" and the 1143/2014 EU Regulation on the invasive species. Also Bern and Bonn conventions underline the importance of collecting data to address transboundary obligations for bird conservation. In Italy, ISPRA is the scientific institution committed to collect, validate and submit these data also thanks to the cooperation of the Italian regions and the autonomous provinces which in turn are responsible for

the population management locally. In the 2020 the Abruzzo Region administration approved the Strategic Environmental Assessment for its Faunistic Management Plan which was edited by ISPRA. It included an appropriate monitoring plan for species and pressures which implementation is mandatory under the SEA Directive. Recently ISPRA published the report for the hunting game bags for the period 2017–2023 also for the Abruzzo Region. After four years, an access to documents regarding the Faunistic Management Plan revealed that no data were gathered for all the indicators previously specifically selected regarding monitoring of bird populations, both protected or huntable species. Also the analysis of the ISPRA report revealed wide information gaps, and incongruous data such as the killing of several individuals of species which were actually not huntable in different year (*Streptopelia turtur*, *Lymnocryptes minimus*, *Aythya ferina*) or the hunting of dozens of individuals of the European Turtle Dove during periods when the species is practically absent in the region. The consequence of these dramatic deficiencies are discussed.

The Special Area of Conservation (SAC) IT9330087 “Laghi La Vota” (Gizzeria, CZ, Calabria): Ornithological and geobotanical research highlights the need for urgent conservation measures

Barbara Santostefano[1*], *Domenico Gargano*[1], *Antonio Mingozzi*[1]

1 Department of Biology, Ecology and Earth Sciences, University of Calabria, Rende (CS) 87030, Italy

*Presenter’s email: sntbbr97s60d976u@studenti.unical.it

Along the 8,000 km of Italian coastline, the coastal lagoons were once a constant feature of the landscape, then reduced to the current relictual situation after the reclamations and transformations of the last centuries. The Special Area of Conservation (SAC) IT9330087 ‘Laghi La Vota’ represents the last example of coastal lagoon along the Tyrrhenian Calabrian coast (Southern Italy). The site’s conservation status was assessed through a 15-year (2008–2023) spatiotemporal analysis of wetland dynamics using QGIS, accompanied by field surveys on composition and structure of plant communities, and ornithological monitoring (2022–2023) through qualitative surveys and quantitative censuses (n = 23). Results highlight remarkable spatiotemporal dynamics of the Area, due to the interplay of natural processes and human activities. Plant communities show poor conservation status, with alterations of early stages of psammosere, including heterotopic displacement, reworking, and, in some cases, complete loss of typical plant species. Ornithological monitoring led to a total of 122 species, 33 (27%) of which resulted as certain or probable breeders, while 89 species (73%) were identified as migratory or wintering species. The Shannon index (H’) exhibited marked fluctuations, ranging from H’ = 2.67 (December 2021) to H’ = 0.46 (July 2023). *Fulica atra* was the most frequent and abundant species year-round ($\bar{x}$ = 229.8 birds/survey, ± 236.7 SD, range: 40–582). In conclusion, strengthening conservation efforts is needed, as the SAC is experiencing a lack of regulation, control, and an increasing degradation due to anthropogenic pressures, including vehicular traffic, abandoned infrastructure, waste accumulation, invasive species, and poaching.

Four years of surveys on Red-backed Shrike *Lanius collurio* in the Modena hills

Carlo Maria Giorgi[1,2], Dino Scaravelli[1,2*]

1 STERNA

2 Museo Ornitologico Foschi, via Pedriali 12, 47121 Forlì

*Presenter’s email: dino.scaravelli@gmail.com

In the hilly area of the Modena Apennines, near the Sassi di Rocca Malatina Regional Park, an area of 28 km² was monitored for the presence of the Red-backed Shrike *Lanius collurio*. The area, with elevations ranging from 240 to 680 meters a.s.l, is characterized by a mosaic of extensive crops, uncultivated areas with bushes, and a generally well-preserved and diverse rural landscape. Between 2020 and 2024, 22 different locations were identified within the surveyed area. The number of pairs observed was as follows: 11 pairs in 2020, 13 in 2021, 12 in 2022, 12 in 2023, and 10 in 2024, corresponding to a density of 0.39 pairs per km² in 2020, 0.46 in 2021, 0.43 in 2022, 0.43 in 2023, and 0.36 in 2024. For nests where fledging was observed, the average productivity was 1.7 chicks in 2020, 2.25 in 2021, 2.4 in 2022, 1.75 in 2023, and 1.5 in 2024. Regarding the presence of nests over the years, of the 22 locations surveyed, nests were recorded in a specific position for only one year in 9 cases, for two years in 2 cases, for three years in 3 cases, for four years in 4 cases, and in all five years in just 2 cases. This shows a general consistency in the selection of nesting areas. From an environmental perspective, there appears to be no negative correlation with the network of rural roads, while the birds showed a clear preference for areas with extensive bushy pastures and fodder fields

Ventotene's Manifesto after the restoration of shearwater colonies: New studies become possible!

Carmen Biondo[1*], *Sara Riello[1], Ferdinando Corbi[2], Antonio Romano[1], Giulia Cerritelli[3], Marco Zenatello[4], Nicola Baccetti[4]*

1 Area Marina Protetta - Riserva Naturale Statale, Isole di Ventotene e Santo Stefano

2 Gruppo Pontino Ricerche Ornitologiche

3 Università di Pisa, Dipartimento di Biologia

4 ISPRA

*Presenter's email: carmen.2.biondo@gmail.com

Nest monitoring for Yelkouan Shearwater *Puffinus yelkouan* and Scopoli's Shearwater *Calonectris diomedea* is particularly challenging on Ventotene Island, due to the steep and unstable coastal cliffs, which have historically prevented access to breeding sites. As a secondary outcome of the LIFE Ponderat project, which eradicated black rats from Ventotene, enhanced seabird monitoring efforts led to the identification of some accessible nests for both species. Understanding foraging habitats is crucial for conservation, particularly regarding marine resource availability and environmental pressures. During two successive breeding seasons, we equipped six Scopoli's Shearwaters (2023) and seven Yelkouan Shearwaters (2024) with GPS-GSM loggers. We analysed foraging movements from the Ventotene colony, comparing trip duration, total travelled distance, and habitat use. A clustering algorithm (EMbC) was used to classify behavioral states (resting, foraging, traveling), and 95% Kernel Density Estimations to identify key foraging and resting areas. Yelkouan Shearwaters undertook significantly longer foraging trips and covered greater total distances than Scopoli's Shearwaters, although maximum distances from the colony did not differ significantly between species. Foraging and resting areas overlapped considerably between the two species, although Scopoli's Shearwaters also utilized areas not frequented by Yelkouan Shearwaters. These findings indicate partly differentiated foraging strategies, likely influenced by ecological and behavioural factors. Understanding these at-sea movements and spatial distributions is essential for the management and designation of Marine Protected Areas, aligning with the EU Biodiversity Strategy for 2030 and reinforcing collaborative Mediterranean conservation efforts.

Medium-term ringing and monitoring of a wintering population of White-winged Snowfinch *Montifringilla nivalis* in the Dolomites

Chiara Bettega[1,2*], *Gilberto Volcan[3], Enrico Dorigatti[3], Piergiovanni Partel[3], Paolo Pedrini[2], Alessandro Franzoi[2],*

Maria Delgado[4], *Mattia Brambilla*[1]

1 Università degli Studi di Milano, Dipartimento Scienze e Politiche Ambientali

2 Museo delle Scienze, Trento

3 Parco Naturale Paneveggio-Pale di S. Martino

4 Instituto Mixto de Investigación en Biodiversidad, Mieres (Spagna)

*Presenter's email: chiara.bettega@gmail.com

High-elevation environments are experiencing the effects of land-use changes and climate changes. Species inhabiting them—often characterized by specific adaptations to extreme environments—are particularly at risk. Among high-elevation bird species, the White-winged Snowfinch *Montifringilla nivalis* can be considered a "flagship species" of the alpine ecosystem. The monitoring of this species in winter through scientific ringing is important to gather information about movements, social structure, survival, and therefore for its conservation. In winter 2021/22, the MUSE of Trento and the Natural Park Paneveggio-Pale di S.Martino started an ongoing medium-term monitoring aimed at capturing and ringing wintering snowfinches in the area of Passo Rolle (Trento Province, NE Alps). Two capture methods were used. In addition, a weekly monitoring to record resightings of ringed individuals started from the following winter. From winter 2021/22 to winter 2024/25, using both metal rings and PVC-rings with a specific combination of colours and letters that identify the population of the Italian Alps, we captured and ringed a total of 94 individuals and resighted/recaptured 55 individuals overall. The two capture methods performed differently depending on weather conditions. Birds tended to visit the capture site only under certain meteorological conditions. Four adults were recorded during the breeding season in the Pale di S.Martino massif. As part of a larger project on movement ecology in collaboration with the IMIB (Spain), during winter 2024/25 9 birds were also marked with a GPS-Cellular-ACC (Interrex), with the aim of tracking the movements both during the winter and hopefully also throughout the year.

Monitoring of Laridae and Charadriidae in the Natura 2000 Network of Apulia

Cristiano Liuzzi[1*], *Antonio Camarda*[2]

1 Centro Studi de Romita APS, 70014 Conversano (Bari), Italy

2 Dipartimento di Medicina Veterinaria, Università degli Studi di Bari "Aldo Moro", 70010 Valenzano (Bari), Italy

*Presenter's email: cristiano.liuzzi@gmail.com

As part of the project "Natura 2000 Network: Monitoring Actions for Habitats and Species in the Puglia Region" (POR – POC Puglia 2014-2020), monitoring activities were conducted between 2021 and 2023 during both the wintering (w) and breeding (b) season for the following species: Little Tern (b), Gull-billed Tern (b), Common Tern (b), Sandwich Tern (w), Slender-billed Gull (b, w), Audouin's Gull (w), Mediterranean Gull (b, w), Kentish Plover (b, w), and Little Ringed Plover (b). The study covered key areas where the target species are present including five Special Protection Areas (SPAs): IT9110037, IT9110038, IT9120012, IT9140003 IT9150015 and six Special Areas of Conservation (SACs): IT9110015, IT9130001, IT9130003, IT9140002, IT9140009, IT9150002. The main methodologies applied included: i) active searches for nests, breeding pairs, and individuals in suitable habitats, conducted from vantage points; ii) standardized transect surveys. The SPA IT9110038 was confirmed as the most significant site at the regional level due to the presence of Kentish Plover and breeding colonies of Slender-billed Gull (max. 744 pairs), Little Tern and Gull-billed Tern. Particularly noteworthy was the breeding of the Common Tern (max. 84 pairs), a species previously considered an occasional breeder in Puglia, also recorded in the SPA Laghi di Lesina e Varano during the study. Winter monitoring provided valuable data on Mediterranean Gull (11,331 individuals recorded) and Audouin's Gull (131 individuals). The results obtained contributed to updating the Standard Data Forms, filling significant knowledge gaps. Pressures and threats were assessed for each species and SPA/SAC, providing useful insights for conservation measures.

Plastic nests of the Audouin's Gull *Ichthyaetus audouinii*. First documented cases in Italy

Cristiano Liuzzi[1*], *Paola Pino d'Astore[2], Antonio Camarda[3]*

1 Centro Studi de Romita APS, 70014 Conversano (Bari), Italy

2 Centro Fauna Selvatica della Provincia di Brindisi-Santa Teresa S.p.A., 72100 Brindisi, Italy

3 Dipartimento di Medicina Veterinaria, Università degli Studi di Bari "Aldo Moro", 70010 Valenzano (Bari), Italy

*Presenter's email: cristiano.liuzzi@gmail.com

The presence of plastic inside the nests of seabirds is a rapidly growing and concerning phenomenon. The use of this material has been observed in seabird colonies located in all the oceans, and numerous species have been documented experiencing this phenomenon. In the Mediterranean, cases are sadly well-known, especially in the "Mediterranean" Shag *Gulosus aristotelis desmarestii*. In Southern Italy, plastic presence was observed for the first time in 2022 in the nests of Audouin's Gull *Ichthyaetus audouinii*, in one of the studied colonies in the small archipelago of the Pedagne Islands, near Brindisi, as part of the actions carried out during the Marine Strategy Framework Directive (MSFD) monitoring. Over the 2022-2024 period, 377 nests were examined, and 18.33% were found to be partially or almost entirely with nylon threads and/or ropes (N=7). From a preliminary analysis, the materials used appear to be waste found near the colony, but further research is needed to obtain more detailed information. The presence of numerous fishing lines and their hooks, also poses a serious threat to both adults and fledge juveniles. We suggest removing all the waste from the islets during the winter months, before the settlement of the colony, as a conservation measure to counter this potential threat.

Offshore occurrence and phenology of the Little Gull *Hydrocoleus minutus* (Pallas, 1766) in the Gulf of Taranto (Northern Ionian Sea)

Cristiano Liuzzi[1*], *Stefano Bellomo[2], Maurizio Ingrosso[3], Francesca Cornelia Santacesaria[2], Carmelo Fanizza[2]*

1 Centro Studi de Romita APS, 70014 Conversano (Bari), Italy

2 Jonian Dolphin Conservation, 74123 Taranto, Italy

3 Università degli Studi di Bari Aldo Moro, 70125 Bari (Italy)

*Presenter's email: cristiano.liuzzi@gmail.com

Seabirds are highly mobile species, often referred to as biological indicators or sentinel species because they show relatively rapid responses to environmental variability. Nonetheless, offshore seabirds are often understudied. Specifically, in the Mediterranean, very little is known about the occurrence and phenology of the Little Gull *Hydrocoleus minutus*, primarily due to its predominantly pelagic habits, particularly during the winter months. In the Gulf of Taranto monthly pelagic surveys were carried out between January 2022 and February 2025, using standardized linear transects over an area of 900 km2. In line with the European Seabirds at Sea database guidelines, surveys were conducted on board a 12m-catamaran travelling at 7 knots. Only individuals in flight or resting, observed within 300 m from the boat and within a 90° angle, were counted. Species occurrence, phenology, group size, behaviour and associations were recorded. In about 200 h of navigation and 1,711.7 km travelled, a total of 35 sampling sessions were carried out. The Little Gull was regularly present from January to April, with an average distance from the coast of 9,07 km. During wintering (January-February) an average of 272 individuals was observed, with a peak in February 2022 (700 individuals). During spring migration (March-April) an average of 386 individuals was observed, with a peak in March 2022 (1,003 individuals). The observed behaviours included feeding (65%), resting (29.3%) and flying (5.5%). These are the first available data on the pelagic wintering and migratory population of Little Gull in the Gulf of Taranto.

Phenotypic differences and pitfalls for a correct identification of the Eastern Black-eared Wheatear *Oenanthe melanoleuca* and the Western Black-eared Wheatear *Oenanthe hispanica* of Apulia and Basilicata

Cristiano Liuzzi[1*], *Egidio Fulco*[1]

1 Centro Studi de Romita APS, 70014 Conversano (Bari), Italy

*Presenter's email: cristiano.liuzzi@gmail.com

The Eastern Black-eared Wheatear *Oenanthe melanoleuca* is a regular migratory and breeding species in Apulia and Basilicata. While adult males display easily recognizable diagnostic features, immature males and females are often mistaken for the Western Black-eared Wheatear *Oenanthe hispanica*. Unfortunately, over the years, reports (often incorrect) of this latter species have accumulated, suggesting a regular presence during migrations also in Apulia and Basilicata. The two species were considered subspecies of *O. hispanica* until a few years ago and therefore a correct identification is essential also in order to update the status of the two recently split species. In order to carry out an in-depth study of the issue, we examined over 200 individuals photographed in good conditions and/or ringed as part of specific projects, evaluating the shape and size of the eye-mask and where possible also the pattern of the tail feathers. The results confirm the hypothesis that Western Black-eared Wheatear in the regions examined can be considered vagrant and that a critical review of the data present in the main databases would be desirable.

The Ely valley: An important site for wintering Green Sandpiper *Tringa ochropus*

Daniel Jenkins-Jones[1], Ursula Scuderi[1*]

1 BTO

*Presenter's email: eastglamwebs@gmail.com

Green Sandpipers winter in small numbers in the UK. Establishing a robust wintering population estimate for the species is difficult because they occupy a variety of habitats and are thinly spread across the country. Here we describe a survey method for Green Sandpiper, using the River Ely in Glamorgan as a case study. A series of coordinated counts undertaken by a team of local volunteers across several sections of the river during the core winter period (November to March) revealed that the River Ely regularly held at least 7-15 wintering Green Sandpipers. The survey method was designed to avoid double counting these highly mobile birds, such that each month produced a "safe" minimum count and a possible maximum count of birds present at the river. The value of researching suitable habitat for the species is demostrated by the presence of Green Sandpipers during the study at sites along the river where they had not previously been recorded. Variation in the monthly counts and the spatial behaviour of the birds are explored and the potential threats to species' continued precence on the Ely are discussed. The River Ely in Glamorgan has, for many years, attracted wintering Green Sandpipers and the results of this study demostrate that they are present there in nationally significant numbers, regurarly exceeding 1% of the species' current wintering population estimate.

Age and sex ratios of Common Snipe *Gallinago gallinago* and Jack Snipe *Lymnocryptes minimus* by plumage collection across different Italian regions

Daniel Tramontana[1*], *Marco Fasoli[2], Claudio Cortesi[3], Michele Sorrenti[1]*

1 Federazione Italiana della Caccia (FIdC), Ufficio Studi e Ricerche Faunistiche e Agroambientali, Roma, Italia

2 Associazione Cacciatori Migratori Acquatici (ACMA), Milano, Italia

3 Club del Beccaccino, Melzo (MI), Italia

*Presenter's email: daniel.tramontana@fidc.it

In 2016/17 the Ufficio Studi e Ricerche Faunistiche e Agro ambientali FIdC implemented Common and Jack Snipe Project based on plumage collections of a sample of birds shot in Italy, in cooperation with the Club del Beccaccino and ACMA. The program aims to describe and evaluate sex and age ratios for Common and Jack Snipe in Italy, in the last three hunting seasons from 2022/23 to 2024/25, in the monitored regions. Over the three hunting seasons, 419 Common Snipe plumages and 212 Jack Snipe plumages were collected to determine age and sex of the specimens. For Common Snipe, the proportion of juveniles was 87.9% (age ratio = 9.6) in the 2022/23, 68.4% (age ratio = 2.1) in the 2023/24 and 65.1% (age ratio = 1.9) in the 2024/25. As for the sex ratio, the proportion of males in the overall sample was 42% in the 2022/23, 33% in the 2023/24, and 49% in the 2024/25. For Jack Snipe, the proportion of juveniles was 50,0% (age ratio = 1,1) in the 2022/23, 70,9% (age ratio = 2,6) in the 2023/24 and 61,1% (age ratio = 1,7) in the 2024/25. As for the sex ratio, the proportion of males in the overall sample was 38% in the 2022/23, 34% in the 2023/24 and 54% in the 2024/25. These results underscore the importance of maintaining long-term monitoring programs to evaluate the population structure of Common Snipe and Jack Snipe, which are important for management of both species in Europe.

Wintering in Italy of *Acrocephalus melanopogon* nesting in Hungary. The case of the Ramsar area, ZPS, ZSC "I Variconi", Campania - Southern Italy

Danila Mastronardi[1*], *Akos Németh[2], Elio Esse[1], Alfonso Maria Piromallo[1], Filippo Tatino[1]*

1 Associazione Studi Ornitologici Italia Meridionale odv

2 Bird Protection Society of Kiskunsag (KME)

*Presenter's email: danila.mastronardi@gmail.com

The Acrocephalus melanopogon shows a decreasing trend in several breeding range districts including Italy and is listed in Annex I of the Birds Dir. Among the most important nesting nations for the species is Hungary, which hosts more than 10 percent of the European population. The species mainly winters in southern Europe and North Africa. The present work is based on capture/recapture data collected by scientific ringing technique and shows the main Italian wintering sites of *A. melanopogon* nesting in Hungary. The wintering areas are examined on the basis of their coastal or inland and Adriatic or Tyrrhenian location. One of the interesting ringing stations for the wintering of the species is the protected area "I Variconi" located in Campania on the left bank of the Volturno river where a ringing station managed by the authors of this work has been active since 2019 and has recorded several recaptures of Hungarian-ringed *A.melanopogon*. In this work, the recaptures of *A. melanopogon* ringed in the Hungarian ringing stations of Foldvari-tò and Kolon-tò and recaptured in Variconi or vice versa from 2019 to today are analyzed. For each individual recaptured in the same year, mass, fat and muscle detected in the two sites were compared. The size of the populations breeding in Foldvari-to and Kolon-to and wintering in Variconi in the same year was compared, to highlight any similarities in trends.

High-risks mid-migration: Hunting exposure and the role of protected areas for Northern Pintails at their Eurasian stopovers

Devon Cevenini[1,2*], *Daniele Baroni[2], Marco Basso[3], Jacopo G. Cecere[2], Federico De Pascalis[2], Alessandro Franzoi[2,4], Simona Imperio[2], Lucio Panzarin[5], Andrea Pilastro[1,6], Simone Pirrello[2], Fernando Spina[2,7], Lorenzo Serra[2]*

1 Università degli Studi di Padova, Dipartimento di Biologia (DiBio), Padova (PD), Italy

2 Area per l'Avifauna Migratrice (BIO-AVM), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano Emilia (BO), Italy

3 Via Gianbattista Verci 25/4 35128, Padova (PD), Italy

4 Ufficio Ricerca e Collezioni museali, Muse – Museo delle Scienze, Trento (TN), Italy

5 Via Giacomo Leopardi 5 30020, Venezia (VE), Italy

6 National Biodiversity Future Center, Palermo (PA), Italy

7 Via Francesco Verrotti 32 65126, Pescara (PE), Italy

*Presenter's email: devon.cevenini@phd.unipd.it

Protected areas (PAs) are essential for global conservation efforts, yet static boundaries often fail to protect mobile animals effectively. Tracking data provides critical insights into species movement, exposing limitations in current PAs designs, relevant for game species. We studied the pre-breeding migration of GPS-tracked Northern Pintails *Anas acuta* tagged in late winter in the Adriatic (Italy) to identify critical passage sites leading to their tundra breeding grounds (where they face traditional subsistence hunting to an undocumented extent). As spring hunting is a major threat to the viability of wildfowl populations, we assessed hunting exposure at stopovers for n=89 migration events across the Eurasian flyway (being nocturnal migrants, pintails are safe during active migration). By integrating spatiotemporal stopover data with national hunting season timings and PAs/SPAs coverage, we identified a high-risk zone midway through migration in Belarus, western Russia, and western Kazakhstan, where hunting exposure was alarmingly high (64%, 34%, 100% of "risky" locations). In contrast, hunting-related risks were negligible early in migration (within the EU) and in the Russian taiga, where stopovers were largely past hunting season. At the individual level, 25% ± 33% of stopover days were spent in open-hunting zones, with PAs and SPAs successfully protecting only 6% ± 15% of them (18% ± 27% of stopover days spent at huntable non-protected sites). Our findings emphasize the vital role of PAs in reducing hunting risks for migratory waterfowl while highlighting how EU conservation measures are made less effective by spring hunting in other countries along the flyway.

Assessing gene flow between wild Rock Doves and Feral Pigeons in the Central Mediterranean

Dimitri Giunchi[1*], *Nadia Mucci[2], Daniele Bigi[3], Chiara Mengoni[2], N. Emilio Baldaccini[1]*

1 Dipartimento di Biologia, Università di Pisa

2 Area per la Genetica della Conservazione (BIO-CGE), Dipartimento per il monitoraggio e la tutela dell'ambiente e per la conservazione della biodiversità, ISPRA

3 Department of Agricultural and Food Science (DISTAL), University of Bologna

*Presenter's email: dimitri.giunchi@unipi.it

The genetic status of wild Rock Dove *Columba livia* remains poorly understood, especially in the Mediterranean region, making it difficult to assess gene flow with domestic/Feral Pigeons and, consequently, the conservation status of the wild form. Sardinia is one of the species' Mediterranean strongholds, where wild Rock Doves have been studied since the late 20th century. In this study, we examined the genetic differentiation between wild Rock Doves from the Capo Caccia colony (Sardinia) and Feral Pigeons from three Sardinian cities (Cagliari, Sassari, Oristano), as well as from other Italian localities, both insular (Caltanissetta, Sicily) and mainland (Pisa, Livorno, Rome, Foggia, Naples). DNA was extracted from feather samples and analyzed at 12 microsatellite loci (STRs). We assessed genetic variability and examined population structure using multivariate and Bayesian approaches. Our results revealed low genetic differentiation between wild Rock Doves and Feral Pigeons, with only subtle differences between Sardinian and

mainland feral populations. The Naples population exhibited slight divergence, while Sicilian birds were genetically indistinguishable from peninsular ones. This overall low differentiation is likely due to the recent domestication process and the ongoing gene flow between domesticated and undomesticated populations. These findings suggest that phenotypic differences observed in domestic pigeons may be linked to a limited number of selected genes, which may have been counter-selected once these pigeons returned to the wild. Further investigations on functional genes may clarify these dynamics and contribute to assessing the conservation value of remaining wild populations.

More than a flight: Drones in heronries counts

Dino Scaravelli[1,2*], *Elisa Padulosi*[3], *Marco Gustin*[4]

1 STERNA, Forlì

2 Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, via Campi 103, 41125 Modena

3 Department of Spatial Sciences, Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kamýcká 129, 16500 Praha-Suchdol, Czech Republic

4 Lipu/Birdlife Italia, via Pasubio 3 bis, 43122

*Presenter's email: dino.scaravelli@gmail.com

Heronries visual counts are often hindered by the structure of the ecosystem, because of the difficulty of viewing the entire aggregation at once and because of local logistics. To better monitor species numbers, we recently introduced a drone counting approach. We tested this new approach on six multi-species heronries in Emilia and compared it to traditional methods to evaluate its potential. The drone was manually flown over the heronries in May 2024 to create orthomosaics and manually count the herons. Comparisons were made with the counts obtained using visual counts conducted with binoculars and telescope during the 2024 reproductive season. Heron species were divided between pairs of "grey herons" and "white herons". Only in one of the six heronries, the drone recorded higher counts for white herons compared to visual counts, while overall the visual counts showed higher numbers. Repeated manual counts, based more on the number of nests, led to a higher estimate of the number of pairs present and were able to identify the different species involved. In contrast, our drone counts provided a snapshot of the individuals that were present at the specific time of the flight. Although the traditional method showed higher potential biases than the drone, it is advisable to carry out a series of repeated flights over the same area, possibly overcoming problems of dense vegetation patches and species identification deriving from the different light conditions.

Nesting birds in Sicilian wind farms and surroundings: Evidence of environment simplification

Dino Scaravelli[1,2*], *Francesco Adragna*[3]

1 STERNA, Forlì

2 Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, via Campi 103, 41125 Modena

3 Via Immacolata 82, 91013 Calatafimi Segesta, TP

*Presenter's email: dino.scaravelli@gmail.com

A study was conducted to identify the nesting bird community in six wind farms located in Sicily, across the provinces of Palermo, Trapani, Agrigento and Syracuse. To describe the community structure, repeated surveys were carried out throughout the breeding season in observation stations using 10-minute listening points. These were set both within the wind farm buffer zones and in comparable habitats located one kilometer away from the wind farm boundaries. In five out of six sites, the overall species diversity within the wind farms ranged from 28% to 52% of the diversity recorded in the surrounding areas. However, in one case, diversity outside the wind farm

reached only 78% of that recorded inside. The main influencing factor appears to be the structural simplification of habitats within the wind farms. The one site where greater diversity was observed inside the wind farm featured small woodlands, groves, and shrubby patches. In the four sites where *Lullula arborea* was present, no significant difference was observed in breeding pair numbers between inside and outside the wind farm. Regarding birds of prey and other species of conservation concern, these were generally more abundant in areas outside the wind farms. However, within the buffer zones, species such as Common Kestrel and Woodchat Shrike were recorded, while the surrounding areas also hosted Common Buzzard, Lesser Kestrel, and Eurasian Stone-curlew. This research represents the first attempt to analyze wind farms within their broader environmental context in Sicily and offers recommendations for structural improvements aimed at enhancing nesting conditions for avifauna.

Ecology and breeding biology of the Eastern Black-eared Wheatear in Apulia and Basilicata: Preliminary data

Egidio Fulco[1*], *Cristiano Liuzzi*[2]

1 Studio Naturalistico Milvus, 70022 Altamura (BA)

2 Centro Studi de Romita APS, 70014 Conversano (Bari, Italy)

*Presenter's email: egidiofulco1@gmail.com

The Eastern Black-eared Wheatear *Oenanthe melanoleuca* breeds with fragmented populations in some thermophilic areas of central and southern Italy, with its main range on the Ionian side of Basilicata and the Apulian Murge. With rare exceptions, the ecology and breeding biology of this species are poorly known in Italy, despite the worrying signs of populations decline. To study the ecology of the species in Apulia and Basilicata, over 400 records of nesting individuals and/or territorial pairs, collected in the period 2010-2024, were analyzed. For each georeferenced record, a cartographic analysis of land use and orography was produced, studying the slope and exposure, in order to identify the ecological preferences of the species in the two regions. Finally, for a smaller sample of data, the breeding biology and phenology are described. Ecological analyses indicate a marked preference for grazed surfaces alternating with bare ground, along sunny areas but with slopes that are not always significant. Fledging has been recorded as early as the beginning of June, while phenological data indicate a tendency to remain in the breeding sites until the end of September, with delays extending into October.

Long-term monitoring of Mediterranean pseudosteppe environments in the Alta Murgia National Park (Southern Italy)

Egidio Fulco[1*], *Cristiano Liuzzi*[2], *Fabio Mastropasqua*[2], *Luciana Zollo*[3]

1 Studio Naturalistico Milvus, 70022 Altamura (BA)

2 Centro Studi de Romita

3 Parco Nazionale Alta Murgia, 70024 Gravina in Puglia

*Presenter's email: egidiofulco1@gmail.com

Starting from 2019, the Alta Murgia National Park Authority promoted a survey on the nesting bird community, in order to monitor the "pseudo-Mediterranean steppe" environments. The monitoring plan was designed using 45 quadrants of 5 km on each side derived from the UTM grid; in each of them, 2 observation/listening points were identified, for a total of 90 monitoring stations. The surveys were carried out in the 2019, 2021, 2022, 2023, 2024 breeding seasons. A total of 70 breeding species were recorded, of which 29 are of conservation interest based on the following criteria: annex I dir 2009/147/CE, SPEC, Italian Red List. The Calandra Lark *Melanocorypha calandra* popula-

tion is of considerable importance, as it is the dominant species of the community in all survey seasons. Furthermore, the rarity index calculated for each species indicates that the Calandra Lark has a detection frequency up to 15 times higher than the average on the national territory, identifying the Alta Murgia National Park as the core area for this species in Italy. During the survey, however, a negative trend in Calandra Lark populations was detected, which showed a significant decline between 2019 and 2023, while remaining stable between 2023 and 2024. Other species of interest include Lesser Kestrel *Falco naumanni*, Eurasian Stone-curlew *Burhinus oedicnemus*, European Roller *Coracias garrulus*, Greater Short-toed Lark *Calandrella brachydactyla* and Eastern Black-eared Wheatear *Oenanthe melanoleuca*.

Ecology and distribution of Middle Spotted Woodpecker in Basilicata (Southern Italy)

Egidio Fulco[1*]

1 Studio Naturalistico Milvus, 70022 Altamura (BA)

*Presenter's email: egidiofulco1@gmail.com

The Middle Spotted Woodpecker *Dendrocoptes medius* breeds in Italy with fragmented populations in the central-southern Apennines and in Friuli Venezia Giulia. The core area is concentrated in the mountainous areas of Basilicata, where the ecology and distribution of the species are still little known. Over 700 records relating to territorial individuals (singing males, pair displays) and/or breeding pairs (confirmed nesting) collected in Basilicata in the period 2010-2024 were analyzed. The distribution was expressed as presence/absence data using the 10 km side parcels, deriving from the UTM grid, as detection units. Furthermore, for each data point, the forest typology was verified within a 500 m buffer, through cartographic analysis. The species was found to be present in over 50 detection units with a regional distribution index higher than 40%. As known in literature, a marked preference for oak woods has been detected, with lower densities observed in beech woods, with isolated nestings also in mesophilous woods dominated by Maple and Alder. The species positively selects high forests, while it tends to avoid coppices. The altitude range is between 400 and 1892 m above sea level, with maximum diffusion between 700 and 1200 m, consistently with the development of the main oak woods.

Citizen science observations reveal spatial and temporal patterns of colour variation in the Common Buzzard *Buteo buteo*

Elena Frederika Kappers[1*], *Kaspar Delhey[2], Mihai Valcu[2], Christiaan Both[3], Bart Kempenaers[2]*

1 Altenburg & Wymenga Ecological Consultancy, Feanwâlden, Netherlands

2 Department of Ornithology, Max Planck Institute for Biological Intelligence, Seewiesen, Germany

3 Conservation Ecology Group, Groningen Institute of Evolutionary LifeScience, University of Groningen, Groningen, Netherlands

*Presenter's email: elena_kappers@hotmail.com

Common Buzzards *Buteo buteo* show high levels of colour variation, ranging from dark brown to almost white, but what maintains this variation is not well understood. We compiled a large dataset of citizen science observations to map buzzard colour variation across Europe, test for potential environmental drivers, and assess temporal colour variation during the last two decades. Common Buzzard colour variation is geographically structured: light-coloured buzzards are mainly found in North-Central Europe, intermediate-coloured buzzards are more common in the eastern Mediterranean region and the British Isles, while darker buzzards are more common in the Iberian Peninsula and Brittany. Environmental effects explain only limited amounts of variation, with lighter coloured buzzards found in areas with low forest cover, and higher precipitation. We found marked temporal de-

creases in the proportion of dark- and light-coloured buzzards and increases in intermediate-coloured buzzards between 2000 and 2022, leading to a reduction in colour variation over time. Increases in intermediate-coloured buzzards match temporal trends reported for a Dutch population and studies showing that intermediate-coloured buzzards have higher fitness. Field studies should establish whether selection against colour extremes is evident in other parts of the range and identify the mechanisms responsible, while phylogeographic genetic analyses are needed to disentangle the effects of historical contingency and local adaptation on colour variation in this species.

The search for the holy grail: One black rotor blade did not reduce bird mortality in windfarm Eemshaven in the Netherlands

Elena Frederika Kappers[1*], *Lizanne Jeninga[2], Erik Klop[1], Jonne Kleyheeg-Hartman[1]*

1 Altenburg & Wymenga Ecological Consultancy, Feanwâlden, Netherlands

2 Waardenburg Ecology, Culemborg, Netherlands

*Presenter's email: e.kappers@altwym.nl

Following the positive results of painting one blade black to reduce collision rates among birds on the Norwegian island of Smøla, a follow-up study was set up in windfarm Eemshaven in the Netherlands starting in 2021. Here, a much broader set of species is present, and collision rates among birds are known to be relatively high. The study consisted of 14 turbines in a BACI setup (Before-After-Control-Impact). After one year of Before monitoring, during which all Control and Impact turbines had regular white blades, the 7 Impact turbines received one black blade. The After monitoring lasted two years, until the end of 2024. In total 436 collision victims of birds were found, of which 196 under Control and 240 under Impact turbines. The most frequently recorded species groups were songbirds and gulls, followed by waders. Unfortunately, no statistically significant effect of the black blade on the number of collision victims was found. This result holds for all bird species together, as well as for individual species groups. Interestingly, for diurnal birds and large gull species we did find a positive effect of the black blade, although this was not statistically significant. A possible explanation for the results of this study, is that the single black blade might not contrast enough with the (busy) industrial background in the Eemshaven area. Another explanation is that due to the relatively small sample size in the study at Smøla, the positive effect of the black blade might have been overestimated.

The community of the Real Bosco di Capodimonte - Naples. Changes in community structure between 2001/2003 and 2021/2023

Elio Esse[1*]

1 ASOIM OdV

*Presenter's email: elioesse58@gmail.com

The Real Bosco di Capodimonte is a monumental park as well as the largest green area in Naples with its 130 ha. From a botanical point of view, it is a mesophilic old-growth forest but with the presence of numerous species belonging to other associations such as European Lime Tilia europea and Silver Fir Abies alba. Extensive grazing areas, periodically mowed, are present. In addition to the remarkable age of the trees, the site is ecologically interesting for the presence of dense undergrowth. An initial two-year avifaunal study was conducted in 2001/2002. A census was conducted in the three-year period 2021/2023 as part of a site redevelopment project funded by the Ministry of Culture. In this work, the ornithic community structure was compared 20 years later through community indices. The site maintained the prerogative of being isolated from other green areas resulting totally immersed in a densely urbanized matrix. This condition allows us to understand the resilience of this ecosystem, interpreted both with

respect to its nature as an old-growth forest and as a function of climate change. For this reason, special attention was paid to the presence/absence of species detected in the two time intervals, as well as to increases and decreases in population size, looking for a link to factors that have occurred in the meantime. In the past three years, green maintenance work has been carried out within the park, which would appear not to have caused disturbance.

Monthly dynamics of waterbirds in the Orbetello lagoon (central Italy): Preliminary results

Emiliano Arcamone[1], *Federica Gianneschi*[1], Luca Puglisi[1*]

1 Centro Ornitologico Toscano 'Paolo Savi' - ETS

*Presenter's email: direttore@centrornitologicotoscano.org

The Orbetello lagoon, a protected wetland area of international importance according to Ramsar criteria, is subject to various human activities and facing ecological changes of anthropogenic origin, such as changes in water quality, with an increase in nutrient inputs over time, and in hydrological cycles, with the artificial raising of water levels in the spring-summer months. In 2024, a project based on monthly bird censuses was started in order to investigate how birds use the wetland throughout the year and the factors that influence their abundance and distribution within the lagoon. The censuses are carried out by 10 teams working simultaneously, counting birds in 26 pre-defined sectors. During the first year of the survey, 82 species of waterbirds were recorded, with the lowest monthly value in June (29) and the highest in January (52). The number of birds varied between a minimum of 1,681 in May and a maximum of 17,520 in February. Twelve species were dominant (relative abundance ≥ 5%) in at least one month; among these, the Greater Flamingo *Phoenicopterus roseus* was dominant in 11 months (with values even above 50%). Preliminary results from the first year of the study indicate that herbivore species (such as the Eurasian Coot *Fulica atra*) and shorebirds, particularly those present as transient migrants, are relatively poorly represented and that the functional diversity of the waterbird community at the site is reduced.

10-years trends of the breeding bird community in the Lipu Oasi "Castel di Guido" and SPA IT6030025 "Macchiagrande di Ponte Galeria": Conservation implications

Emiliano De Santis[1*], *Alessia De Lorenzis*[1]

1 Oasi Lipu Castel di Guido – Lega Italiana Protezione Uccelli, Via Pasubio 3/bis - 43122 Parma

*Presenter's email: xemiliano.desantisx@gmail.com

We present the results of a 10-year (2016–2025) systematic survey on the breeding bird community and species distribution in the Lipu Oasi "Castel di Guido". This area overlaps with the SAC IT6030025 "Macchiagrande di Ponte Galeria" and is part of the State Reserve "Litorale Romano" (Rome, Italy). Each year, 60 point counts were conducted twice during the breeding season; point number was proportional to woodland and open habitat coverage. In addition, diurnal routes across a 500-meter grid (62 cells) were carried out, as well as nocturnal surveys using spontaneous calls and playback to detect nocturnal and elusive species. Over the study period, 70 breeding bird species were recorded. Dominant species included Eurasian Blackcap, Common Blackbird, Eurasian Chaffinch, Great Tit, and Common Starling. We observed a decline in the estimated number of breeding pairs of most abundant species as well as open-habitat species of European conservation concern like Red-backed Shrike and Woodchat Shrike. In contrast, some forest species, like the Great Spotted Woodpecker and Common Wood

Pigeon, increased. These trends are consistent with results from multi-year Farmland Bird Index for the Lazio Region. We identify the abandonment of traditional extensive agriculture as a major conservation pressure. In light of our results and considering the presence of breeding raptors listed in Annex I of the EU 'Birds' Directive (e.g., Short-toed Snake Eagle, Black Kite, and Red Kite), we strongly recommend that the Natura2000 site should be expanded and reclassified as a "C" type (SPA/SAC) to ensure appropriate conservation measures for this area.

Supporting the Little Owl *Athene noctua* in the Adige Valley (province of Trento) and its ecosystem services

Eugenio Osele[1], *Giovanni Zanfei*[2], *Federica Bertola*[1], *Lucio Uber*[1], *Ezio Ferretti*[3], Dino Scaravelli[4,5*]

1 MUSE – Museo delle Scienze, Ufficio Ricerca e Collezioni museali, Biologia della Conservazione, Corso del Lavoro e della Scienza 3, 38122 Trento

2 Dipartimento di Scienze della Vita, Università di Trieste, via Weiss 2, 34128 Trieste

3 Associazione De Gaspari, via Zandonai, 38122 Trento

4 STERNA, Forlì

5 Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, via Campi 103, 41125 Modena

*Presenter's email: dino.scaravelli@gmail.com

Starting from preliminary research on the presence and distribution of the Little Owl *Athene noctua* in the Adige valley carried out in the 2010s, in 2021 a hundred tube nest boxes were distributed in the countryside to support the establishment of the species. On the one hand, the initiative was supported by the De Gaspari Association, which involved the students and teachers of the De Gaspari primary school and some local associations operating in the social field, and on the other hand, by the enthusiasm of numerous farmers who showed interest and solidarity with the project. From 2022 to 2024, the nest boxes were occupied by 5, 8 and 11 pairs who flew 12, 14 and 24 juveniles respectively. In 2024 Little Owl pellets collected in the study area were analysed and about 300 preys were recognized. Rodents (Apodemus sylvaticus and voles) accounted for 26% of the total but accounted for the 71% of the biomass, birds (*Turdus merula*, *Fringilla coelebs*, *Passer italiae* were found among others) accounted for 1,5% of the total and 4% of the biomass, insects accounted for the 72% of the total but for the 25% of biomass, mainly represented by Orthoptera, Carabidae, Scarabaeidae and Dermaptera. This study highlights the importance of making suitable nesting sites available in the agricultural valley floor of the Adige river in Trentino and the important role of the little owl in the control of potential pest species in agriculture, as well as transmitting important educational and social issues.

Firsts results of the marine avifauna monitoring activity in the 'Isola di Bergeggi' Protected Marine Area

Fabiano Sartirana[1*], *Giacomo Actis Dato*[1], *Daniele Duradoni*[1], *Davide Virzi*[2]

1 Ce.S.Bi.N. srl

2 Area Marina Protetta "Isola di Bergeggi"

*Presenter's email: info@cesbin.it

The aim of this work was to monitor the avifauna of conservation interest present in the 'Isola di Bergeggi' Protected Marine Area (Liguria Region – Province of Savona – NW Italy), focusing on the species included in Annex I of the Birds Directive EU. The surveys were carried out 10 times in 2024 in the months of January, February, March, April and December using the visual census methodology along 2 line transects that were traversed using a boat. The surveys were carried out in the early morning hours by a single operator with suitable optical equipment (10x42 binoculars).

A total of 19 species were contacted during the surveys, 5 of which are listed in Annex I of the Birds Directive EU: European Shag *Gulosus aristotelis*, Sandwich Tern *Thalasseus sandvicensis*, Peregrine Falcon *Falco peregrinus*, Little Egret *Egretta garzetta* and Common Kingfisher *Alcedo atthis*. A remarkable result was the confirmed frequentation of the protected area for foraging by a pair of Peregrine Falcon, for which the first nesting on the Island of Bergeggi was also ascertained, with the successful fledging of at least 2 young. These results, together with those that will be gathered during 2025-2026, provide an excellent basis for conservation strategies for this protected area.

Active and passive monitoring of migratory birds in the Parco Lombardo della Valle del Ticino, Lombardy, Northern Italy

Fabio Casale[1*], *Luca Giussani[1], Milo Manica[1], Barbara Badino[2], Massimo Balocco[2], Arianna Calcaterra[2], Davide Cameroni[2], Orietta Cortesi[2], Federico Faraci[2], Cristina Poma[2], Pietro Beretta[2], Michele Bove[2], Monica Di Francesco[2]*

1 Fondazione Lombardia per l'Ambiente

2 Parco Lombardo della Valle del Ticino

*Presenter's email: fabio.casale4@gmail.com

Parco Lombardo della Valle del Ticino has activated in the last years monitoring activities of migratory birds whose flyways follow or intersect the valley of Ticino River, the largest protected area in the Padana Plain. Visible bird Migration (VisMig) has been investigated through diurnal active monitoring from selected watchpoints particularly significant for the migration (e.g. the confluence between Ticino and Po rivers) or with a wide view on the Ticino valley (e.g. on the top of some high river escarpments). The activity carried out during spring and autumn migrations in 2024 and 2025, within the framework of the PNRR-funded project "Mo.Mi.T. Green & Blue - Monitoring of Migrations along Ticino river", has permitted so far to census 130 migratory species, including many species of conservation interest like *Aythya nyroca*, *Grus grus*, *Egretta garzetta*, *Circaetus gallicus*, *Circus aeruginosus*, *Pandion haliaetus*, *Falco vespertinus*, *Vanellus vanellus*, *Lanius collurio*, *Emberiza hortulana*. Passive acoustic monitoring of Nocturnal Migration (NocMig), ongoing from spring 2025 within the same project, has already conducted during migrating periods of 2020-2021 (project "LIFE Ticino Biosource") and 2022-2023 (project "SINTESI Fauna"). During past years 113 species were identified in one site (Geraci, Motta Visconti), 46 of which are of community interest, including *Caprimulgus europaeus*, *Botaurus stellaris*, *Botaurus minutus*, *Nycticorax nycticorax*, *Porzana porzana*, *Zapornia parva*, *Burhinus oedicnemus*, *Tringa glareola*.The combination of these two methods permits to the Park to have a much clearer view of the importance of the ecological corridor of the Ticino River for migratory birds.

Monitoring the Grey Partridge *Perdix perdix* population of Monti Sibillini National Park

Federico Morandi[1], Francesco Renzini[2], Francesco Riga[3], Alessandro Rossetti[1], Andrea Scappi[3], Alberto Sorace[3*]

1 Parco Nazionale Monti Sibillini

2 Reparto Carabinieri Parco Nazionale Monti Sibillini

3 ISPRA

*Presenter's email: alberto.sorace@isprambiente.it

The populations of the Monti Sibillini National Park and the Gran Sasso and Monti della Laga National Park are the only two regularly breeding Grey Partridge *Perdix perdix* populations in Italy. The results of the first year of monitoring of the population of the Monti Sibillini National Park are reported. The study area included the Castelluccio plateau, Monte Fiegni and the Frascaro Valley (Norcia). In spring (15-April-31May 2024) the number of

singing males was investigated with the playback technique in point counts along transects. Subsequently, the sites in which at least one territorial male had been identified were investigated with pointing dogs in the period 15 August – 1 October, in order to identify partridge broods and evaluate their breeding success (ratio between young and females). In spring 152 point counts distributed along 13 transects (43.1 km) were carried out recording 24 singing males. In Castelluccio plateau and Frascaro Valley (Norcia) 10 broods including 96 individuals were found, corresponding 7,6 juv/female. Mt Fiegni area was not investigated. The results highlight that Grey Partridge populations of Monti Sibillini National Park are stable. Data on breeding success indicate a high number of juv per female suggesting a good expansion potential. Altho ugh according to preliminary genetic analysis conducted by ISPRA the individuals present in Monti Sibillini do not belong to Italian subspecies *Perdix perdix italica*, the population has a high ecological value since it reproduces naturally and it is adapted to a mountain environment.

Effect of nest microclimate on incubation behaviour in a cavity nesting raptor

Federico Pelliccioni[1*], *Alejandro Corregidor-Castro[1,2], Jacopo G. Cecere[3], Claudia De Battisti[4], Chiara Favaretto[1], Michelangelo Morganti[2,4], Andrea Romano[5], Diego Rubolini[5], Jacopo Sacchet[5], Andrea Pilastro[1,2]*

1 Dipartimento di Biologia, Università di Padova, Via U. Bassi 58/B, I-35131 Padova, Italy

2 National Biodiversity Future Centre, Piazza Marina 61, 90133, Palermo, Italy

3 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), via Ca' Fornacetta 9, I-40064 Ozzano Emilia (BO), Italy

4 Consiglio Nazionale delle Ricerche – Istituto di Ricerca sulle Acque (CNR-IRSA), Via del Mulino 19, I-20861 Brugherio, Italy

5 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, via Celoria 26, I-20133 Milano, Italy

*Presenter's email: federico.pelliccioni@phd.unipd.it

Managing time allocation between parental care and self-care is a complex task for avian parents. Avian embryos require stable thermal conditions for proper development, while adults need to adjust their foraging trips based on egg temperature. Climate warming has been shown to reduce brooding effort in populations where ambient temperatures during incubation are generally low. However, less is known about the effects of high temperatures in more southern populations, where heatwaves can lead to increased hatching failure. In this study, we analysed the effect of nest microclimate during incubation in the Lesser Kestrel *Falco naumanni*, a small bird of prey that breeds in nestboxes and exhibits biparental egg brooding. We experimentally manipulated nest temperature by shading a group of nestboxes from direct sunlight over three breeding seasons (2022-2024) in a nestbox-breeding population. During incubation, shaded nestboxes were, on average, approximately 2°C cooler than control, unshaded nestboxes, with maximum temperature differences reaching about 6°C. Females consistently brooded during the night (from 8 PM to 5 AM), while daytime brooding was shared between partners. Males spent, on average, 1-2 hours more brooding than females during the day. Males from control and shaded nestboxes spent similar amounts of time incubating. However, females from the shaded group spent less time in the nest, suggesting differential risk-taking behaviour between partners in response to increasing nest temperatures.

Plastic ingestion in Scopoli's Shearwaters from Lampedusa: Evidence from stomach content analysis

Federico Tossani[1*], *Federico De Pascalis[2], Giorgia Gaibani[3], Antonella Di Gangi[4,5], Susanne Kühn[6], Jan A. van Franeker[6], Jacopo G. Cecere[2], Diego Rubolini[1], Marco Parolini[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milan, Italy

2 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano dell'Emilia, Italy
3 Nature conservation Area, LIPU, Parma, Italy
4 Berta maris - via Mannarazza s.n.c., 92031 Linosa, Italy
5 Nature conservation Area, LIPU, Parma, Italy
6 Wageningen Marine Research, 1781 AG Den Helder, The Netherlands
*Presenter's email: federico.tossani@unimi.it

Plastic pollution is an escalating threat to marine biodiversity. Seabirds are widely recognized as effective indicators of ocean health. The amount of plastic in Scopoli's Shearwaters *Calonectris diomedea*, a wide-ranging seabird that breeds throughout the Mediterranean, one of the world's most plastic-polluted seas, is not well-known. In this study, we analyzed the stomach contents of bycaught Scopoli's shearwaters collected by local fishers near Lampedusa Island, in the central Mediterranean Sea. A total of 18 carcasses were dissected using a standardized protocol adapted from the seabird plastic monitoring program in the North Sea. Biometric data and additional information such as organ condition, sex, and sexual maturity were recorded for each individual. The contents of both the proventriculus and gizzard were rinsed, sorted, and analyzed by plastic shape, number, and mass. We identified 243 plastic items across all specimens with an average mass (± SD) of 26.02 ± 30.74 mg per bird, with marked differences between stomach sections and sexes. Interestingly, immature/subadult females (n = 4) exhibited higher plastic burdens than adult males (n = 14), although the highest plastic mass was found in a male (128.6 mg). On average, plastic mass in the gizzard was 23.8 ± 32.0 mg, compared to 5.4 ± 9.08 mg in the proventriculus. Future analysis of polymer composition using FTIR will offer deeper insight into the origin and characteristics of the ingested plastics, contributing to a better understanding of marine litter impacts on Mediterranean seabirds.

The avifauna of the middle-upper course of the Sarno river: Preliminary results of bird ringing activities at the Longola archaeological site

Filippo Tatino[1*], *Marcello Bruschini[1], Alessandro Motta[1], Luca Nelisio[1]*

1 ASOIM odv
*Presenter's email: filippo.tatino@gmail.com

Active since September 2024, the Longola ringing station is located within the Archaeological Park of Longola, part of the Parco del Bacino Idrografico del Fiume Sarno in Campania (southern Italy). The site includes fallow land, riparian forest, reed bed, and a small artificial basin, supporting a diverse bird community. Situated in Zone A of the protected area and subject to strict environmental regulations, it remains undisturbed by human activities affecting the Sarno River. The station follows ISPRA's "annual" monITRIng protocol, conducting bird capture and marking sessions once every ten days. The capture system consists of three mist-net transects (four shelves, 16 mm mesh), totaling 150 meters. As of April 2025, 663 individuals from 43 species have been ringed. Seven species account for 75% of captures: *Phylloscopus collybita*, *Passer montanus*, *Erithacus rubecula*, *Acrocephalus scirpaceus*, *Cettia cetti*, *Sylvia atricapilla*, and *Emberiza schoeniclus*, with *P. collybita* alone representing 36%. Three Annex I species of the EU Birds Directive were captured: Common Kingfisher (*Alcedo atthis*, 8), Moustached Warbler (*Acrocephalus melanopogon*, 7), and Bluethroat (*Luscinia svecica*, 2). All were recaptured multiple times in winter, confirming the site's role as a wintering area. A Moustached Warbler ringed in Hungary was recaptured 13 times. Additionally, a Sedge Warbler (*A. schoenobaenus*) with a Danish ring was recaptured during spring migration—the second such case ever recorded in Italy, making it nationally significant. Funded by PNRR and set to run for at least two years, this is the first systematic bird ringing initiative in the Sarno basin. It provides new insights into migratory dynamics in a previously unstudied area, confirming its value for bird conservation despite the Sarno River's ecological challenges.

Tracking the annual movements of Eleonora's Falcons *Falco eleonorae* from La Galite Archipelago, Tunisia

Flavio Monti[1*], *Ouni Ridha[2], Stephan Tillo[3], Moez Shaiek[4], Sahbi Dorai[4], Hassen Zaghdoudi[5], Michel-Jean Delaugerre[6], Joan Mayol[7], Nicolas Croizé[7], Eva Tankovic[7], Jeanne Chaumont[7]*

1 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

2 Independent Researcher, Sidi Thabet, 2020 Ariana, Tunis, Tunisia

3 Independent Researcher, 34380 Rouet, France

4 Méditerranée Action Nature (MAN), 7021 Zarzouna, Tunisia

5 Agence de Protection et d'Aménagement du Littoral (APAL), 1002 Tunis, Tunisia

6 Independent Researcher, 20200 Bastia, Corsica, France

7 PIM Initiative for Small Mediterranean Islands, 13008 Marseille, France

*Presenter's email: flavio.monti@cnr.it

Understanding the full annual cycle of migratory landbirds is crucial for effective conservation. However, data on the movement ecology of many species remain limited, particularly in North Africa. This study provides the first insights into the seasonal movements of six Eleonora's Falcons *Falco eleonorae* - four adults and two juveniles - tracked via GPS/GSM from La Galite Archipelago, Tunisia. Birds were tagged at their breeding colony in mid-September. During the pre-migratory period, adults performed repeated foraging trips at sea, primarily along a SW-NE axis extending from the colony into open waters. Occasional trips to the coastal and inland areas of northern Tunisia were also recorded. One juvenile female exhibited an exploratory movement across Sardinia and Sicily before initiating migration on October 11. The remaining falcons departed between late October and early November (October 27-November 8). Autumn migration revealed distinct patterns: the four adults followed a similar route across Libya, Chad, and South Sudan, funneling through the rainforest and reaching northern Madagascar via the Mozambique Channel by late November. The two juveniles initially took a more westerly path across the Sahara, passing through Libya, Niger, Nigeria, and Cameroon before reorienting towards Lake Victoria and arriving in Madagascar on December 8-9. These findings represent the first complete tracking data for this species in North Africa and align with international efforts to integrate research and conservation strategies for Afro-Palearctic migratory landbirds.

Two decades of Osprey *Pandion haliaetus* reintroduction in Italy: Population status update and conservation perspectives

Flavio Monti[1*], *Guido Alari Esposito[2], Francesco Pezzo[3], Vincenzo Rizzo Pinna[2], Giampiero Sammuri[4], Andrea Sforzi[2]*

1 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

2 Maremma Natural History Museum, Strada Corsini 5, 58100 Grosseto, Italy

3 Italian Institute for Environmental Protection and Research (ISPRA), Via Ca' Fornacetta 9, 40064 Ozzano dell'Emilia, Italy

4 Tuscan Archipelago National Park, Locality Enfola, 57037 Portoferraio, Italy

*Presenter's email: flavio.monti@cnr.it

Reintroduction projects require standardized monitoring of both pre- and post-release phases, as well as the breeding performance of newly established populations. Such monitoring is essential for evaluating project effectiveness, addressing potential challenges, and refining conservation strategies to maximize success. Nearly twenty years after the launch of the Osprey *Pandion haliaetus* reintroduction project in Italy, we present an updated assessment of the species' population status, reproductive performance and conservation outlook. Overall, 54 reproductive events were recorded, 156 eggs were laid, 114 of them hatched (73.1%) and 100 young successfully fledged between 2011 and 2024. Trends in average productivity (1.8 ± 0.4), hatching (0.7 ± 0.3), fledging (0.8 ± 0.3) and breeding success (0.6 ± 0.2) indicate a gradual increase in breeding pairs and reproductive performance. As of 2024, the breeding population consists of 7–8 established pairs distributed across key coastal and wetland areas in Tusca-

ny and Sardinia. However, variability in reproductive success among pairs and across years highlights ongoing challenges in securing a stable growth rate and ensuring the long-term viability of the Italian Osprey population. Despite these positive trends, the species remains classified as Critically Endangered on Italy's national IUCN Red List, underscoring the need for sustained conservation efforts. Key strategies include habitat protection, nest monitoring, and the mitigation of human disturbances. Future priorities will focus on range expansion, genetic reinforcement, and collaborative conservation initiatives to enhance population resilience. This review emphasizes the critical role of long-term monitoring in assessing reintroduction success and guiding future management efforts.

Peri-urban wetlands as biodiversity hotspots: Seven years of bird monitoring in Arnovecchio Oasis (Florence - Central Italy)

Francesco Bimbi[1*], *Roberto Tocci[1], Clara Sargentini[1]*

1 Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali (DAGRI) - Università di Firenze

*Presenter's email: bimbifrancesco7@gmail.com

Peri-urban wetlands are often biodiversity hotspots, especially for birds and fishes, and can host rare, native and common species that are important for habitats conservation. The aim of this work was to describe the ornithological community of the Arnovecchio hot-spot, a peri-urban wetland located in the province of Florence, throughout a seven-year period. From January 2018 to December 2024, every 25 days, using a Nikon Aculon A211 8x42 binocular, three-hours sessions of bird sighting were carried out; the monitored species and their number have been recorded. For each species, the Dominance index was calculated and for the avian community, the Abundance, Richness, Shannon-Wiener Diversity and Evenness ecological indices were calculated. To evaluate the presence of significant trends throughout the years, the Spearman's non-parametric correlations were calculated, using JMP. Twenty-five waterbird species were recorded: *Anas platyrhynchos*, *Fulica atra* and *Larus michahellis*, were dominant both as breeding and as wintering species; *Ardea cinerea*, *Aythya ferina*, *Chroicocephalus ridibundus* in the winter period, while Podiceps cristatus was dominant in the breeding period. Among the most numerous species, *Phalacrocorax carbo*, *Microcarbo pygmaeus* and *Ardea ibis* followed a significant increasing trend (Prob>|p| <0.05), with Spearman Rho: 0.4556; 0.4150 and 0.3029 respectively. These species appeared in Arnovecchio most recently, probably as a consequence of the movement towards secondary sites due to the high competition for the main wintering areas in Tuscany. Richness, Shannon-Wiener Diversity and Evenness have shown increasing trends, confirming the ecological and environmental value of Arnovecchio site.

Nesting of the Black Stork *Ciconia nigra* at Bocchigliero (Cosenza province - Calabria)

Francesco Sottile[1*], *Anna Funaro[1]*

1 GRAC - Gruppo di Ricerca Avifauna Calabra

*Presenter's email: francescosottile@tiscali.it

In the 2024 breeding season, a pair of Black Stork nested on a rock face in the territory of the municipality of Bocchigliero. The site is located about 6 km east of the Sila National Park. The nest, about 1,5 m wide, was built on a ledge located about 25 m high on a sedimentary rock wall in the Laurenzana stream valley at about 550 m above sea level, surrounded by shrubby vegetation typical of the Mediterranean scrub and oak and chestnut woods associated with agroecosystems. A watercourse with a variable flow runs along the valley floor, on whose banks there are hygrophilous species of limited extent. Observations at the nest were carried out from March to July using a 20-60x scope

at a distance of over 500 m in order not to disturb the breeding activity. Based on field observations and on the time scans of reproductive phenology found in the literature, the pair occupied the nest during the first ten days of March; laying took place between the second and third ten days of March; eggs hatched during the last ten days of April. The pair raised three chicks that successfully fledged in the second ten days of July. In the last two years, the species has shown a positive increase in Calabria, rising from seven to nine nesting pairs that have successfully reproduced.

Evolution of heronries in Calabria in the period 2022-2024

Francesco Sottile[1*], *Emanuele Guido Condello[1], Anna Funaro[1], Maurizio Vena[1]*

1 GRAC - Gruppo di Ricerca Avifauna Calabra

*Presenter's email: francescosottile@tiscali.it

Over the last three years, the Gruppo di Ricerca Avifauna Calabra has surveyed the colonies of herons present in Calabria. Four of the seven species of colonial herons that nest in Italy reproduce in them: Black-crowned Night Heron, Squacco Heron, Western Cattle Egret and Little Egret. Furthermore, the nesting of the Great Cormorant and the Pygmy Cormorant has also been confirmed. The first heronry, discovered in 1999 in the Crati Valley, has changed location several times. Initially it contained only Black-crowned Night Heron nests; in the following years, it attracted Little Egret, Western Cattle Egret and Squacco Heron. Two nesting sites are located along the Crati River and on Lake Esaro (CS), the third on Lake Angitola (VV). The heronries are relatively modest: currently, the largest is on Lake Esaro, with an increase from 30 pairs in 2022 to 101 in 2024. The number of pairs for each species (minimum-maximum in the three-year period) is as follows: Pygmy Cormorant: 3-9 pairs; Great Cormorant: 20-53 pairs; Western Cattle Egret: 4-36 pairs; Little Egret: 3 pairs. A pair of Squacco Heron nested along the Crati River while the nesting of Black-crowned Night Heron, Western Cattle Egret and Little Egret are to be counted, because the heronry changed site and was found only in June 2024. On Lake Angitola, the Great Cormorant colony has increased from 3 to 10 pairs. The trend of species consistency is different: the Little Egret is stable; the Western Cattle Egret, Pygmy Cormorant and the Great Cormorant are increasing.

A non-invasive method for dietary assessment of *Egretta garzetta*: A photographic approach for estimating prey size and biomass

Francesco Tiralongo[1*], *Rosario Balestrieri[2], Flavio Monti[3], Daniele Tibullo[4], Antonino Barbera[5], Renzo Ientile[1]*

1 Department of Biological, Geological, and Environmental Sciences, University of Catania, Catania, Italy

2 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Department of Integrative Marine Ecology, Amendolara, Italy

3 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Lecce, Italy

4 Department of Biomedical and Biotechnological Sciences, University of Catania, Italy

5 Via Giovanni Prati 28, Castelvetrano, Italy

*Presenter's email: francesco.tiralongo@unict.it

Non-invasive monitoring methods have increasingly become essential to minimize disturbances, particularly for sensitive species inhabiting fragile ecosystems. Photographic techniques offer a promising approach for acquiring accurate data on foraging behavior and prey selection without direct interference. In this study, we evaluated the dietary preferences of *Egretta garzetta* across distinct coastal ecosystems in Italy, specifically comparing estuarine/lagoonal environments with marine coastal habitats. Observations were carried out using a combination of high-resolution photographic surveys and photographic data collection through citizen science. Moreover, a novel length-based coefficient was developed, relating the measured bill length of photographed individuals to the size

of captured prey items. This morphometric relationship enabled reliable estimates of prey size, subsequently allowing calculations of prey biomass through established length-weight relationships from existing ichthyological databases. Our findings indicated habitat-specific dietary strategies for E. garzetta: in estuarine/lagoonal habitats, the species showed a diversified fish prey composition, reflecting opportunistic feeding behavior in these productive ecosystems. Conversely, in marine coastal habitats, it revealed a clear preference toward cryptobenthic fish species, highlighting specialized feeding adaptations. This photographic method proved to be highly effective, reducing observer bias and limiting ecological disturbances, making it suitable for long-term monitoring and conservation programs. The developed bill-prey size coefficient offers a straightforward and replicable tool for estimating prey biomass, providing valuable insights into the trophic ecology of coastal avian species. In conclusion, our results underscore the importance of non-invasive photographic methodologies in ecological ornithology, offering robust data collection alternatives essential for understanding and preserving avian populations in diverse coastal habitats.

Variation in vegetation characteristics across territories drives differences in survival

Franziska Hacker[1*], *Samuele Ramellini[1], Helen L. Osmond[1], Andrew Cockburn[1], Damien Farine[1]*

1 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australian Capital Territory, Australia

*Presenter's email: franziska.hacker@anu.edu.au

Suitable vegetation is key to animals' foraging success and efficiency as well as predation avoidance, potentially exerting a strong effect on survival. However, assessing how such drivers affect animal survival proves challenging, as it requires longitudinal datasets on both individual life-history data and fine-scale spatiotemporal information on the habitat. Here, we combine long-term data (>30 years) on the survival of a small Australian passerine, the Superb Fairywren *Malurus cyaneus*, with Light Detection and Ranging (LiDAR) vegetation data, aiming to determine whether territory-level variation in vegetation metrics (vegetation volume, vegetation height, horizontal variability, distribution of forest gaps, and ground availability) affects the winter and summer survival of individuals. To do this, we fit a Cox proportional hazard model that investigates whether these vegetation characteristics are conducive to higher survival in superb fairy-wrens. We predict that forest gaps and higher ground availability will be important for successful foraging, especially in winter, and thus survival. Additionally, vegetation volume is expected to positively influence survival since birds need to trade off foraging with predation avoidance – breeding territories that contain open areas surrounded by dense vegetation are thus expected to have highest survival rates. Preliminary results show that vegetation volume significantly affects adult male survival. Our novel approach shows how remotely sensed vegetation data can be used to assess habitat quality in an ecologically relevant way. Our results can provide guidance for targeted conservation interventions aimed at creating and maintaining key habitats that could stop or even reverse the decline of threatened species.

Short-term variation in the distribution and abundance of nocturnal raptors in Alpine forests in relation to climate change

Gabriel Nicolosi[1*], *Chiara Bettega[1,2], Luca Ilahiane[1], Davide Scridel[3], Gaia Bazzi[4], Michele Ruggeri[1], Leonora Francesconi[1], Elena Sardi[1], Damiano Cuzzolin[1], Paolo Pedrini[2], Piergiovanni Partel[5], Andrea Romano[1], Mattia Brambilla[1]*

1 Department of Environmental Science and Policy University of Milan Via Celoria 26, 20133 Milan - ITALY

2 Museo delle Scienze di Trento, Corso del Lavoro e della Scienza 3, 38122 Trento
3 DOPPS – BirdLife Slovenia, Ljubljana, Slovenia
4 ISPRA-Istituto Superiore per la Protezione e Ricerca Ambientale
5 Parco Naturale Paneveggio Pale Di San Martino Villa Welsperg - Località Castelpietra, 2 38054 Primiero - San Martino di Castrozza (Tn)
*Presenter's email: nicolosigabriel@gmail.com

Understanding how organisms respond to climate change and anthropic alterations of the environment is crucial for developing effective conservation strategies. This study analysed the short-term effects of climate variations on the distribution, abundance, and interspecific interactions of three nocturnal raptors in the Alps and Prealps of Lombardy and Paneveggio Pale di San Martino Park (Trentino), Tawny Owl *Strix aluco*, Eurasian Pygmy Owl *Glaucidium passerinum* and Boreal Owl *Aegolius funereus*. By comparing data collected in 2017 and in 2023, the research assessed the impact of rising temperatures, Vaia storm (2018), and expansion of Tawny Owl on the other two species, which may be subject to competitive and predatory pressures. The Tawny Owl exhibited a strong increase in abundance and expanded its distribution, with occurrence in 2023 at higher elevations than in 2017, likely due to more favorable climate (species occurrence was associated with higher land surface temperature and NDVI). Conversely, the boreal owl showed a decline over time, with many sites likely abandoned from 2017 to 2023. While the Tawny Owl is known as a major competitor and predator of the boreal owl, analyses suggested that, for now, its density at higher elevations does not significantly affect the species' population. We did not find any supported evidence for variations in the Eurasian Pygmy Owl distribution, but this could be due to its limited detectability. Our study highlights rapid changes in Alpine communities, with potential implications for biodiversity conservation and ecosystem functioning.

Habitat influence on bird survey performance in a Mediterranean protected area: Assessing consistency between Point Count vs Audio Recording

Gaia Porporato[1], *Lorenzo Gordigiani*[1], *Matthias Gabriel Berger*[1], *Francesco Ferretti*[1], Flavio Monti[2*]

1 University of Siena, Department of Life Sciences, University of Siena, Via Mattioli, 4, 53100, Siena, Italy
2 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy
*Presenter's email: flavio.monti@cnr.it

The habitat heterogeneity hypothesis suggests that structurally complex habitats provide more niches, leading to increased species diversity. However, the influence of habitat structure on species detectability and survey performance remains unclear. In this study, we compared the effectiveness of two bird survey methods-Point Counts and Audio Recording-in assessing spatial variation in bird species richness across three habitat types with differing vegetation densities in a protected area of central coastal Italy during the 2021 breeding season. Thirty-seven sites were surveyed using both methods simultaneously, with two replicates per site, totaling 74 sampling units. A total of 57 bird species were recorded. Point Counts detected the highest number of species and showed a significant positive correlation with species richness recorded via Audio Recording. However, non-vocalizing birds detected through Point Counts but missed by Audio Recording influenced method performance at the habitat level, though not overall. Alpha diversity was highest in open habitats, followed by pinewood and sclerophyllous forest. Our findings highlight a relationship between vegetation density and survey method performance. With the sampling intensity used, Point Counts were more effective in quantifying absolute species richness. However, both methods consistently detected spatial variation in species richness across sites, supporting the use of Audio Recording for ecological studies focused on relative patterns of bird diversity. This study underscores the importance of considering habitat structure when selecting bird survey methods to ensure accurate biodiversity assessments.

Conservation measures for forest bird species of interest to the EU (Collared Flycatcher, Black Woodpecker, Middle Spotted Woodpecker) within Sila Grande SPA – IT 9310301 – Calabria (Southern Italy)

Gianluca Congi[1,2*], *Tommaso Talerico*[1,2]

1 LIPU (Italian League for Bird Protection)

2 GLC 121 Sila (Calabria) Local Conservation Group

*Presenter's email:gianlucacongi@libero.it

The GLC LIPU Sila, as part of the protocol of accord with the Sila National Park Authority from 2020 has implemented a program to monitor some target species in Annex I of the Community Directive 2009/147/EC "Birds" and also potential threats within the Natura 2000 site "ZPS - Sila Grande IT9310301" - IBA n.148. The bird species of EU interest monitored were: Collared Flycatcher *Ficedula albicollis*, Black Woodpecker *Dryocopus martius* and Middle Spotted Woodpecker *Dendrocoptes medius*. Thanks to the monitoring, some sensitive woodland areas subject to imminent logging projects were identified. The GLC promptly reported the results to the relevant bodies. The construction sites and works would have presented a potential threat to the habitats and consequently to the bird species that had not been correctly assessed, particularly since the silvicultural operations would have been carried out during the breeding season. The main measure requested and obtained was the suspension of operations during the period of greatest vulnerability which coincided with the breeding period (1 April - 30 June). This main conservation measure, together with other requirements for the protection of forest biodiversity, made it possible to confirm the breeding of species listed of EU interest for the following seasons. Furthermore, the dialogue with the managing body (P.N.Sila) made it possible to suggest the adoption of this main medium-long term conservation measure within the management plan of the protected site, adopted in terms of the naturalistic management of the SPA forests.

Digging old local bird collections... a mine of underused data

Giorgio Aimassi[1]

1 Gruppo Piemontese Studi Ornitologici

*Presenter's email: aimassi.giorgio@gmail.com

Due to the scarcity of research and field observations gathered in Piedmont until the 1980s, ornithological collections play a decisive role in defining an incomplete and fragmentary historical picture. For this reason, we decided to examine and publish the data from private collections, which are now almost all deposited in public institutions. The specimens housed in the Museo Regionale di Scienze Naturali di Torino, mainly coming from the former Museum of Zoology of the University, are not included in this work. The catalogues of some collections have already been published in full and, together with the partial control of some others, allowed the selection of the specimens of rare or accidental species. We now collected data from the following collections: Galletti (Museo Civico Domodossola, VB), Noro (Comune di Graglia, BI), Federazione Italiana della Caccia, Sezione di Tortona (Tortona, AL), Ferrero (Parco naturale Lame Sesia, Albano Vercellese, VC), Franchetti (San Giuseppe, Torino), Rolando Barberis, Raspagni e Assini (Aree protette Po piemontese, Bosco Marengo, AL). Summing up with the collections yet published, the overall database includes more than 3250 specimens of 370 taxa, coming mainly from the Piemonte region, with some other specimens from other Italian regions. The specimens document vagrants for both Piedmont and across Italy, as well as interesting phenological and distributional data. All the data collected will be included in the GPSO general archive, and published as a catalogue.

Ornithological monitoring of Pinewood *Pinus pinea* area affected by forest pathogens in Presidential Estate of Castelporziano, Rome – Italy

Giovanni Mastrandrea[1*], *Sauro Giannerini[1], Lorenzo Nannelli[1], Michele Soprano[1]*

1 Segretariato generale della Presidenza della Repubblica - Servizio Tenuta Presidenziale di Castelporziano - Via Pontina,690 - 00128 Roma

*Presenter's email: g.mastrandrea@quirinale.it

The Stone Pine Pinus pinea is a tree species typical of the Italian coastal Mediterranean landscape. In the Lazio region, it can be found from the coast to the city of Rome. In the early 2000s, the stresses caused by climate change made trees more susceptible to the effect of the Tomicus destruens, a native beetle. In 2019, a new pathogen, Toumeyella parvicornis, arrived from southern Italy. The pines, weakened by the previous presence of Tomicus, could not withstand the attack of the Toumeyella and began to collapse, showing complete desiccation at an impressive speed. In 2024, an ornithological monitoring plan had been scheduled in the areas affected by the Tomicus and Toumeyella, in order to reach the "FSC" certification of the Sustainable Forest management that the Presidential Estate of Castelporziano planned to obtain in 2025, and also to assess the effects of the Pines' death on the bird community. The monitoring was carried out at listening points located on walking paths located within and on the edge of the dead pine forests, and also in deciduous plots adjacent to the pine forest. During the 2024 breeding season, the bird richness recorded in the three sampled areas showed no statistically significant differences. The species detected used both trees (woodpecker, pigeon and doves) and bushes (warblers and thrushes) as nesting sites. In the next breeding season, the effect of the mechanical processes for the removal of dead trees and of the ecosystem restoration activities on the ornithological community will be evaluated, both within the pine forests and in the adjacent areas.

Fear without flight: Homing Pigeons maintain route while changing flight behavior when exposed to an artificial predator during their flights

Giulia Cerritelli[1*], *Luca Marinoni[1], Claudio Carere[2], Robert Musters[3], Diego Rubolini[4], Irene Vertua[4], Lorenzo Vanni[1], Anna Gagliardo[1], Dimitri Giunchi[1]*

1 Dipartimento di Biologia, Università di Pisa, Italia

2 Dipartimento di Scienze Ecologiche e Biologiche, Università della Tuscia, Italia

3 Roflight, Enschede, the Netherlands

4 Dipartimento di Scienze e Politiche Ambientali, Università di Milano, Italia

*Presenter's email: giuliacerritelli@hotmail.it

Predation and prey-predator interactions are arguably one of the most striking and studied phenomena in ecology. Preys may adopt different strategies to reduce their predation risk by completely avoiding a predator (space or time) or evolving specific defensive systems (e.g., aposematism). In the present study, we repeatedly exposed 20 experienced Homing Pigeons *Columba livia* displaying a highly stereotyped homing route to the simulated attack of a robotic peregrine falcon (RobotFalcon) to evaluate their anti-predator response. We aimed at testing whether pigeons: 1) abandon their familiar route to avoid the area where the RobotFalcon is flying (RFA) or 2) remain faithful to their familiar route but change their flight behavior to lower predation risk. Routes of Pigeons and RobotFalcon were recorded by GPS data loggers. Pigeons never showed to avoid the RFA but kept retracing their familiar homing route. However, the exposure to the RobotFalcon affected their flight behaviour; when approaching the RFA, pigeons flew at lower altitudes and lower speeds than when the RobotFalcon was absent. Also, after exiting the RFA, pigeons that had been attacked exhibited increased route sinuosity compared to those that were not attacked. These results suggested that the RobotFalcon was perceived as a potential threat. The strong route fidelity exhibited by experimental pigeons induced them to maintain their trajectory despite the presence of the predator, displaying increased caution when approaching the RobotFalcon rather than avoiding the area entirely.

Analysis of Italian data on hunting permits from the 2017–2018 to the 2022–2023 hunting seasons

Giulio Carcani[1], *Massimiliano Di Vittorio*[1], *Lucia Ruscillo*[1], Alberto Sorace[1*]

1 ISPRA

*Presenter's email: alberto.sorace@isprambiente.it

Directive 2009/147/EC (Article 7) requires that the hunting of species listed in Annex II respects the principle of wise use and ecologically balanced regulation of the species, without thereby compromising their conservation status. Following the Ministerial Decree "6 November 2012", the Regions and the Autonomous Provinces of Trento and Bolzano are required to submit annual harvest data obtained from hunting permits in order to assess the impact of hunting on population levels. These data, sent to ISPRA, are processed and forwarded to MASE and MASAF and subsequently to the European Commission. The data concerning the harvest of each huntable bird species during the period from the 2017–2018 season to the 2022–2023 season have been analyzed to assess the extent of hunting in Italy. The analysis highlighted an increase in collaboration between the various administrations and ISPRA. The main critical issues concern the lack of complete information on the ratio between the permits analyzed and the total number of permits issued, as well as the absence of comprehensive data on hunting effort—both of which are essential for an accurate quantification of hunting levels. As a result, the actual extent of the harvest is most likely underestimated. The most hunted species in Italy is *Turdus philomelos*; among non-passerines, *Columba palumbus* and among waterfowl, *Anas platyrhynchos* and *Anas crecca*. Numerical differences in harvests between species across different regions may be related both to differences in hunting traditions and to the geographical location in relation to migratory routes and wintering areas.

The birds of Pompeii Archaeological Park

Giuseppe Di Martino[1*], *Silvia Capasso*[1], *Olimpia de Simone*[1], *Carmine Ferrara*[1], *Maurizio Fraissinet*[1], *Rossella Lanzieri*[1], *Patrizia Loffredo*[1], *Gianluca Nunziata Rega*[1], *Filippo Tatino*[1], *Claudio Labriola*[1]

1 ASOIM

*Presenter's email: giuseppe_dimartino@libero.it

In November 2024, the ASOIM (Associazione Studi Ornitologici Italia Meridionale) signed an agreement with the Archaeological Park of Pompeii to monitor the birds of the archaeological and historical sites of the Park. The archaeological area of Pompeii covers 66 hectares: 45 hectares have been excavated and opened to the public, the remaining peripheral part is still a green area. Bird censuses and monitoring will be performed for two years with monthly surveys over the entire area. The aims of this project are to produce a comprehensive checklist of the species present in the study area, to calculate the Ornithological Value Index of the registered breeding birds and to create information material for the broad public. These include information booklets and panels for visitors, a photographic exhibition and the creation of an ornithological section within the Archaeological Park App. Monitoring began in March 2025 and 36 species were surveyed over the first month. Most of the species were resident and breeding. It is worth mentioning the presence of the Rose-ringed Parakeet *Psittacula krameri* and Western Cattle Egret *Ardea ibis*, as evidence of their expansion over this territory. Preliminary analyses also show that the central part of the archaeological area is mostly populated by pigeons, sparrows and crows: this zone is affected by the considerable flow of visitors, so bird species more adapted to the urban context prevail. This study probably represents the first case of an ornithological survey over a large and famous touristic archaeological site.

Nesting of Black-winged Stilts *Himantopus himantopus* in Bergamo: Protection, monitoring and prospects

Giuseppe Platania[1*], *Ilaria Mazzoleni[1], Giampaolo Brignoli[1]*

1 Lipu Bergamo

*Presenter's email: giuplata24@gmail.com

During spring and summer 2024, a group of volunteers from the Lipu delegation of Bergamo monitored and protected a small colony of Black-winged Stilts *Himantopus himantopus* in the province of Bergamo. The colony was located in an agricultural area dominated by intensive maize cultivation, between the Oglio and Serio rivers. It consisted of seven adult individuals, including three breeding pairs. The Black-winged Stilts nested in a cornfield adjacent to a privately owned artificial wetland, surrounded by hedgerows and used for hunting purposes during the winter season. To protect the three nests, each containing four eggs, from damage due to scheduled ploughing during the hatching period, they were marked in agreement with the landowner. Bamboo sticks were used following the recommendations of Zámečník et al. (2018), while ribbons, flags, or other conspicuous markers were avoided to reduce the risk of attracting predators. The eggs hatched in June, and seven juveniles successfully fledged by July. Reproductive success, calculated as the number of fledged young per breeding pair, was 2.33. Although Black-winged Stilt nesting has been recorded in the province of Bergamo since 2018, this is the first documented case for which precise data on the number of clutches, eggs, and fledglings are available. Recommendations have also been provided to support the continued protection of this colony in the coming years.

So useful, so dangerous! The damage of electrocution in a raptor reintroduction project: An economic analysis

Giuseppe Puddu[1*], *Veronica Cippitelli[2], Stefano Picchi[2], Giampiero Tirone[1]*

1 Regione Lazio - Riserva Naturale Lago di Vico

2 Ente Monti Cimini

*Presenter's email: gpuddu@regione.lazio.it

Electrocution is a well-known problem affecting medium and large-sized birds and one of the main threats to the conservation of avifauna. LIFE LANNER project (Action C.3) has secured 363 MT poles in and around 4 Protected Areas of the Lazio Region, which include 3 SPAs. In addition, with a timely intervention, some poles in Sicily have been secured, after causing the death of one of the Lanner Falcon *Falco biarmicus feldeggii* released by the project. To maximize the results both in terms of economic effort and in terms of effectiveness in preventing electrocution, some operational criteria have been adopted to identify the power lines on which to operate the safety measures. It was decided to secure the power lines present in open areas: here the power poles are the highest support compared to the height of the almost absent surrounding tree vegetation and for this reason they act as an attractor for birds, in particular diurnal and nocturnal birds of prey. This work aims to propose an economic balance to estimate the costs of conservation, comparing the "production costs" of lanner chicks to be released from captivity, with those of securing a MT pole. The investment in 4 nest-boxes at the Ente Monti Cimini, the annual maintenance of the breeding pairs, the hours of work to bring the young to the foal stage, and the technological equipment for monitoring, represent a strong economic commitment of the project in relation to the current costs of securing the poles.

Avian communities and species monitoring in the Monte Pellegrino Nature Reserve (Palermo, Italy): An update for conservation management

Grazia Orecchio[1*], *Giovanni Provinzano[2], Mario Lo Valvo[1]*

1 University of Palermo

2 Rangers d'Italia Sezione Sicilia, Palermo, Italy

*Presenter's email: grazia.orecchio@community.unipa.it

The Monte Pellegrino Nature Reserve in Palermo, covering 1,050 hectares, is divided into Zone A and Zone B and is part of the Natura 2000 ecological network as a Special Area of Conservation (SAC). The reserve, known for its natural features, was primarily established to protect its habitats and avifauna. Conducting research and updating scientific knowledge is therefore essential for the conservation of species and effective management of the reserve. Since the most recent studies on vertebrate fauna date back several years, the aim of this work was to verify and update current knowledge on bird species and avian communities within Zone A of the reserve. From March 25th to July 9th, 2024, we conducted surveys across approximately 650 hectares, divided into 148 square cells of 250 meters per side. In each cell, we carried point-count censuses lasting at least 15 minutes. In a subset of 126 cells, we also deployed passive acoustic recorders (Audiomoths), programmed to record 40 minutes per day at set intervals, including 10 minutes during the night. The bioacoustics data confirmed 43 breeding species and identified two additional possible species. Presence data were analyzed to update the reserve's bird checklist, assess any recent changes, and characterize the current composition of avian communities. Ultimately, this research not only contributes to improving future conservation planning but also supports the reserve's management in identifying targeted conservation measures for the SAC.

BiodiverCITY. A multi-approach study for improving the management of urban avifauna

Grazia Orecchio[1], Flavio Vizzini[1], Elisa Maria Grazia Anzalone[1], Myrtò Eleftheriadi[2], Chiara Alessandra Gaudesi[1], Gianluca Grano[1], Sara Pedone[1], Mario Lo Valvo[1], Daniela Campobello[1]*

1 University of Palermo

2 Democritus University of Thrace - Dept. FMENR, Orestiada, Greece

*Presenter's email: flavio.vizzini@community.unipa.it

The management and conservation of urban green areas is a solution for mitigating the impacts caused by anthropogenic disturbance on natural environments. Urban green areas play a crucial role in supporting wildlife survival as they serve as biodiversity hotspots and ecological corridors. Despite the increasing interest in urban avifauna, most studies have aimed to report the presence and abundance of species living in urban environments. These however might act as a new force selecting for specific personality phenotypes which, in turn, might shape main urban features of the avian social networks. Whether avian personality and social network traits are selected by urban pressure is a question still unexplored. Accordingly, as part of a larger investigation, the BiodiverCITY project, here we show the first data collected since October 2023 at the Botanical Garden of Palermo. Specifically, we quantified i) the avian composition and abundance obtained by capture-mark-recapture data, ii) behavioural personalities including responses of individually-marked birds during intra- and inter-specific interactions by analysing videos recorded at five feeders and iii) the vegetation suitability of avian species and community. We finally discuss the importance of integrating a behavioural approach into the management aimed at improving the conservation of urban avifauna.

Monitoring biodiversity indicators in urban and peri-urban forests in Central Italy

Guglielmo Londi[1*], *Davide Travaglini[2], Gherardo Chirici[2,3],[4], Bruno Lasserre[5], Giovanni Capobianco[6], Marco Marchetti[7], Francesco Parisi[4,5]*

1 D.R.E.Am. Italia, Arezzo

2 GeoLAB Laboratorio di Geomatica Forestale, Department of Agricolture, Food, Environment and Forestry, University of Florence

3 NBFC National Biodiversity Future Center

4 Fondazione per il futuro delle città, Firenze

5 Forestry LABs Department of Biosciences and Territory, University of Molise

6 ARDEA, Napoli

7 Sapienza Università di Roma, Dipartimento di Architettura e Progetto

*Presenter's email: londi.guglielmo@gmail.com

Urban forest environments face challenges, such as the removal of dead wood, which threaten ecosystem functions. We present here preliminary results on bird assemblage from a multi-taxa study (also including saproxylic and non-saproxylic beetles). We surveyed four forest sites in three Italian cities (Campobasso, Florence, and Rome) along an urban-to-rural gradient. Bird censuses (5' listening sessions, twice in a breeding season, 3-18 plots per site) were conducted in spring 2023 and 2024. We analyzed the structure of the stands, dead wood, and tree-related microhabitats, evaluating their relation to bird fauna. The most represented tree species are: Quercus ilex, Q. cerris, Tilia cordata and Acer campestre. Dead wood primarily consists of stumps, coarse woody debris, and standing dead trees. Bird species observed include 13 cavity nesters: *Upupa epops*, *Picus viridis*, *Dendrocopos major*, *Dryobates minor*, *Phoenicurus phoenicurus*, *Muscicapa striata*, *Poecile palustris*, *Periparus ater*, *Cyanistes caeruleus*, *Parus major*, *Sitta europaea*, *Certhia brachydactyla*, *Sturnus vulgaris* and the non-native *Psittacula krameri*. Also of interest are *Falco peregrinus*, *Turdus viscivorus*, *T. philomelos*. Three non-native bird species were detected: *Psittacula krameri* very abundant in all sites in Rome, common in all sites in Florence, *Myiopsitta monachus*, common in all sites in Rome, and *Leiothrix lutea*, present in one site in Florence and one site in Rome. Urban forest environments in our study sites proved to be quite rich, capable of hosting even demanding species. However, invasive alien species, which are abundant in some of our sites, could become a critical factor if they affect native species.

The Black Woodpecker in the Northern Apennines: Historic and present distribution

Guglielmo Londi[1*], *Tommaso Campedelli[1], Simonetta Cutini[1], Davide Ridente[1], Guido Tellini Florenzano[1]*

1 D.R.E.Am. Italia, Stia Pratovecchio (Arezzo)

*Presenter's email: londi.guglielmo@gmail.com

The Black Woodpecker *Dryocopus martius* has been expanding its range in Western Europe since the late 19th century, recolonizing formerly occupied areas. In Italy, the expansion began only in the late 20th century, from the Alps and a few southern mountain areas, where it was restricted, reaching, for example, the Po Plain and Northern Apennines more recently. We investigated its historical and current distribution in the Northern Apennines and Tuscany using museum records and data collected from 2008 to 2024. We found 11 historical records prior to 1900 (two before 1800, three from 1800–1850, and six from 1851–1889), and only one record between 1900 and 2000. These findings support the hypothesis of a small population in the region during the 19th century, which rapidly declined and likely became extinct before the 20th century. Since 2000, the Black Woodpecker has recolonized the Northern Apennines, first observed in the Foreste Casentinesi National Park, then in eastern Liguria and Pratomagno massif. For the period 2010–2024, we collected 258 breeding-season observations, 107 related to wintering or dispersal, and 268 foraging signs. The species is now widespread across the Northern Apennines, from eastern Liguria to the Marche–Umbria–Tuscany border, fully occupying its former range. During the breeding season, it is mainly found

between 1000 and 1200 m a.s.l., with occasional winter records down to 400 m. Although primarily associated with beech forests, over half of the records and 60% of feeding signs were found in conifer woodlands, mainly silver fir.

Crop-land simplification impacts differently on small mammal communities: Evidence from diversity/dominance plots using Western Barn Owl *Tyto alba* pellets

Ilaria Pelosi[1*], *Giuseppe Dodaro[2], Corrado Battisti[3], Massimiliano Scalici[1]*

1 Department of Sciences, University of Roma Tre, Viale G. Marconi 446, 00146 Rome, Italy

2 Fondazione per lo Sviluppo Sostenibile, via Garigliano 61a, 00198 Rome, Italy

3 Torre Flavia LTER (Long Term Ecological Research) Station, Protected Areas–Regional Park Service, Città Metropolitana di Roma Capitale, Viale G. Ribotta, 41, 00144 Rome, Italy

*Presenter's email: Ilaria9968@gmail.com

The transformation of traditional agro-mosaics into progressively more anthropized crops can significantly affect the small mammal communities that constitute the main diet of the Western Barn Owl *Tyto alba*. In this study, we compared prey communities consumed by Western Barn Owls from two sites with differing levels of anthropization: a simplified crop mosaic (treatment site; ANT) and a highly heterogeneous mosaic (control site; CTR). Analysis of Western Barn Owl pellets revealed that in the ANT site, normalized richness, Shannon–Wiener diversity, evenness and trophic level were all significantly lower compared to the CTR site. This reduction in diversity was primarily driven by (1) a sharp decline in higher trophic level prey, particularly shrews (Eulipotyphla), and (2) an increase in the abundance of the dominant species, Savi's Pine Vole Microtus savii. Furthermore, the diversity/dominance diagrams plot lines appear steeper in ANT. Comparison of abundance and biomass patterns both in Whittaker and in k-dominance plots, showed a higher sensitivity of abundance to crop-land simplification, when compared to biomass. Although shrews appear sensitive to the use of chemical compounds in agriculture, in our study the cropland management in ANT is based on 'organic farm' approach, without use of chemicals. In this regard, we propose alternative processes to explain the decrease in shrews. These results highlight the impact of anthropization on the availability and diversity of prey species for Western Barn Owls, with potential consequences on their diet, predation patterns and ability to sustain large broods.

Habitat availability and connectivity analyses allow to guide national-scale conservation of an endangered marsh passerine

Iván Alambiaga[1], Luis Carrasco[2], Pablo Vera[3], Juan Monrós[1*]

1 Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia, Spain

2 TRACT B.V. B2.06, Netherlands

3 Servicio de Conservación de Ambientes Acuáticos, SAV/Servicio Devesa-Albufera, Ajuntament de València, Spain

*Presenter's email: monros@uv.es

Widespread degradation of Mediterranean wetlands has led to a dramatic loss of suitable habitats and connectivity between waterbird populations. Multi-scale approaches that integrate habitat availability and landscape connectivity can help identify key areas to prioritize for conservation. However, such methods have rarely been applied to small, wetland-associated birds such as the "Eastern Iberian" Reed Bunting *Emberiza schoeniclus witherbyi*, a critically endangered marsh passerine with 85% of its Spanish population confined to three apparently isolated wetlands. This study aims to contribute to the national conservation strategy for this species by pro-

viding evidence-based management guidelines derived from habitat availability and connectivity assessments. We analyzed the availability of suitable habitat across 64 Spanish wetlands using a Random Forest algorithm trained on national census data. We then evaluated the role of both breeding wetlands and unoccupied sites in enhancing landscape connectivity. Our findings indicate that habitat availability strongly limits the current breeding distribution, with 85% of the population occurring in the three wetlands offering the largest suitable areas. These same wetlands also serve as the most critical nodes for maintaining connectivity, though each faces challenges that threaten its long-term viability. Several unoccupied wetlands were identified as having high potential to improve overall connectivity, although most currently offer limited suitable habitat. This work highlights priority wetlands for future active management and restoration, and provides targeted, multi-scale conservation recommendations to improve the national status of the "Eastern Iberian" Reed Bunting witherbyi.

Population Viability Analyses to prevent extinction of a marsh passerine: Simulating the potential of alternative conservation approaches

Iván Alambiaga[1], *Pablo Vera*[2], Juan Monrós[1*]

1 Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia, Spain

2 Servicio de Conservación de Ambientes Acuáticos, SAV/Servicio Devesa-Albufera, Ajuntament de València, Spain

*Presenter's email: monros@uv.es

Habitat loss across the world has led to dramatic population declines for several bird species. Population Viability Analysis (PVA) is a widely used method to assess the extinction risk of a given species that can also be used to simulate alternative management scenarios, supporting the development of effective recovery plans. In this study, we conducted a PVA to assess the extinction probability of the Spanish population of "Eastern Iberian" Reed Bunting *Emberiza schoeniclus witherbyi*, a marsh passerine with 85% of the recently estimated 250 breeding pairs confined to three wetlands. Viability analyses were then applied to simulate previously proposed conservation measures, e.g. habitat restoration, predator control, and ex situ interventions, to predict their potential for improving the subspecies' critical conservation status. Our results predict that the population will decline by half within the next 20 years and contract to just two wetlands, with complete extinction expected by the 2070s. Simulated habitat restoration and predator control actions delayed the estimated extinction time but failed to prevent the massive disappearance of small, isolated populations. In contrast, population reinforcements and reintroductions from captive breeding programmes, when combined with in situ actions, were the measures predicted to be most effective for the study species conservation. These findings highlight the urgent need for immediate and integrated conservation measures to avoid the short-term extinction predicted. The simulations performed provide practical guidance for the developing of a national conservation strategy for the "Eastern Iberian" Reed Bunting.

"Campi di Brebbia" (Varese, Italy): A crucial stopover and wintering refuge for birds

Jacopo Sacchet[1*], *Luca Giussani*[1], *Alessandro Berlusconi*[1,2]

1 Gruppo Insubrico di Ornitologia, Via Manzoni 21, Clivio (VA)

2 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Via Giovanni Celoria, 26, 20133 Milano (MI)

*Presenter's email: jacopo.sacchet1@gmail.com

"Campi di Brebbia" (45°49'10"N 8°39'04"E Brebbia, Varese, Italy) is a small agricultural and forested area recognized as an important stopover site for migratory birds, as it provides a heterogeneous habitat along Alpine and Preal-

pine flyways while also serving a relevant local ecological corridor between several protected areas. However, the site faces several conservation challenges including high anthropogenic disturbance and habitat degradation. To date, no systematic studies have been conducted in this area. We carried out the first standardized avian survey, employing three linear transects and one point count weekly during the 2024 post-breeding migration and the 2025 pre-breeding migration. During each survey we recorded species abundance, richness, two diversity indices and crop coverage. For each transect, we analyzed the relationships between species richness, Julian date and land use. Agricultural fields hosted species of particular conservation concern, such as Eurasian Skylark *Alauda arvensis*, Meadow Pipit *Anthus pratensis* and Western Yellow Wagtail *Motacilla flava*. Mixed-habitat patches were highly important for Common Reed Bunting *Emberiza schoeniclus* and European Stonechat *Saxicola rubicola*. Notably, we recorded Eurasian Penduline Tit *Remiz pendulinus*, representing the first documented occurrence of this species in the area. Our findings highlight the ecological significance of the area for migratory and wintering birds, especially passerines, and emphasize the need for conservation measures to mitigate habitat degradation and anthropogenic disturbance.

Vocal activity of bird species during spring migration on a small Mediterranean island (Ventotene, Italy)

Jan Giordano[1*], *Maia Pastres[2], Sara Riello[3], Giuseppe Vecchio[4]*

1 Department of Life Sciences and Systems Biology, Università degli Studi di Torino, Torino, Italy

2 Department of Cardiac, Thoracic and Vascular Sciences, Università degli Studi di Padova, Padova, Italy

3 Riserva Naturale Statale “Isole di Ventotene e S. Stefano”, 04031 Ventotene (LT), Italy

4 Agrofauna srls, Wildlife management and research, via delle Corallaie 1, Livorno, Italia

*Presenter’s email: jan.giordano@unito.it

Ventotene Island represents a crucial stopover site for many bird species during the Palearctic-African migration across the Mediterranean Sea. While Mediterranean migration routes have traditionally been studied through methods such as bird ringing and bio-logging, recent advances have introduced bioacoustic analysis (e.g., spectrogram and sonogram studies), facilitated by the availability of low-cost Autonomous Recording Units (ARUs). Although there is increasing evidence that birds vocalize during migration, knowledge about these vocalizations remains limited. In this study, we carried out 54 field recording surveys during the early spring migration on Ventotene Island, using a directional microphones and audio recorders. A standardized 10-minute recording protocol was applied at 19 different contact points, yelding a total of 9 hours of audio data. Bird vocalizations were then identified through acoustic and visual sonogram analyses and categorized by structural similarity, with reference to the available bibliographic literature. A total of 19 bird species were identified, with *Curruca melanocephala*, *Ficedula albicollis*, *Serinus serinus* and *Streptopelia decaocto* being the most frequently detected. Among these species, 30 different bird vocalization types were recorded, predominantly alarm and social calls, but also including reproductive songs for nine species. Notably, five of these (*Acrocephalus arundinaceus*, *Cuculus canorus*, *Curruca communis*, *Luscinia megarhynchos*, and *Motacilla flava*) are not reported as breeding species on the island. Our results demonstrate high vocal activity and a diverse range of vocalization types among both migratory and resident species, highlighting the potential of bioacoustics as a valuable, non-invasive method for monitoring bird species during spring migration. Future research should focus on refining recording protocols and survey techniques to enhance the effectiveness of this approach.

Species-specific thresholds to improve accuracy in passive acoustic monitoring

Jarek Scanferla[1], *Mattia Brambilla[2], Giordano Brambilla[1], Andreas Hilpold[1], Anna Elisa Marchetti[1,2], Felix Puff[1,3], Ulrike Tappeiner[1,4], Matteo Anderle[1]**

1 Institute for Alpine Environment, Eurac Research

2 University of Milan

3 Department of Botany and Biodiversity Research, University of Vienna

4 Department of Ecology, University of Innsbruck

*Presenter's email: matteo.anderle@eurac.edu

Passive acoustic monitoring is increasingly popular and widely used worldwide. For analysing acoustic data, automated and AI-driven species identification is a powerful tool, but its accuracy varies considerably among species, posing a major challenge for reliable monitoring. Species-specific thresholds offer a solution by optimizing model performance for each individual species. Using Alpine birds as a case study and an expert-annotated dataset of 25 hours and 17,737 bird sounds, we provide 72 species-specific thresholds for filtering detections from BirdNET, a widely used sound identification software. Thresholds were calculated using binomial logistic regression, with BirdNET identification scores as predictors and the binary annotation (species present or not within the recording) as outcome. The equation can then be solved to determine a threshold that provides any desired probability of correct species prediction. These thresholds significantly improve the precision of the identification model, making them efficient and practical tools for passive acoustic monitoring. Our approach may serve as an example-protocol for developing species-specific thresholds for birds in other regions or for other taxa (e.g., amphibians or grasshoppers), thereby supporting future passive acoustic biomonitoring efforts by substantially reducing processing time. In addition, our first list of 72 species-specific thresholds could serve as a reference for future species identification across other European areas.

Monitoring of the breeding population of Kentish Plover *Anarhynchus alexandrinus* in the SPA IT9110038 "Paludi presso il Golfo di Manfredonia"

Laura Magarielli [1,2]*, *Cristiano Liuzzi[3], Giuseppe Albanese[4], Maria Mercurio[1], Cataldo Pierri[1], Giuseppe Corriero[1], Lorenzo Gaudiano[1,2]*

1 Università degli studi di Bari Aldo Moro

2 Systema naturae

3 Centro Studi de Romita APS, 70014 Conversano (Bari)

4 libero professionista

*Presenter's email: lmagarielli@gmail.com

The Special Protection Area (SPA) "Paludi presso il Golfo di Manfredonia" (IT9110038) is one of Italy's most important bird conservation areas, with particular emphasis on the Kentish Plover *Anarhynchus alexandrinus*, a species in global decline. This shorebird depends on coastal habitats for nesting, but its populations are increasingly threatened by human-induced disturbances. The aim of this study was to assess the minimum number of breeding pairs in 2022 and 2023 within the SPA. Monitoring techniques included fixed-point observations with optical instruments and standardized linear transects to ensure comprehensive coverage of suitable habitats. In 2022, 54 confirmed breeding pairs were recorded (with 35 pairs along the coastline and 19 pairs in the salt pan system), while in 2023, 51 pairs were observed (with 19 pairs along the coastline and 32 pairs in the salt pan system). The data collected within the SPA represent a large part of the estimated national minimum population, highlighting the region's critical role in species conservation. The SPA faces several threats, including coastal habitat disturbance, wetland degradation, pollution, land reclamation, and urbanization. Conservation efforts must focus on habitat protection, reducing human impacts, and monitoring for diseases like avian flu. These actions are essential to ensure the long-term stability of the Kentish Plover population within the SPA and contribute to national conservation goals. Effective management and continuous monitoring are crucial for maintaining this key breeding site and mitigating threats to the species.

Cooperative/commensal foraging behavior between *Phalacrocorax carbo* and *Egretta garzetta*: A case study in Porto Cesareo (LE)

Leonardo Chiriacò[1], *Luca De Gaetanis*[2*], *Rosario Balestrieri*[3]

1 ARDEA – Associazione per la Ricerca, la Divulgazione e l'Educazione Ambientale – via Ventilabro, 6 80126 Napoli

2 Dipartimento di Scienze e Tecnologie Biologiche e Ambientali (DiSTeBA), Università del Salento, Strada Provinciale Lecce-Monteroni, 73100 Lecce, Italy

3 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Department of Integrative Marine Ecology, c. Torre Spaccata 87071, Amendolara (CS), Italy

*Presenter's email: luca.degaetanis@studenti.unisalento.it

A periodic observational survey was undertaken across three successive winter seasons (beginning in December 2022) to document a specific interspecific interaction involving individuals of Great Cormorant *Phalacrocorax carbo* and Little Egret *Egretta garzetta* in Porto Cesareo (Lecce, Italy). During the 29 observation days carried out across the three wintering periods, a behavioural pattern indicative of joint foraging was detected and recorded on 8 occasions. This pattern manifested with cormorants, during their predation activity in shallow lagoon waters, directing prey towards the intertidal zone. Simultaneously, individuals of *Egretta garzetta*, maintaining proximity to the cormorants' actions, positioned themselves in shallow waters and along the shoreline, intercepting the fleeing prey. Data analysis suggests that this coordinated hunting strategy was mutually beneficial for both species. Prey were effectively subjected to dual predatory pressure, with fish evading the cormorants moving towards the Little Egrets' foraging area and, potentially, vice versa. Observations of this specific behavior involved groups composed of 7 to 14 individuals of *Phalacrocorax carbo* and 6 to 13 individuals of *Egretta garzetta*, and occurred exclusively under conditions of high meteorological and marine stability and during the early morning hours. On average, the interaction was observed with a frequency of approximately once every three observation sessions. Notably, the 8 specific sequences of joint foraging were documented solely in the first two winter periods, while during the 2024-2025 winter period, despite ongoing field monitoring, this interaction was not detected.

"Marini da Nord": Monitoring the abundance and distribution of North Atlantic seabirds wintering in Italian seas using a citizen science approach

Letizia Campioni[1*], *Rosario Balestrieri*[2], *Emiliano Mori*[3], *Flavio Monti*[4]

1 Department of Conservation Biology and Global Change, Doñana Biological Station (EBD-CSIC), Seville E-41092, Spain

2 Department of Integrative Marine Ecology, Stazione Zoologica Anton Dohrn, Calabria Marine Centre, Amendolara, Italy

3 Istituto di Ricerca sugli Ecosistemi Terrestri IRET, Consiglio Nazionale delle Ricerche, Via Madonna del Piano 10, Sesto Fiorentino (Firenze) 50019, Italy

4 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100 Lecce, Italy

*Presenter's email: letiziacampioni@hotmail.com

The Mediterranean basin is a hotspot of biodiversity and particularly vulnerable to climate change effects, such as rising water temperatures and extreme weather events. Seabirds are considered good ecological indicators of marine environments and potential indicators of climate-induced ecosystem changes. In addition to breeding species, the Mediterranean hosts a poorly studied contingent of less common North Atlantic seabird species, which migrate southward to winter in its waters. In recent years, a larger number of observations and occasional irruption events linked to storm conditions have been recorded. However, little is known about the distribution, abundance, and temporal trends of these species in the central Mediterranean. We present the "Marini da Nord" project, which uses data collected by ornithologists and uploaded to the Ornitho.it platform to monitor changes in the abundance and distribution of 23 North Atlantic seabird species wintering in Italian seas. The growing dataset includes over 41,700 records spanning 58 years (1966-present) and will continue to expand with future observations. Here, we present the first exploratory analyses and discuss future developments to investigate how

recent changes in regional environmental conditions and large-scale climatic indices could affect the abundance and phenology of these species. The goal of this project is to monitor trends in species abundance and distribution in a dynamic ecosystem under strong climate and anthropogenic pressures, ultimately influencing seabird survival and population dynamics. Finally, we highlight the crucial role of platforms like Ornitho.it in improving species detection, abundance estimates, real-time reporting, and preserving historical data for temporal analysis.

Wintering status of Kentish Plover *Anarhynchus alexandrinus* in Latium, Italy

Loris Pietrelli[1*], *Massimo Biondi*[1], *Sergio Muratore*[1]

1 GAROL

*Presenter's email: lpietrelli@gmail.com

In this paper we examine distribution and habitat selection of wintering Kentish Plover along the Latium coast which is 299 km long including 236 km of sandy and 63 km of rocky beaches. Data were collected between December and January from 1986 to 2025. The Kentish Plover wintering in Lazio represents about 4.0% of the population wintering in Italy. 50.3% of sightings involve 1-2 isolated individuals almost always spotted on sandy beaches while the largest flock, 28 individuals, was observed in 1994 in a brackish pond. Wintering individuals joined by other migrants such as Calidris alba (24.8%), Pluvialis squatarola (13.1%) were observed. Aside from the annual fluctuations, there are clear indications of a decline in wintering numbers: 78 birds observed during the 2009 winter at 10 sites, while only 32 winters in 2022 at 4 sites. The Roman littoral can be considered, over the years, the most outstanding wintering area for Kentish Plover (70.3% of individuals). During the long monitoring of wintering Kentish Plover it can be observed a relative uniformity in the habitat selection, they use to forage in the sandy and muddy substrates. Since the late 90s, some areas visited by the Kentish Plover, not only during the winter season, have been converted into harbor areas. Although the mechanisms that determine some behaviors in winter are not very clear, the analysis of the data shows that the habitat quality of some areas is also critical for the survival of this species.

Conservation of specialist birds through habitat structure and composition: Evidence from a 20-Year temporal comparison

Luca Bajno[1], Enrico Caprio[1*]

1 Dipartimento di Scienze della Vita e Biologia dei Sistemi – Università di Torino

*Presenter's email: enrico.caprio@unito.it

Forest management plays a key role in shaping bird diversity and distribution. In 2004 and 2024, we conducted a monitoring program focused on breeding and wintering bird communities within the protected areas managed by the Ente di Gestione del Parco Paleontologico Astigiano. Surveys were carried out using point counts in randomly selected plots with a 50-meter radius. Each plot was described in terms of habitat structure, and landscape metrics were calculated within a 500-meter buffer using an updated GIS database. Bird species were classified as either specialists or generalists. We then applied generalized linear models (GLMs) to assess the effects of habitat and landscape variables on key guild parameters: species richness, Shannon diversity, and abundance. Our results showed that several habitat and landscape predictors significantly influenced bird diversity. Specifically, guild parameters for specialist species were consistently affected by oak biomass (a habitat-level variable) and the core area of oak patches (a class-level metric), regardless of the season. In contrast, generalist species were influenced by the oak core area in winter and the perimeter-to-area ratio

of oak patches in spring. Bird community composition remained consistent between years, with the notable addition of the Black Woodpecker *Dryocopus martius* in 2024, previously unrecorded in the area. These findings underscore the importance of native oak habitats for conserving specialist bird species and highlight the value of multi-seasonal, guild-based monitoring over holistic approaches that consider all species equally.

Modelling European Bee-eater distribution to assess the potential impact on Italian apiaries

Luciano Bosso[1], *Gennaro Di Prisco*[2], *Mattia Brambilla*[3], Rosario Balestrieri[4*]

1 Institute for Agriculture and Forestry Systems in the Mediterranean, National Research Council of Italy, Piazzale E. Fermi 1, 80055, Portici, NA, Italy

2 Institute for Sustainable Plant Protection, National Research Council of Italy, Piazzale E. Fermi 1, 80055, Portici, NA, Italy

3 Dept. of Environmental Science and Policy, Milan University, Via Celoria 26, 20133, Milan, Italy

4 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Department of Integrative Marine Ecology, c. Torre Spaccata 87071, Amendolara (CS), Italy

*Presenter's email: rosario.balestrieri@szn.it

The European Bee-eater *Merops apiaster* has a specialised diet consisting of large flying insects, mainly bumblebees and other bees, including honeybees. Here, we use a modelling approach to estimate the potential impact of the European Bee-eater on Italian apiaries. We realised a habitat suitability map in Italy by combining breeding presence records of the European Bee-eater with environmental predictors to estimate the potential distribution of the species and compare it with that of Italian apiaries. Outside mountainous regions, the European bee-eater found acceptable habitat over all of Italy. It prefers regions with a high annual mean temperature, a wide variety of vegetation cover, and a relatively low amount of annual precipitation. The European Bee-eater's estimated range overlaps with around 70% of the Italian apiaries. Species distribution models are key tools for conservation and management, and our results encourage the use of spatially explicit approaches to predict, manage, and mitigate the impact of European Bee-eaters on apiaries.

Analysis of the nesting habitats of the Kentish Plover *Anarhynchus alexandrinus* and the Little Ringed Plover *Charadrius dubius* along the coasts of the Campania region

Luciano Bosso[1], *Rosario Balestrieri*[2], *Giovanni Capobianco*[3], *Antonio Ceruso*[3], Marcello Giannotti[3*]

1 Institute for Agriculture and Forestry Systems in the Mediterranean, National Research Council of Italy, Piazzale E. Fermi 1, 80055, Portici, NA, Italy

2 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Department of Integrative Marine Ecology, c. Torre Spaccata 87071, Amendolara (CS), Italy

3 ARDEA – Associazione per la Ricerca, la Divulgazione e l'Educazione Ambientale – via Ventilabro, 6 80126 Napoli

*Presenter's email: marcello.giannotti@gmail.com

Shorebirds are crucial indicators of coastal ecosystem health. Many shorebird species face population declines due to habitat destruction and climate change. The Kentish Plover *Anarhynchus alexandrinus* and the Little Ringed Plover Charadrius dubius nest on sandy beaches, but data on their nesting habitat requirements along the Campania region's coasts is scarce. This study aimed to assess their nesting habitats by integrating field observations (2020-2024) along the Caserta coasts for the Kentish Plover and the Salerno coast for the Little Ringed Plover, with

spatial analysis using satellite-derived maps. Results showed that the Kentish Plover preferred nesting sites at an elevation of 1.9 m above sea level (a.s.l.), with a dune length of 94 m, beach length of 164 m, and distances from the coastline, water bodies, vegetation, and human settlements of 46 m, 395 m, 83 m, and 144 m, respectively. The Little Ringed Plover was found in habitats with an elevation of 1.4 m a.s.l., dune length of 30 m, beach length of 69 m, and distances of 38 m, 1,088 m, 30 m, and 146 m from the coastline, water bodies, vegetation, and human settlements, respectively. In conclusion, our preliminary analysis is a first step toward understanding the nesting habitats of these two threatened species, with the goal of improving management and conservation plans.

10 years of avifauna monitoring in the Regional Nature Reserve "Palude La Vela" (2016–2025): First analysis of the ornithic community

Marco D'Errico[1*]

1 Regional Park Mar Piccolo

*Presenter's email: marco.derrico78@gmail.com

The "Palude La Vela" Reserve is a bird hotspot located within the Regional Park of Mar Piccolo in southern Italy. This small protected area lies along the banks of Taranto's Mar Piccolo and hosts three habitats listed in Annex I of the Habitats Directive: 1150, 1310, and 1420. These habitats provide ideal conditions for many bird species, particularly waterbirds and others that are ecologically connected to wetlands. To date, few specific studies have been conducted within the Reserve. The lack of historical data has made it difficult to assess the ecological importance of the area and to understand how human activities have affected the conservation status of its habitats and the composition of its avian community. This study therefore aims to address this knowledge gap by analysing data collected through a long-term monitoring programme initiated in 2016 and still ongoing. So far, 138 field sessions have been carried out, gathering 10,085 records of species presence and abundance using fixed observation points, consistent with those employed during the International Waterbird Census. From the analysis, a total of 169 species across 31 families have been recorded. The monthly trend in species richness highlights spring migration as the peak period, with 116 species observed in April. The highest median abundance of birds was recorded in January, with 2,169 wintering individuals. These preliminary results support the need for further analysis to deeply investigate the bird community of the "Palude La Vela" Reserve. They also highlight the area's significance for wetland and bird conservation in southern Italy.

First results for the monitoring program of avifaune in the Regional Natural Park Litorale D'Ugento

Marco D'Errico[1*]

1 Regional Park Litorale di Ugento

*Presenter's email: marco.derrico78@gmail.com

The Litorale d'Ugento Regional Park is a protected area located in the Salento, southern Italy, along the eastern Ionian coast. The park encompasses a variety of habitats, including dunes, wetlands, Mediterranean forests, oak groves, and scrubland. It also features urban areas primarily used for tourism during the warmer months, creating a dynamic interaction between biodiversity and human activity. In recent years, the park has joined several research projects and received funding for scientific studies. One notable initiative is the bird monitoring program, which has conducted 86 field sessions and collected 4,240 data points on bird presence and abundance from fixed observation points. These same observation points are used during the International Waterbird

Census. The program began in July 2019 and is set to conclude in September 2025. By the end of the project, an additional 21 field sessions will be completed. Preliminary data analyses show that the park is home to 147 bird species across 41 families. The highest number of species observed occurs during the spring migration, with 85 species recorded in April. The peak abundance of birds, 1,266 individuals, is observed in February, coinciding with the early spring migration. These initial findings underscore the park's critical role in biodiversity conservation, particularly during the spring migration. They also provide valuable insights that can help park management maintain a delicate balance between preserving biodiversity and accommodating human activities.

Observation on the preys brought to the nest by *Falco vespertinus* in Northern Italy (Parma Province)

Marco Gustin[1], *Silvia Pelizza*[1], *Andrea Zanichelli*[1], Dino Scaravelli[2,3*]

1 Lipu/Birdlife Italia, via Pasubio 3 bis, 43122, Parma

2 STERNA, Forlì

3 Dipartimento di Scienze Chimiche e Geologiche, Università di Modena e Reggio Emilia, via Campi 103, 41125 Modena

*Presenter's email: dino.scaravelli@gmail.com

The Red-footed Falcon *Falco vespertinus*, a species classified as vulnerable by the IUCN, has approximately 90% of Italy's breeding pairs located in the province of Parma. In this study, the diet of the nestlings was analysed by direct observation of the preys brought by the adults to the nests, in a period between July and August 2023. We compared the preys brought by adult males and females to chicks aged between 0 and 30 days in 8 nest boxes and 8 natural nests. Overall, we observed 226 preys, without differences between the two types of nest, of which 117 were brought by adult males and 109 by females. Of the total preys observed, 197 were taxonomically identified at class level. Insects constituted 72% of the species' diet, while mammals constituted 15%, and a 13% of the preys could not be classified. These results are consistent with a previous investigation done in the same area in 2016-2017, but based on pellets analysis. Concerning the distribution of preys brought by the to sexes, it emerged that in the first age group of the nestlings (0-10 days) 75% of the prey was brought by the male and 25% by the female; in the second age group (10-20 days) 43% of the prey was brought by the male and 57% by the female. Finally, in the third age group (20-30 days) we observed a similar number of preys brought by either sex. This is the first information on the species concerning the diet and time budget of the breeding pair during chick-rearing.

Daily activity of *Scolopacidae* and *Charadriidae* during the winter period in Circeo National Park (Central Italy)

Marco Trotta[1*]

1 SROPU

*Presenter's email: marcotrot@gmail.com

An important tool for assessing the status of waterfowl communities is studies of the daily activity of species in their habitats. During two winter seasons (2022-23 and 2023-24), the activity of waders was investigated in a coastal area of southern Latium, each individual observed was assigned to one of the following behavioral categories: feeding, sleeping (birds with their beaks under the wing) and resting (birds in a crouched position, birds cleaning their plumage, birds bathing or flapping their wings). The study showed a marked difference in daily activity between Scolopacidae and Charadriidae in both years. Overall, the percentage of individuals in trophic activity of Northern Lapwing, European Golden Plover and Grey Plover was 17.7% (N = 15179); the lowest value was recorded by

European Golden Plover (2.8%, N = 1742), the highest by Northern Lapwing (19.8%, N = 12993). Foraging, on the other hand, represents the main activity of the Scolopacidae (62.3%, N = 4764), with percentages ranging from 61.9% (N = 854) of the Eurasian Curlew to 93.6% (N = 47) of the Common Sandpiper. The results of this survey suggest intense nocturnal trophic activity among Charadriidae; indeed, their eyesight is highly adapted for night vision, ensuring high foraging rates even in the absence of daylight. This behavior should be taken into account when planning management interventions aimed at the conservation of species belonging to this family of Charadriiformes birds.

Foraging success of Eurasian Curlew *Numenius arquata* in a grassland environment in Circeo National Park (Central Italy): Current analysis and comparison with previous surveys

Marco Trotta[1*]

1 SROPU

*Presenter's email: marcotrot@gmail.com

The Eurasian Curlew *Numenius arquata* has declined sharply over the past 25 years in some key European populations, and its conservation status is unfavorable. A survey of the foraging success was conducted in 2024 and 2025 in a wintering site in Central Italy. This consisted of 59 samplings, each lasting 3 minutes, involving individuals engaged in trophic activity in pasture areas surrounding the Pontine Lakes. Results were compared with those obtained in the same foraging areas in previous surveys. Foraging success was 1.36 (prey/minute), slightly higher than the value recorded in the 2012-13 winter season (1.14) and similar to that obtained in the four-year period 1997-98/2000-01 (1.41); individuals feeding in groups had higher success (1.51) than those foraging alone (0.96). The number of capture attempts increased from 7.3 (1997-98/2000-01) to 18.6 attempts/minute; however, this did not affect foraging success, which remained well below the averages recorded in northern Europe. This would suggest a modest quality of feeding areas that could be compensated by higher foraging rates obtained in non-grazing environments, such as in the flooded backdune areas adjacent to the shores of Lake Fogliano; this hypothesis should be verified with targeted research in the near future. However, the results of the present survey do not seem to justify the decrease in the occurrence of the Eurasian Curlew in the study area, which appears instead to be related to the unfavorable conservation status and marked decline observed in the UK and other European populations.

The "Barn Owl Monitoring and Conservation in Italy" (M.C.B.I.) project: A comprehensive overview of the preliminary results of what will be a long-term monitoring activities

Marina Guglielmi[1*], *Gabriele Stanisci*[1]

1 "L'Università della Natura – Investigatori Naturalistici" – E.T.S. (U.N.I.N.)

*Presenter's email: ricercabarbagianni.italia@gmail.com

As part of the "Barn Owl Monitoring and Conservation in Italy" (M.C.B.I.) project, launched by Gabriele Stanisci in 2021 and self-financed, the authors present the preliminary results of what will be a long-term monitoring of the Western Barn Owl *Tyto alba*. Research is conducted by project operators using methods like visual censuses, pellet dissection, and audio-video analysis. To date, 146 nesting boxes have been installed across 11 regions, with a 50% occupancy rate and documented nesting and fledging. Several 24h live streaming sessions on YouTube have been used for data collection and public engagement. The bioacoustic data collected from the audio-video material has allowed

the creation of the first Italian sound archive dedicated to the Western Barn Owl, and the first complete recording of a fight between two male individuals in a nesting box has been filmed. Over 1500 pellets have been collected and analyzed across Italy, with some analyses still ongoing. In 2024, a collaboration with the University of Lausanne was launched for genetic studies using feather samples. The project also promotes environmental education through the "Science Kit" and raised awareness among local communities and farmers to promote sustainable agricultural practices and eliminate the use of rodenticides. Through collaborations with public and private entities, the project aims to integrate Western Barn Owl conservation into broader territorial and biodiversity management strategies.

Breeding bird atlas of the city of Milan: A two-decade overview of urban avian changes

Marina Nova[1], Silvia Di Martino[1], Massimiliano Deaddis[1], Stefano Scali[2], Marco Sozzi[3], Roberto Lardelli[4], Zeno Porro[5], Andrea Riccardo Pirovano[6], Giovanni Gottardi[7], Paolo Bonazzi[8], Gianpiero Calvi[8], Lorenzo Fornasari[8], Luca Ilahiane[9*], *Mattia Brambilla[9], Diego Rubolini[9]*

1 Associazione GuardaMI ETS, Milano, Italy

2 Museo Civico di Storia Naturale, Milano, Italy

3 Associazione EBN Italia, Torino, Italy

4 Ficedula - Associazione per lo studio e la conservazione degli uccelli della Svizzera italiana, Morbio inferiore, Switzerland

5 Freie Universität Berlin, Berlin, Germany

6 Progetto Natura Onlus, Milano, Italy

7 Gruppo Ornitologico Lombardo (GOL), Milano, Italy

8 Associazione FaunaViva, Milano, Italy

9 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Milano, Italy

*Presenter's email: luca.ilahiane@unimi.it

Over recent decades, urban transformation has significantly impacted bird communities inhabiting city environments. Species traditionally associated with human settlements (such as synanthropic and building-nesting species) have experienced marked declines, while opportunistic and several non-native birds have expanded their urban presence. In light of ongoing global urban expansion and the concurrent biodiversity crisis, understanding the drivers shaping avian communities in urban landscapes is crucial for informed and sustainable planning. Urban bird atlases based on citizen science contributions represent valuable tools to address these pressing challenges. Although several studies and initiatives have focused on urban birds in Milan, a comprehensive breeding bird atlas for the city has never been released. To fill this gap, we integrated data from eight ornithological databases, including multiple citizen science projects, spanning from 2006 to 2024. The resulting dataset comprises 116,716 records, distributed across a 1 × 1 km grid of 200 cells, each covering at least 25% of the municipal area. An expert-based assessment, considering both breeding evidence codes and species phenology, identified 80 confirmed breeding species. An additional 20 species were classified as uncertain or summer visitors, resulting in a total of 100 species included in the atlas. The atlas will present species distribution maps across two time periods: a past window (2009–2013) and a recent one (2020–2024), offering a comparative perspective on changes that have occurred over the past two decades. This resource is intended to support planners and decision-makers in reconciling biodiversity conservation with sustainable urban development.

Can morphometrics support sex assignment in the field? The case of the Griffon Vulture in the Apennines, Italy

Mario Posillico[1*], *Giancarlo Opramolla[1], Samuele Spacca[1], Filippo La Civita[1], Elena Di Filippo[1], Rosita Giuliani[1], Antonello Pascazi[1], Eliseo Strinella[1], Stefano Laurenti[2], Enzo Savo[3], Rosario Balestrieri[4], Augusto De Sanctis[5], Elisa Mancuso[6], Annalisa Brucoli[7], Giulia Pace[8], Nicolò Borgianni[8], Fabrizio Cordischi[8], Luisa Garofalo[9], Rita Lorenzini[10]*

1 Reparto Carabinieri Biodiversità Castel di Sangro

2 Società Ornitologica Italiana – c/o Galleria di Storia Naturale – CAMS, Via del Risorgimento – 06051 Casalina (Deruta, PG)

3 Stazione Romana Osservazione e Protezione Uccelli, 00186 Roma

4 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, 87071, Amendolara (CS)

5 Stazione Ornitologica Abruzzese, 65100 Pescara

6 Dipartimento di Malattie Infettive, Istituto Superiore di Sanità, 00161 Roma

7 Associazione per la Ricerca, la Divulgazione e l'Educazione Ambientale APS, 80126 Napoli

8 Rewilding Apennines ETS, 67055 Gioia dei Marsi (AQ)

9 Istituto Zooprofilattico Sperimentale del Lazio e della Toscana "M. Aleandri", Osservatorio Epidemiologico, 00178 Roma

10 Istituto Zooprofilattico Sperimentale del Lazio e della Toscana "M. Aleandri", Centro di Referenza Nazionale per la Medicina Forense Veterinaria, 58100 Grosseto

*Presenter's email: m.posillico64@gmail.com

Genetic tools allow accurate sex identification, although, for monomorphic species, predicting gender in the field could be useful for practical purposes (e.g. providing a balanced sample of GPS-instrumented birds). Thus, on Griffon Vultures *Gyps fulvus* genetically sexed (amplifying portions of the Chromo-Helicase DNA-binding protein gene, CHD1), we tested the accuracy of morphological approaches to assign gender. Within a long-term research program, 424 individual griffons (captures recaptures = 1000) were trapped (2010 to 2024) in Monte Velino Reserve (L'Aquila province). Standard morphometric measurements were recorded and age was assessed from moult pattern and the colour of bill, iris and ruff. We inspected and removed outliers and implausible values (seemingly measurement errors), obtaining a subsample of 101 fully developed vultures (62 males and 39 females, age ≥ 2cy) for which all of the target morphological measures were available. These were tested for sex-related differences (t-test), and the best combination of variables to discriminate sex was evaluated by linear discriminant analysis (LDA). Females weighed significantly more than males and had a longer head, whilst males had greater bill-depth, bill-width and head-width. Bill- and head-bill length did not differ between sexes. LDA correctly classified 91% (92% for males, 90% for females) of training cases (95%CI: 0.838-0.958). Such an outcome was comparable with *Gyps africanus*, but we were more effective in assigning sex with respect to what resulted for *G. coprotheres* (84%), though not reaching the predictive power estimated for *G. fulvus* in Crete (94%).

At-sea seasonal presence and distribution of shearwaters in the Mediterranean Sea: First insights from long-term monitoring programs

Martina Gregorietti[1], Marco Pecoraro[2], Eugenia Pasanisi[1], Elena Santini[1], Roberto Crosti[1], Lea David[3], Natalie Di-Meglio[3], Marine Roul[3], Gianluca Sarà[4], Marta Azzolin[5,6], Matteo Costantino[5,6], Lara Carosso[7], Maria Lenor Garcia-Gutierrez[7], Ilaria Campana[8], Miriam Paraboschi[8], Fulvio Maffucci[9], Marianna Farina[9], Roberta Teti[9], Alberto Castelli[10], Eleonora Pignata[10], Francesca Grossi[11], Paola Tepsich[11], Giuliana Pellegrino[8], Clara Monaco[12], Morgana Vighi[13], Odei Garcia-Garin[13], Natalia Fraija[14], Toni Raga[14], Raul Miguez-Serrano[14], Manel Gazo[13], Antonella Arcangeli[1]*

1 Istituto Superiore per la Ricerca e la Protezione Ambientale

2 University of Palermo

3 EcoOcean Institut

4 University of Palermo

5 University of Turin

6 GAIA Research Institute
7 Capo Carbonara Marine Protected Area
8 Accademia del Leviatano
9 Stazione Zoologica Anton Dohrn
10 University of Pisa
11 CIMA Research Foundation
12 Ketos
13 University of Barcelona
14 University of Valencia
*Presenter's email: marcopecoraro1994@gmail.com

Reliable mapping of the at-sea distribution throughout the year of the three shearwater species breeding in the Mediterranean is still lacking, due to the challenges of large-scale open sea monitoring. Data collection programs mainly focused on cetaceans, turtles, maritime traffic, and litter, the FLT Network and the LIFE project CONCEPTU Maris (which systematically monitor cetaceans and turtles using ferries), thus, have also collected data on key seabird species. Over 12 years (2013-2024) and along up to 34 routes crossing the Mediterranean Sea covering almost 345.000NM, nearly 5.000 mostly opportunistic sightings have been recorded, the majority involving Scopoli's and Yelkouan Shearwaters. Their seasonal presence mirrors their phenology, peaking in spring and summer. Key areas for the taxa were the Liguro-Provencal basin, the northern Tyrrhenian Sea, and the Corfù Strait. Scopoli's Shearwater was frequently observed near the Balearic Island and the Tunis gulf, while Yelkouan Shearwater was common also off the coast of central Adriatic sea. From the Gulf of Lyon to the Balearic sea, differentiating between *Puffinus yelkouan* and *P. mauretanicus* is challenging, so Puffinus is displayed as sp. in our maps. These preliminary results start to reveal the at-sea presence and distribution of these species across the Mediterranean throughout the years and seasons. Furthermore, the potential to integrate these data with information on their major threats regularly collected along the same routes (e.g marine litter), will help identify areas at greatest risk of exposure over time.

The Atlas of breeding and wintering birds in the Selva del Lamone Regional Reserve (Central Italy)

Massimo Bellavita[1], Giuseppe Campanella[1], Alessandro Ceccarini[1], Daniele Ciavatta[1], Emiliano De Santis[2], Sergio Muratore[3], Roberto Papi[4], Moica Piazzai[1], Fabio Scarfò[5], Andrea Schiavano[1], Alberto Sorace[6*], *Aldo Terazzi[1]*

1 Riserva Naturale Regionale Selva del Lamone
2 Regione Lazio
3 Riserva naturale Macchiatonda
4 Parco Marturanum
5 Riserva Naturale Lago di Vico
6 ISPRA
*Presenter's email: alberto.sorace@isprambiente.it

The investigation started in winter 2022-23 and here the data of first two years of investigation are shown. We overlapped a 1-km square grid, originated from UTM coordinate system, on the map of the study area obtaining 29 recording units (RU). We performed one point counts in the centre of each RU, twice in winter (December-early February) and twice in spring (March-June). In spring seventy-six species were recorded including 28 non-passerines (36.8%) and 48 passerines (63.2%) In winter sixty-two species were recorded including 22 non-passerines (35.5%) and 40 passerines (64.5%). In spring mean richness per RU was 24.6 species (S.D.= 6.2). In winter mean richness per RU was 24.5 species (S.D.= 6.2). In spring the most widespread species were: *Sylvia atricapilla* (28 RU), *Turdus merula* (28 RU), *Erithacus rubecula* (28 RU), *Carduelis carduelis* (27 RU), *Fringilla coelebs* (27 RU) and *Garrulus glandarius* (27 RU). Among the 20 species observed in only one RU, we recorded *Circus pygargus*, *Falco peregrinus*, *Burhinus oedicnemus* and *Ciconia nigra*, as species of EU concern. In winter the most widespread species were: *Cyanistes caeruleus* (29 RU), *Columba palumbus* (29 RU), *Garrulus glandarius* (29 RU), *Turdus merula* (29 RU), *Erithacus rubecula* (29 RU), *Sylvia atricapilla* (28 RU), *Parus major* (28 RU) and *Corvus cornix* (28 RU). Among the 12 species observed in only one RU, we recorded: *Circus cyaneus*, *Falco peregrinus*, *Falco biarmicus* and *Asio otus*.

Three decades of monitoring the Black Stork *Ciconia nigra* breeding population in Italy

Matteo Visceglia[1], Salvatore Urso[1], Giuseppe Rocca[1], Nicola Norante[1], Maurizio Marrese[1], Mariangela Francione[1], Maurizio Fraissinet[1], Diego Errico[1], Bruno Dovere[1], Guido Cattaneo[1], Matteo Caldarella[1], Massimo Brunelli[1*], *Lucio Bordignon[1], Beatrice Bigu[1]*

1 G.L.I.Ci.Ne.

*Presenter's email: mss.brunelli@gmail.com

The Black Stork *Ciconia nigra* has been nesting in Italy since 1994, initially with 2 pairs in Piedmont and 1 in Calabria; since 2000 also in other regions. In 2024, the nesting pairs confirmed were 43, distributed in 7 regions: Piedmont, Lazio, Campania, Molise, Apulia, Basilicata and Calabria. Overall, the population can be estimated at around 50 pairs. In 2003, G.L.I.Ci.Ne. was founded, with the aim of monitoring the trend of the species in Italy, identifying coordinators for each Region. G.L.I.Ci.Ne carries out annual monitoring and organizes workshops. Since 2008, it has published reports at the end of each breeding season. Monitoring includes: identification of pairs (nesting or territorial), verification of those that have laid eggs and raised young; number of fledged young; calculation of productivity, reproductive success and fledging rate. Over the last thirty years, the population in Italy has been growing steadily: 390 controlled pairs were found (a), of which 332 laid eggs (b), 310 raised young (c), 907 fledged young (d); reproductive parameters recorded a productivity of 2.32 (d/a), a reproductive success of 2.73 (d/b) and a fledging rate of 2.93 (d/c). The majority of the population is concentrated in Southern Italy, with Basilicata and Calabria hosting 55% of the total pairs. With the exception of Piedmont, nests are found on rocks.

Threatened birds in the "Vena del Gesso Romagnola " Regional Park, Emilia Romagna

Mattia Bacci[1,2], Carlo Maria Giorgi[1,2], Dino Scaravelli[1,2*]

1 STERNA

2 Museo Ornitologico Foschi, via Pedriali 12, 47121 Forlì

*Presenter's email: dino.scaravelli@gmail.com

The Messinian chalk formations of Emilia Romagna within the "Vena del Gesso Romagnola" Regional Park have recently been identified as a UNESCO heritage site, where research on the presence of birds of particular conservation status has been underway since 2023. The study area is characterized by the rapid succession of rocky environments and mesophilous valleys that increase the importance of the site in terms of biodiversity. The species were recorded through direct observation and point counts. A total of 145 species are known within the protected area, of which 90 are nesting, 140 are recorded in migration and 65 are wintering. The research confirmed the presence of the following species included in Annex I of Directive 2009/147: *Pernis apivorus* 1-2 pairs, *Circus pygargus* 1-2 pairs, *Falco peregrinus* 5-6 pairs, *Bubo bubo* 2-3 pairs, *Anthus campestris* 2 pairs, *Lanius collurio* 7-10 pairs, *Alcedo atthis* 3 pairs. Among the other species, *Corvus corax*, *Ptyonoprogne rupestris*, *Tachymarptis melba* and *Saxicola rubicola* were reported. *Lullula arborea* and *Caprimulgus europaeus* are widespread throughout the protected area, while the decline of *Monticola solitarius*, reported as regular in previous years, was noted. *Circaetus gallicus* and *Coracias garrulus* were regular in the breeding season but without certain evidence of nesting. The study provides important contributions on diversity and relevant information on these bioindicators in the management activity of the Park.

The new Atlas of breeding birds in Campania one year before the end of the survey campaign

Maurizio Fraissinet[1*], *Silvia Capasso[1], Bruno Dovere[1], Danila Mastronardi[1], Filippo Tatino[1]*

1 ASOIM odv

*Presenter's email: maurizio.fraissinet@libero.it

The first Atlas of breeding birds in Campania, published in 1989, refers to the period 1983 – 1987. Subsequently, in 1999, the Atlas of wintering birds was also published, referring to the period between the winters of 1989/90 and 1994/1995. 34 years after the first Atlas, it was necessary and no longer deferrable to repeat the research and realize a new Atlas of breeding birds in Campania. For this purpose, ASOIM conducted a preliminary feasibility study, which lasted two years, to verify that the conditions to realize the atlas were met. Following the positive feedback, ASOIM decided to start the project from the 2021 breeding season, foreseeing a duration of five years. A grid of 168 UTM 10 x 10 km squares was superimposed on the Campania Region territory (1,359,354 hectares). Square cells with less than 10% of regional administrative territory were excluded. Up to 2024 there were 94 surveyors who compiled 1032 survey sheets for a total of 184,332 data. 169 bird species were recorded as Possible, Probable and Confirmed breeding. The average number of species per square is currently 45.8. The good territory coverage and the amount of data collected bode well for concluding the field surveys on schedule.

Atlas of the breeding and wintering birds in the Sarno River Basin Regional Park

Maurizio Fraissinet[1*], *Marcello Bruschini[1], Silvia Capasso[1], Giuseppe Di Martino[1], Bruno Dovere[1], Elio Esse[1], Rossella Lanzieri[1], Danila Mastronardi[1], Alessandro Motta[1], Gianluca Nunziata Rega[1], Luca Nelisio[1], Alfonso Maria Piromallo[1], Filippo Tatino[1]*

1 ASOIM odv

*Presenter's email: maurizio.fraissinet@libero.it

The Atlas of breeding and wintering birds of the Sarno River Regional Park has been realized as part of the project "Protection of Sarno biodiversity: citizen science and innovation for Monitoring" funded by the "National Biodiversity Future Center (NBFC)" with PNRR funds, of which ASOIM is a partner. The Park's territory (3436 ha) includes the course of the Sarno River (24 km) from its springs to its mouth, located in the Gulf of Naples. 96 breeding species were recorded. 43 of these are Non-Passerines and 53 are Passerines, therefore the NP/P ratio is 0.81. 11 species are included in the Annex I of the Birds Directive: Black-winged Stilt, Little Bittern, Black-crowned Night Heron, Squacco Heron, Little Egret, European Honey Buzzard, Short-toed Snake Eagle, Common Kingfisher, Peregrine Falcon, Red-backed Shrike, Tawny Pipit. These presences are evidence of the effectiveness of actions carried out in recent decades to recover the Sarno River from degradation. The wintering species are 92, 46 of these are Non-Passerines and 46 are Passerines, therefore the NP/P ratio is 1. In the reproductive period, the square cells with the highest number of species are mainly located in the upper part of the Park, where the springs are located. Lower numbers, with some exceptions, are recorded in the lowland cells, characterized by intensive agriculture, high population density and industrial areas. In winter, the coastal cells record an increase in the number of species compared to the breeding period.

The breeding bird communities in the beechwoods of the Abruzzo, Lazio and Molise National Park. A comparison 38 years later

Mauro Bernoni[1*]

1 PNALM (Parco Nazionale Abruzzo, Lazio e Molise) Via S.Lucia 67032 Pescasseroli AQ

*Presenter's email: mbernoni@inwind.it

In 2023, 38 years after the last large-scale census of birds breeding in the beechwoods of the Abruzzo, Lazio and Molise National Park, 175 transect units, mapped in 1987 (Bernoni, 1987), were surveyed for a total of 71.5 km, walking each transect twice. Compared to 1987, survey dates were brought forward by about 15 days, in consideration of significantly milder climatic conditions. A total of 32 species were recorded in 2023, compared to 39 species in 1987. This difference, only accounting for 2.5% of the 1987 overall encounters, can be ascribed to less numerous species, echotonal or poorly detectable with the transect method. For the most numerous species, differences are significant only for *Turdus viscivorus* and *Turdus merula*, currently subdominant species (rare species in 1987), and *Regulus ignicapilla* and *Certhia brachydactyla*, currently rare species. Although the overall frequency (I.K.A., Ferry and Frochot, 1958) shows a 17% increase, some typical mountain species of the Apennines, such as *Periparus ater* (-40%), *Certhia familiaris* (-66%) and *Phyrrula phyrrula* (-97%), show a significant decrease, which could be related to the ongoing climate change. Among the species listed in the Birds Directive, *Ficedula albicollis* and *Dendrocopos leucotos* show a marked increase in frequency values for the former (79%) and stable values for the latter (-4%).

Out of Africa: Unraveling the migration routes of Lesser Kestrels with non-breeding areas in South Africa

Michelangelo Morganti[1*], *Javier Bustamante[2], Rina Pretorius[3], Andrea Romano[4], Maurizio Sarà[5], Gareth Tate[3], Ronelle Visagie[3], Diego Rubolini[4]*

1 CNR-IRSA

2 EBD-CSIC, Sevilla Spain

3 Endangered Wildlife Trust, Gauteng, South Africa

4 Università di Milano

5 Università di Palermo

*Presenter's email: michelangelo.morganti@irsa.cnr.it

The Lesser Kestrel *Falco naumanni* is a long-distance migratory raptor breeding at mid-boreal latitudes and migrates to sub-Saharan Africa during the non-breeding season. Its breeding range extends across Eurasia, from Morocco in the west to Mongolia in the east. Globally, the population is divided into two evolutionarily distinct lineages: Western and Eastern. While the movement ecology of the Western lineage—migrating between Europe and the Sahel—is relatively well understood, the migratory behavior of the Eastern lineage remains poorly studied. It is hypothesised that this lineage primarily spends the non-breeding season in southern Africa. To address this knowledge gap, in January 2025, we equipped 34 Lesser kestrels (18 males and 16 females) from the Central Karoo region (Northern Cape province, South Africa) with satellite tracking devices. The birds departed from their non-breeding grounds in late February to early April. As of mid-April 2025, all individuals are actively migrating towards the northeast, roughly following the Rift Valley. Prolonged stopovers occurred in the Serengeti-Masai Mara region and Ethiopia, near Djibouti. Two individuals crossed northeastward through Saudi Arabia and Iran, one currently reached Kazakhstan and still moving. The maximum distance covered during this initial phase exceeded 10,000 km—surpassing any previously recorded migration distances for Lesser kestrels of the Western lineage. The ongoing movements are expected to reveal the final breeding destinations of these individuals. Future research will aim to characterize migratory behavior across a broader segment of the species' breeding range.

Age ratio of European Turtle Dove *Streptotelia turtur* in italian harvest from 2016 to 2024

Michele Sorrenti[1*], *Marco Fasoli*[1]

1 Study and Research Office Italian Hunting Federation Via Garigliano 57,00198 Roma

*Presenter's email: michele.sorrenti@fidc.it

The European Turtle Dove *Streptotelia turtur* is a species of high hunting interest in Italy. In recent decades, the Western European population has undergone a major decline and consequently a hunting moratorium for this flyway was introduced in 2021. The Central and Eastern European population has also declined but less pronouncedly, and in Italy some regions allowed hunting until the 2024-2025 season. Due to the decline, the International Action Plan in 2018 and subsequently the Italian National Management Plan in 2022 were published, which provide for an in-depth study of the issues related to the reproductive success of the European Turtle Dove by all stakeholders. Hunters have been involved in the drafting of these plans, research on this species and actions taken to improve habitats. The Study and Research Office of the Italian Hunting Federation started collecting wings of European Turtle Doves shot by hunters to know the age ratio of the hunted population and thus have an estimate of the productivity of young, which is a parameter required for management of the species. Wing collection began in 2016 and there were 5185 wings collected up to the 2024-2025 season, with large differences over the years due to the different hunting regimes in the various regions. The young/adult ratio was between 3.3 and 2.1 young per adult. The results show a relative stability around the value of two young per adult in the hunted population in the Italian regions.

Sex and age in the Common Pochard *Aythya ferina* harvest in Veneto Region

Michele Sorrenti[1*], *Marco Fasoli*[2]

1 Study and Research Office Italian Hunting Federation Via Garigliano 57,00198 Roma

2 ACMA (Associazione Cacciatori Migratori Acquatici), Via Messina 45, 20154, Milano

*Presenter's email: michele.sorrenti@fidc.it

The Common Pochard *Aythya ferina* is listed by AEWA in column A1, indicating it as a globally threatened species. IWC results show decline in the North-eastern and North-western european range, and stability-increase in the Central and North-eastern range of the Black Sea and Mediterranean. IWC also show increase in Italy and Veneto Region, particularly thanks to environmental recovery initiatives in the private shooting areas of the Venice Lagoon. In order to obtain supplementary data to the IWC counts, the Study and Research Office of the Italian Hunting Federation and its sectorial ACMA (Association of Migratory Waterfowl Hunters) undertook the data collection on harvest and analysis of wings of birds shot. Wings of pochards allow sex and age identification by plumage examination. During the last four hunting seasons from 2021-22 to 2024-25, more than 820 wings were collected from the regions of Veneto, Emilia-Romagna, Tuscany and Lombardy. However, the samples received are not consistent for each season for all regions except for the Veneto region. For this reason, the data for Veneto are presented with regard to age and sex ratios. The results show that the age ratio index (total youngs/adult females) was between 5,1 and 6,6, while the sex ratio shows a mean of 0.72 (min 0.540; max 0.803). Sex ratio confirms the prevalence of males recorded in the 2016 IWC censuses with an index of 0.685, while the age ratio does not show a decline in productivity in the study period.

The hidden call of the nest, an acoustic approach to monitor the Red-backed Shrike breeding activity

Nadia Sganzerla[1*], *Sauro Giannerini[2], Matteo Bianchi[3], Giulia Santalmasi[3]*

1 Via Fratelli Bandiera,4 37050 Villafontana di Oppeano VR

2 Via Alberto La Rocca,77, 58051 Magliano in Toscana Grosseto

3 Oasi Dynamo, Via Privata San Vito 1, Località Piteglio 51028 San Marcello Piteglio PT

*Presenter's email: nadiasganzerla99@gmail.com

The Red-backed Shrike *Lanius collurio* is a passerine bird with a vocal repertoire that ranges from a scratched song to a rather quiet warble. This is often with mimicked elements, which are used both to defend the territory and to report threats. During the breeding season, only the female incubates eggs whereas the male provides food and protection. During this phase, the female emits calls to solicit food, which is dispensed from the male when he reaches the nest. Our study aimed to monitor the female's singing activity within a nest, from egg laying to hatching. We set up a camera trap and a passive acoustic device close to 1 meter from the nest which continuously recorded during the day. The video recording showed that only the female was making the call. The analysis was based on 376 sound events, which cumulated to 195 hours of recording. The recorded calls are similar to the fledglings' food-call, it has an average duration of 4.18 ± 0.13 seconds and an average intensity of 50.09 ± 0.33 decibel. The data shows that the female sings, on average, every 16.69 ± 2.21 minutes, with a significant peak of vocalizations in the middle of the day, between 11am and 3pm. These first results show that the female's vocalizations within the nest could be used as a method for monitoring the species, to localize the nest in individual marking projects and in the continuous check of reproductive activity of the species.

A comparison of point counts and Passive Acoustic Monitoring in urban areas

Nicola Fiorese[1], Giacomo Assandri[2], Dan Chamberlain[1,3], Enrico Caprio[1,3*]

1 Università di Torino

2 Università del Piemonte Orientale

3 NBFC, National Biodiversity Future Center, Palermo, Italy

*Presenter's email: enrico.caprio@unito.it

Passive Acoustic Monitoring (PAM) is a powerful method for wildlife studies, providing valuable data on species presence, behavior, and habitat use. It enables continuous and synchronized monitoring over extended periods, reducing the need for constant human presence and offering a cost-effective alternative to traditional fieldwork. However, it generates large volumes of data that require extensive processing. In this study, we compared data collected using PAM (with AudioMoth devices) across 14 urban green areas in the metropolitan area of Turin with data from traditional point counts conducted during two visits to the same sites. PAM recordings were made for 10 minutes every hour over a 24-hour period. We compared species richness and presence from point counts with PAM data, focusing on recordings from 6:00 a.m. onward and cumulatively adding species detected in each subsequent 10-minute interval. Results showed that PAM reached comparable species richness to point counts after three hours of recording, significantly surpassing it after 12 hours. Detection rates were similar across methods for most species. However, point counts were more effective at detecting Feral Pigeons *Columba livia* domestica, while PAM was better at detecting European Robins *Erithacus rubecula* and Long-tailed Tits *Aegithalos caudatus*. These findings highlight the potential of PAM in urban environments, offering valuable insights into bird communities and supporting more accurate biodiversity assessments. Moreover, PAM can aid in detecting other taxa such as orthopterans and contribute to the study of urban soundscapes.

African Sacred Ibis *Threskiornis aethiopicus* dietary insights by stomach content analysis in Italy

Nicola Larroux[1*], *Alessandra Gagliardi[2], Adriano Martinoli[1]*

1 Università degli Studi dell'Insubria, Dipartimento di Scienza e Alta Tecnologia

2 Istituto Oikos ETS

*Presenter's email:nlarroux@studenti.uninsubria.it

The African Sacred Ibis *Threskiornis aethiopicus* has established the largest population outside its native range in Italy, following over 30 years of undisturbed expansion. Since 2016, it has been classified as an invasive alien species of European concern under Regulation EU 1143/2014. However, management policies have largely been guided by the precautionary principle rather than concrete evidence of its ecological impact, which remains uncertain and fragmented. Predation on vertebrates is frequently cited as the most significant concern regarding the African Sacred Ibis' presence in European ecosystems. However, most existing data are qualitative, incidental, and derived primarily from direct observations (e.g. those emerging with citizen science). As a result, many European studies, including all those conducted in Italy, focus mainly on listing prey items, with a methodological bias toward larger and more easily identifiable animals. In this context, Italy has recently begun implementing initial management actions, leading to the availability of culled individuals for study. For the first time in the country, a comprehensive stomach content analysis is being conducted on a substantial sample of African Sacred Ibises. This study aims to estimate the relative proportions of different prey items in the species' diet. However, given the Ibis' remarkable behavioural plasticity, the results should be interpreted with caution. While this analysis provides valuable insights on the average foraging habits of the species, it does not rule out the possibility of acute, localized impacts (e.g., predation on eggs and nestlings), which this method is not well-suited to detect.

Phenology and nest site fidelity in three Swift towers in the Lombardy region

Nicolò Bonvissuto[1], Giulia Belloni[1], Emanuele Zanchin[1*], *Milo Manica[1], Daniela Casola[1], Alessandro Berlusconi[1,2], Jacopo Sacchet[1]*

1 Gruppo Insubrico di Ornitologia

2 Università degli Studi di Milano

*Presenter's email: emanuele.z2022@gmail.com

The Common Swift *Apus apus* is a long-distance migratory species that depends on stable nidification sites to successfully reproduce. Understanding their phenology and the occupancy rate of man-made structures plays an important role in their conservation. In this study we monitored three swift towers located in Jerago con Orago (VA), Azzate (VA), and Cuggiono (MI), respectively. Each one of the towers shows a varying number of nest chambers utilized by swifts as nidification sites. The monitoring starts in the year 2018 for the Jerago con Orago tower and in the year 2022 for the Azzate and Cuggiono towers, allowing a comparison among the data collected during the 2024 reproductive season. The study was conducted through weekly surveys starting from the month of April, taking note of the number of eggs, adults and chicks. Preliminary analysis shows variation in the nest chambers' occupancy rate, differing among the three towers. Reproductive success was calculated by considering the number of laid eggs and fledged chicks. From a phenological standpoint, the first egg laid in the Jerago con Orago tower is registered on the 11th of May 2024, in the Azzate tower on the 20th of April 2024 and in the Cuggiono tower on the 29th of April 2024. A series of ringing sessions took place to analyze the couples' fidelity to the nest site. To better understand the occupancy dynamics in man-made structures for the nidification of the common swift, long-term monitoring will be required.

Ecology and distribution of the European Roller *Coracias garrulus* in a recently colonised area of the Po plain

Nunzio Grattini[1], Paola Forni[2], Roberto Annoni[1], Alessandro Berlusconi[3], Ermes Borghi[1], Rossella Casari[1], Loris Golinelli[1], Alberto Massarenti[1], Giorgio Padovani[1], Paolo Pasini[4], Lorenzo Tosatti[1], Claudia De Battisti[1], Carlo Giannella[5]*

1 CISNiAr/SOM Stazione Ornitologica Modenese "Il Pettazzurro", via Montirone 3, 41037 Mirandola (MO)

2 Istituto di Geoscienze e Georisorse – Consiglio Nazionale delle Ricerche, Corso Stati Uniti, 4, 35127 Padova (PD)

3 Dipartimento di Scienze Politiche e Ambientali, Università degli Studi di Milano, Via Celoria 26, 20122, Milano (MI)

4 Via Wiligelmo, 31, 41012 Carpi (MO)

5 Via Aramo Marri, 2, 58015, Orbetello (GR)

*Presenter's email: paolaforni320@gmail.com

The European Roller *Coracias garrulus* is a species that breeds in Southern Europe, North Africa, and Southwestern Asia. The population of European Rollers is declining, with an estimated 51,000–104,000 breeding pairs. The species' strongholds include Spain, Russia, Romania, Bulgaria, and Turkey. This study presents the first data on the ecology and distribution of a breeding population of European Rollers in the Modena-Mantua lowlands (Northern Italy). The research was conducted from 2011 to 2024, with the first arrivals recorded between April 25–27, and the last individuals observed in October (latest record: October 21). A total of 104 observations of pairs were documented, including 72 confirmed breeding pairs, 11 probable pairs, and 21 possible pairs, with an average of 7.4 breeding pairs per year. The species nested in natural cavities in Populus nigra, Ulmus minor, and Quercus robur in 90.5% of cases, with nest heights ranging from 3.5 m to 12 m. The first egg-laying events occurred between 20–21 May, and the latest between 5–7 July. The average reproductive success was 2.1 juveniles per nest. The foraging distances of the subjects ranged from a minimum of 50 m to a maximum of 1,300 m. The establishment of this population in an atypical area within the Po Plain was likely facilitated by ongoing climate change.

Trends of waterbirds wintering on the lakes of Lombardy: Twenty years of International Waterbirds Census

Nunzio Grattini[1*]

1 Gruppo Ricerche Avifauna

*Presenter's email: cristatus@virgilio.it

Wintering populations of waterbirds on the lakes of Lombardy has been assessed annually since 2002 through the International Waterbird Census (IWC) run by the University of Pavia's Department of Earth and Environmental Sciences. This poster shows the trends, calculated with rtrim, of some regular species in 15 lakes having a surface area equal to or greater than 3 square kilometres, or that support more than 1000 individuals. We selected a type 2 model with a number of changepoints between 4 and 7; the same model was employed for the species and the trend of the total number of individuals with changepoints function "auto" and "stepwise" refinement procedure. A twenty-year period (2005-2024) was analysed: in this time frame, 68 taxa has been recorded of which 14 (20,6%) belong to the IUCN Red List Categories. The trend of the total number of individuals is stable with a mean value of 64793 (SD = 5251), while the number of species shows a moderate increase, with a mean number of 43,7 (SD = 3,75).Three species reveal a strong increase: Red-crested Pochard, Ferruginous Duck and Common Merganser. Five other species shows a moderate increase: Mallard, Great Egret, Great Cormorant, Pygmy Cormorant and Yellow-legged Gull. However, for six species, the model highlights a moderate decrease: Mute Swan, Little Grebe, Grey Heron, Eurasian Coot, Common Gull and Black-headed Gull. The numbers of Common Pochard, Tufted Duck, Great Crested Grebe and Black-necked Grebe were stable.

Watch out for aliens: Citizen science's "Sacro a Sud" initiative to monitor the African Sacred Ibis *Threskiornis aethiopicus* in southern Italy

Pierluigi Serravalle[1*], *Giovanni Capobianco[2], Leonardo Chiriacò[3], Davide De Rosa[2], Marco Del Bene[2], Ilaria Fozzi[2], Arnaldo Iudici[2], Flavio Monti[4], Emiliano Mori[5], Marco Pantalone[6], Massimo Pellegrini[6], Marco Sborgia[6], Pierpaolo Storino[1], Roberto Vento[7], Matteo Visceglia[8], Salvatore Urso[1], Rosario Balestrieri[2]*

1 Stazione Ornitologica Calabrese (StOrCal), c/da Guarassano, 129, 87100, Cosenza (CS), Italy

2 ARDEA – Associazione per la Ricerca, la Divulgazione e l'Educazione Ambientale – Via Ventilabro 6 – 80126 Napoli, Italy

3 Or. Me Associazione per l'Ornitologia e la Gestione Ambientale Via M. Saponaro, 7 – 73100 Lecce, Italy

4 Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Campus Ecotekne, 73100, Lecce, Italy

5 CNR – IRET, Sede di Sesto Fiorentino, Via Madonna del Piano 10, 50019, Sesto Fiorentino (Firenze), Italy

6 SOA - Stazione Ornitologica Abruzzese, via A. De Nino 3, 65126 Pescara (PE), Italy

7 Behavioural Ecology Group, Department of Animal Sciences, Wageningen University and Research, The Netherlands

8 CRAS Centro Recupero Animali Selvatici Riserva Naturale Regionale di San Giuliano – Matera, Italy

*Presenter's email: stazioneornitologicacalabrese@gmail.com

Native to sub-Saharan Africa, Iraq and, historically, Egypt, the Sacred Ibis *Threskiornis aethiopicus* has spread across Europe since the 1970s following the release and escape, of captive specimens. In Italy, the first recorded breeding date back to 1989 (Piedmont and Lombardy). Since 2012, the species has experienced an exponential growth throughout the Po Valley and central Italy, while in the south observations remained sporadic. Since autumn 2024, sightings increased significantly throughout southern Italy, with both solitary individuals and groups of varying size, arousing considerable interest among ornithologists affiliated with the ARDEA, StOrCal and SOA associations, which, sponsored by the CISO, have launched a Citizen Science and social monitoring initiative to collect observations. In southern Italy, in winter of 2023 - 24, around 35 individuals were recorded, distributed across 3 small groups located between Campania and Apulia. In contrast, in winter 2024 - 25 the situation changed significantly, with an estimated 375 individuals in 5 different regions: 76-83 in Abruzzo (Teramo), 162 in Campania (Caserta and Salerno), 62-77 in Calabria (Cosenza and Catanzaro), 26 in Basilicata (Potenza and Matera), 20-25 in Molise (Campobasso). Minimal presence of the species in Sicily and Sardinia, where 10 and 15 individuals were recorded respectively. The winter contingents surveyed will be further monitored to verify the colonisation of other territories and potential reproduction.

Raptor conservation in the Sila plateau (Calabria, S. Italy): Nesting of Golden Eagles and sightings of Bonelli's Eagle

Pierluigi Serravalle[1*], *Eugenio Muscianese[1], Carlo Terranova[1], Nicoletta Boldrini[1], Barbara Carelli[2], Mauro Tripepi[1]*

1 C.I.P.R. (Comitato Italiano per la Protezione degli Uccelli Rapaci) Contrada Lacone Snc - 87036 Rende (CS), Italia

2 Ente Parco Nazionale della Sila - 87055 Lorica di San Giovanni in Fiore (CS), Italia

*Presenter's email: crasrende@libero.it

The Sila is the largest plateau of the Calabrian Apennines, extending between the provinces of Cosenza, Crotone and Catanzaro. The study area is characterised by mountainous relief, dense and extensive forests, artificial lakes and watercourses that form more or less deep gorges. In the three-year period 2021-2024, the CIPR (Italian Committee for the Protection of Birds of Prey) in agreement with the Sila National Park Authority, carried out standardized monitoring of diurnal birds of prey in the UNESCO MaB-Sila area and Natura 2000 Network sites managed by the Authority. Greater attention was paid to priority species included in Annex I of Directive 2009/147/EC. The research allowed to detect the stable presence of Golden Eagle *Aquila chrysaetos* in some of these places; two territorial pairs were detected and for the first time a nesting of the species was determined and described in detail. The monitoring also gave the opportunity to record the presence of other Golden Eagles, of different ages and non-territorial (floaters?), in the survey area. In the province of Crotone, in Monte Fuscaldo SAC, within the Marchesato and Neto River SPA, the observation of an immature Bonelli's Eagle *Aquila fasciata*, a species currently not nesting in Calabria,

was of particular note. The data obtained suggest the advisability of promoting further large-scale studies/monitoring to obtain more information on species of conservation interest, in order to ensure appropriate protection measures, in the face of the threats identified such as anthropic disturbance and habitat transformation or loss.

The Golden Eagle *Aquila chrysaetos* in Calabria: Population status, distribution, and conservation concerns

Pierpaolo Storino[1*], *Giuseppe Martino[1], Giuseppe Rocca[1], Salvatore Urso[1]*

1 Stazione Ornitologica Calabrese (StOrCal)

*Presenter's email: stazioneornitologicacalabrese@gmail.com

In Calabria, the Golden Eagle *Aquila chrysaetos* breeding population currently consists of 11 territorial pairs. Of these, nesting has been confirmed for 10 pairs, while breeding has not yet been documented for one newly identified territorial pair on the Sila plateau. Although the overall number of pairs has remained stable in recent years, last evidence suggests a potential positive trend in the consolidation of historical breeding areas. The breeding territories are distributed across three main geographical sectors: the Calabrian side of Pollino National Park (4 pairs), the uplands of Aspromonte, including adjacent western coastal areas (5 pairs), and the Sila plateau (2 pairs, one of which is confirmed as breeding). The latter is a traditional nesting area that is now showing signs of recolonization. The occurrence of other territorial pairs cannot be ruled out, especially in remote areas of the Pollino and Sila uplands. Breeding habitat and nest site characteristics confirm the species' preference for rocky substrates within rugged mountainous landscapes. Despite recent indications of population expansion, increasing anthropogenic pressures remain a significant concern. Unregulated climbing and nature tourism, deforestation near nesting cliffs, and the development of wind energy infrastructure in key foraging areas pose serious threats to the long-term viability of the regional population. Urgent conservation measures are needed to protect Calabria's Golden Eagles. These should include the regulation of recreational activities in sensitive areas and rigorous environmental assessments for any planned energy infrastructure. Ensuring the protection of breeding sites and maintaining the ecological integrity of foraging habitats are essential for the persistence and recovery of this iconic raptor in southern Italy.

Prey remains analysis reveals a diverse diet of the Egyptian Vulture *Neophron percnopterus* on mainland Italy

Pierpaolo Storino[1*], *Alessandro Andreotti[1], Arianna Aradis[1], Andrea Ferri[1], Remo Bartolomei[2], Salvatore Urso[2], Matteo Visceglia[2], Mariangela Francione[2], Enrico Guzzo[3], Eugenio Muscianese[2], Giuseppe Rocca[2], Enrico Bassi[2], Marco Pavia[4]*

1 Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)

2 Stazione Ornitologica Calabrese (StOrCal)

3 via Guido Gozzano, 23 - 90011 - Bagheria (Pa)

4 Dipartimento di Scienze della Terra, Università degli Studi di Torino

*Presenter's email: pierpaolo.storino@isprambiente.it

The Egyptian Vulture is the smallest Palearctic vulture with a strictly necrophagous diet. In Italy it has suffered a long-term decline and its breeding range is now restricted to the southern part of the mainland, central Sicily and northern Sardinia. The whole Italian population in 2019 was estimated in 9-13 breeding pairs (3-4 of these on the mainland). As part of the LIFE16 NAT/IT/000659 LIFE EGYPTIAN VULTURE project, we examined prey remains from three nests in mainland Italy during the 2021 and 2022 breeding seasons, referring to four breeding attempts. The analysis revealed a broad prey spectrum, with 21 taxa among the Reptilia (1), Aves (12) and Mammalia (8) classes.

Livestock and medium-size wild mammals were the most relevant food sources. Interestingly, the remains of dogs were a common component at all sites, raising questions about the potential risks associated with this prey source. Domestic and feral dogs, indeed, could be an unsafe food when illegally poisoned or shot with lead ammunition. However, this resource, currently widespread in some regions, could decline if stricter control policies were adopted. Food remains from the nest visited in both years revealed a strong preference for avian prey, which included both domestic and wild birds. These findings confirm the Egyptian Vulture's capacity to exploit a variety of food sources and suggest the existence of specialized foraging strategies by some breeding pairs. A better knowledge on species' diet is crucial to address the measures for the conservation of this endangered species in Italy.

Ski-pistes or not ski-pistes, that is the question: Snowfinch foraging behaviour helps identify management strategies for ski areas

Pietro Luciani[1], Chiara Bettega[1*], *Francesca Roseo*[2], *Paolo Pedrini*[3], *Stefano Leonardi*[4], *Mattia Brambilla*[2]

1 Biologia Della Conservazione, Museo Delle Scienze di Trento, Trento, Italy

2 Dipartimento di Scienze e Politiche Ambientali, Università Degli Studi Milano, Milan, Italy

3 Biologia Della Conservazione, Museo Delle Scienze di Trento, Trento, Italy

4 Dipartimento di Scienze Chimiche, Della Vita e Della Sostenibilità Ambientale, Università di Parma, Parma, Italy

*Presenter's email: chiara.bettega@gmail.com

Infrastructures linked to the ski industry have expanded worldwide in mountain areas during the last century, and climate change will cause a shift of ski tracks to higher elevations. For this reason, alpine ecosystems and species, already impacted by climate change, are increasingly threatened by the construction of ski-pistes and linked structures. Here, we investigated the impacts of ski-pistes on the foraging behaviour of the White-winged Snowfinch *Montifringilla nivalis*, an high elevation alpine bird already threatened by climate change. The study was carried out in two alpine areas of the Dolomites (Passo Sella and Passo Pordoi, Trentino Alto Adige), both above 2240 m asl. We monitored 12 active nests, following the breeding pairs' foraging trips and collecting environmental, meteorological, topographic variables and invertebrate abundance at both observed foraging points and control points, discerning foraging events on and outside ski-pistes. The results show that, while the presence of a ski-piste did not directly influence the foraging behavior, snowfinches prefer to forage on areas with characteristics frequently detected on ski-pistes, like snow patches and short grass on medium slope. Snowfinches also selected foraging patches based on the interactive effect of temperature and solar radiation, probably due to trade-offs between prey availability and physiological and thermoregulatory requirements. Our results suggest that maintaining short-sward and snow patches on ski-pistes, could mitigate the ecological footprint of both ski tracks and linked infrastructures on alpine ecosystems and can be applied to the conservation and management of these areas in a context of climate change.

Update on the presence of Egyptian Vulture *Neophron percnopterus* and Griffon Vulture *Gyps fulvus* in the Appennino Lucano, Val d'Agri and Lagonegrese National Park

Raffaele Di Biasi[1*], *Alessia Ranucci*[1], *Remo Bartolomei*[2], *Giuseppe Luzzi*[3], *Donata Coppola*[3], *Antonio Luca Conte*[1]

1 University of Molise

2 Studio Naturalistico Wildlife Research

3 Parco Nazionale dell'Appennino Lucano, Val d'Agri e Lagonegrese

*Presenter's email: raffaeledibiasi1@gmail.com

Across Europe, vulture populations are facing severe pressures due to anthropogenic mortality factors, such as poisoning, electrocution, and collisions with infrastructure. These threats compromise the survival of already fragile populations and underscore the need for effective monitoring and conservation planning. In this context, understanding the current presence and spatial distribution of vulture species is essential, particularly in areas where they are recolonizing or persisting in low numbers. In the Appennino Lucano, Val d'Agri and Lagonegrese National Park (PNAL), two vulture species are currently present: the Egyptian Vulture, which breeds within the park and the Griffon Vulture, regularly observed since 2009 with the first breeding attempt in 2012, and with several breedings of the species recorded between 2014 and 2022. In 2024, a monitoring program was launched through a collaboration between the University of Molise and PNAL to collect updated data on the presence of these threatened species. The study focused on two key areas where the Griffon and Egyptian vultures more steadily occur. Monitoring was conducted in spring and summer 2024 and will continue in 2025 through direct observation sessions from both fixed and opportunistic points. Preliminary results show that the Egyptian Vulture successfully bred within the study area, while no breeding activity was recorded for the Griffon Vulture. The collected data provide a baseline for understanding the ecological needs of both species within the PNAL and will support the development of future conservation strategies.

African Sacred Ibis *Threskiornis aethiopicus* and Grey Heron *Ardea cinerea*: Nesting dynamics and coexistence strategies in urban heronries in Lombardy

Roberta Castiglioni[1*]

1 DARWIN Ricerca e Divulgazione Naturalistica

*Presenter's email: darwin@darwinnatura.it

Since 2021, this study has investigated the ecological and spatial dynamics between African Sacred Ibis *Threskiornis aethiopicus* and Grey Heron *Ardea cinerea* in three urban heronries in Lombardy (Italy), focusing on site occupancy patterns and habitat transformation. The heronries were monitored every 15 days through direct observations and aerial surveys using drones to track interspecific interactions. Grey Herons initially establish breeding sites, complete their reproductive cycle, and leave behind nests and nesting materials, which attract African Sacred Ibises. The Ibises then colonize these pre-existing nests, modifying them and incorporating available materials to build their own platforms. Some individuals also settle in vegetated areas not used by Grey Herons, particularly favoring conifers such as cedars. During the breeding season, Ibises exhibit ecosystem engineering behavior by removing terminal branch segments and flattening tree crowns. This alters vegetation structure and prepares sites for potential future use. In some cases, these modified sites are later occupied by Ibises, while in others, they remain abandoned, raising questions about the reasons behind this behavior. In the following breeding cycle, Grey Herons recolonize the transformed sites, benefiting from the habitat modifications introduced by the Ibises. These findings reveal a complex ecological interdependence: the Grey Herons' initial breeding activities facilitate the arrival of African Sacred Ibises, which, in turn, alter the habitat in ways that enhance its suitability for subsequent Grey Heron nesting. This study provides new insights into interspecific interactions and offers valuable perspectives for the management and conservation of urban heronries.

Preliminary data on Kentish Plover *Anarhynchus alexandrinus* monitoring activity in Calabria

Roberto Santopaolo[1*], *Giorgio Giovanni Berardi[1], Carlo Calabrò[1], Beatrice Cardinali[1], Bruna Vittoria Diano[1], Ilaria Filomia[1], Marco Pietro Frascà[1], Pietro Giovannelli[1], Michaela Iannone[1], Daniele Mandarino[1], Ilaria Mazzoleni[1], Ilenia Ernestina Mezzatesta[1], Domenico Montauro[1], Giacomo Oriani[1], Stefania Pistocchio[1], Giuseppe Platania[1], Mario Pucci[1], Marco Ranù[1], Nicola Romeo Arena[1], Fernando Santopaolo[1], Francesco Sinopoli[1], Katharina Werner[1], Marco Gustin[2]*

1 Lipu Sezione di Rende, Via Bertoni 10, 87036 Rende

2 Lipu BirdLife Italy, Via Pasubio 3 Bis, 43122 Parma

*Presenter's email: rende@lipu.it

Unlike other Italian coastal regions, information on the size of the regional population of Kentish Plover *Anarhynchus alexandrinus*, is still very scarce. To fill this gap in 2020, the Lipu Section of Rende created the "Lipu Fratino Calabria Group" with the aim of monitoring during February-August the Calabrian beaches potentially most suitable for the species. This activity is in coordination with the National Committee for the Conservation of the Fratino (CNCF). An average of 60 km of beach was monitored from 2020 to 2024 each year, distributed along the Ionian and Tyrrhenian coasts with stretches of beach varying in length between 800 m and 2.5 km, with surveys averaging twice a month. In the provinces of Catanzaro, Crotone and Reggio Calabria alone, Kentish Plover nesting has been detected at 8 sites that have repeated or alternated over the years. In 2024 out of 18 nestings (including 6 likely hatching replacements) only 5 were successful, highlighting an important issue related to maintaining beach ecosystem. Since 2023, the Group has been carrying out winter observations aimed at detection of wintering individuals. The research has led to the detection of the presence of about 60 individuals/year located mainly in the Ionian area. Mechanical cleaning of strands, transit of motor vehicles, stray dogs, and anthropogenic disturbance (to name a few) seriously endanger the safety of nests and the success of nesting. Issues that, combined with natural predation and storm surges with beach erosion, further exacerbate the status of the species regionally.

First results on White Stork *Ciconia ciconia* ringing activity in Calabria

Roberto Santopaolo[1*], *Mario Pucci[1], Katharina Werner[1], Giorgio Giovanni Berardi[1], Stefania Pistocchio[1], Fernando Santopaolo[1], Antonio Mancuso[1], Maria Corrado[1], Ernesto Napolitano[1], Marco Gustin[2]*

1 Lipu Sezione di Rende, Via Bertoni 10, 87036 Rende

2 Lipu BirdLife Italy, Via Pasubio 3 Bis, 43122 Parma

*Presenter's email: rende@lipu.it

This report summarizes the results of White Stork *Ciconia ciconia* ringing activities conducted in Calabria between 2019 and 2024, in collaboration with e-distribuzione and ISPRA. Initial efforts began in 2007 on the Sibari Plain (CS) but were suspended due to logistical challenges posed by nests located on electrical pylons. The project resumed in 2019, supported by improved access equipment provided by e-distribuzione. Nest sites were selected based on equipment accessibility, the absence of agricultural crops, and pylon height. Chicks were ringed at 32–40 days of age. A cherry-picker was used to reach the nests, from which chicks were carefully removed, ringed on the ground, and returned. In total, 140 chicks were ringed at 20 sites across two areas: the Crati Valley and the Sibari Plain, both in the Province of Cosenza. Of the 140 ringed individuals, 15 were subsequently recorded. Twelve were observed one or more years later, two were found dead about one month after ringing, and one was recovered injured in the Province of Reggio Calabria roughly two months post-ringing. These data represent the first structured ringing program for the species in the region and offer valuable insights for future monitoring and conservation.

Competitive exclusion between introduced fish and White-throated Dipper *Cinclus cinclus* in alpine lakes

Rocco Tiberti[1*], *Lucia Bello[1], Anna Corapi[1], Veronica Orsi[2], Gianluca Tassi[2], Milo Manica[3], Michelangelo Morganti[4]*

1 UNICAL

2 UNIPV

3 Gruppo Insubrico di Ornitologia odv

4 CNR-IRSA

*Presenter's email: rocco.tiberti@unical.it

The introduction of fish to originally fishless alpine lakes has significant ecological impacts, particularly on conspicuous aquatic macroinvertebrates, which are the primary food source for the White-throated Dipper *Cinclus cinclus*. In the framework of the project RESQUE ALPYR (LIFE20 NAT/ES/000369), we examined whether competition for this shared resource could lead to exclusion patterns between dippers and introduced fish, based on the competitive-exclusion hypothesis. Over 300 visual surveys were conducted to detect dippers in more than 50 alpine lakes, categorized into three groups: fish-free lakes, lakes undergoing fish eradication, and lakes with established fish populations. Macroinvertebrate communities were also assessed in most of these lakes to compare the likelihood of detecting dippers along a prey availability gradient, influenced by environmental factors (e.g., elevation) as well as fish presence and abundance. Despite of the low observation rate of dippers at lakes (~ 5%), preliminary findings up to 2024 are consistent with the hypothesis of an exclusion patterns between dippers and introduced fish, suggesting the need for further investigation which will be realized in 2025.

Human disturbance affects detection probability of birds in urban green areas

Samuele Ramellini[1,2], Stefano Lapadula[2], Luca Bonomelli[2], Diana Sciandra[2], Mattia Falaschi[2]*

1 Division of Ecology and Evolution, Research School of Biology, Australian National University, Canberra, Australia

2 Department of Environmental Science and Policy, University of Milan, Milano, Italy

*Presenter's email:stefano.lapadula@unimi.it

Animals adapted to disturbed habitats have evolved various behavioural strategies, from hiding to displacing to less disturbed microhabitats. Urban areas pose new evolutionary challenges, as animals must adapt to novel conditions. Urban parks can be biodiversity hotspots within cities, but increasing recreational activities potentially puzzle animals' ability to exploit these environments. This study evaluated the effect of human disturbance and other variables on the activity patterns of four bird species commonly found in European urban parks: the Common Blackbird *Turdus merula*, the Hooded Crow *Corvus cornix*, the European Robin *Erithacus rubecula*, and the Common Wood Pigeon *Columba palumbus*. We performed repeated counts of these bird species in six urban parks in northern Italy and we fitted Bayesian N-mixture models to estimate the relationship between detection probability and human disturbance, phenology, and weather conditions. For all species but the blackbird, we found a negative relationship between the number of people in the park and the birds' detection probability. Our results show that urban-dwelling species can modulate their activity patterns based on human disturbance levels, suggesting behavioural phenotypic plasticity. Uncovering detectability patterns can help in planning biodiversity monitoring and conservation, providing information on when to conduct surveys for the highest detection probability, optimizing resource investments and reliability of biodiversity estimates. Integrating such methodologies into long-term avifauna surveys is recommended.

Five minutes of acoustic recording on daily basis to monitor bird population richness

Sauro Giannerini[1*], *Marco Pesente[2], Matteo Bianchi[3], Giulia Santalmasi[3]*

1 Via Alberto La Rocca,77, 58051 Magliano in Toscana Grosseto

2 Via Villa,19, 37052 Casaleone Verona

3 Oasi Dynamo, Via Privata San Vito 1, Località Piteglio 51028 San Marcello Piteglio (PT)

*Presenter's email:g.sauro@hotmail.it

Assessing the presence and abundance of birds is important for monitoring species richness, as well as overall ecosystem health. Many birds are most readily detected by their sounds, and thus passive acoustic monitoring (PAM) is highly appropriate. In order to assess the richness of the ornithic community of a protected area placed in northern Apennine (Oasi Dynamo - Pistoia - IT), during the 2024's spring we carried out an acoustic survey using an automatic recording station. The device was set in a permanent grasslands not characterized by intensive agricultural use or strong anthropic disturbance, near to mixed woods. In addition to the richness-monitoring target, we tested a new recording schedule: scanning and listening to a series of 5-min sound samples each day, from 1st of March to 31st of May, clustering progressively from dawn to 11am. As common birds census way, we collected recording as control, continuously from dawn to 11am, choosing one day per month based on the weather condition. Based on 47 species detected with both methods, the 5-min approach reached 12.47±3.77% more species, compared to the continuous approach, reaching 90% of species at 150-min of recording. Considering no difference in terms of number of detected species between time slots and months was found, month of recording should be selected in accordance with the target of monitoring. March can still provide information on some wintering species, whereas April and May provide a representative sample of breeding species, as well as late migrants such as Red-backed Shrike.

From a wetland to forest, birds community change following habitat traits

Sauro Giannerini[1], Michele Soprano[1], Lorenzo Nannelli[1*]

1 Segretariato Generale della Presidenza della Repubblica - Servizio Tenuta Presidenziale di Castelporziano - Settore tutela e gestione ambientale - Via Pontina, 690 - 00128 Roma

*Presenter's email: tenuta@quirinale.it

Wetlands provide essential habitat for many wildlife species all year round. In addition to food resources, the dense vegetation found in most wetlands provides birds with nesting opportunities. Wetlands also provide a stopover habitat for migratory birds and waterfowl. The wetland "Pantan di Lauro" (coordinates: 41.677450 N, 12.395691E) is located on the Central Tyrrhenian coast, in the Castelporziano Presidential Estate (about 25 km from Rome). In 1985, this area was restored in order to preserve and protect aquatic resources, and the natural processes led the area to a new progressive reforestation, which is still ongoing today. The purpose of this study was to evaluate the wetland degradation in terms of temporal distribution of bird species abundance across four types of habitats, defined according to the AVONET dataset: Wetland, Shrubland, Woodland and Forest. For this purpose, we used the last 18 years of data (2005-2023) from ringing activities in the Presidential Estate concentrated at the "Tor Paterno" station; this is located close to the "Pantan di Lauro" wetland. The results obtained by generalized linear models (GLMs), show that the number of species linked with Wetland and Shrubland habitats has decreased, whereas Woodland and Forest bird species have significantly increased. The species' shift suggests that the forest area has grown constantly conquering the near wetland area, and that the degradation of wetlands habitat can be evaluated using birds as bioindicators.

Thermal performance of nest boxes: Effects of material, color, wall thickness, and shading

Sebastian Cannarella[1*], *Carlo Catoni[1], Giacomo Dell'Omo[1]*

1 Ornis Italica

*Presenter's email:sebastiancannarella@gmail.com

Artificial nest boxes are widely used to support cavity-nesting birds; however, inadequate design can expose both incubating adults and nestlings to harmful thermal conditions, particularly under direct sunlight. This study investigates how material, wall thickness, color, and shading affect internal temperatures in these boxes. Over 12 days (31 July–11 August 2024), we monitored identically sized nest boxes made from different materials (pine wood, okoumé plywood, cork), with varying wall thicknesses (1–2.3 cm) and colors (white, natural wood, grey). Nest boxes were placed in full sun and equipped with temperature loggers, except for one okoumé box fitted with a shading roof. Ambient air temperature averaged 35.6 °C. The highest average internal temperature was recorded in a 1 cm-thick, unpainted okoumé box (45.5 °C), which also reached the highest maximum temperature observed: 51.9 °C. In contrast, the lowest temperatures - both average and maximum - were found in thicker, white-painted boxes made of plastered cork (36.9 °C mean, 43.5 °C max) and pine wood (37.2 °C mean, 43.3 °C max). The shaded okoumé box demonstrated significantly reduced temperatures, indicating that simple shading structures can effectively prevent overheating. Our findings underscore the significance of light-colored surfaces, sufficient wall thickness, and passive shading in mitigating internal temperatures. Thinner, unshaded boxes risk critical thermal thresholds, suggesting that nest box designs in warm climates should prioritize color, thickness, and shading over material alone to mitigate the risk of creating ecological traps.

Movement ecology and first migration of juvenile Montagu's Harriers *Circus pygargus*

Sebastian Cannarella[1*], *Enzo Calevi[2], Enzo Cripezzi[2], Giuseppe Giglio[2], Stefania Pellegrino[2], Marco Gustin[2], David Costantini[1,3]*

1 Ornis Italica, Roma

2 Lipu BirdLife Italy, via Pasubio 3 bis, 43122, Parma, Italy

3 University of Tuscia, Viterbo

*Presenter's email:sebastiancannarella@gmail.com

Studying the movement ecology of birds is essential for understanding their behaviour, migration patterns, and interactions with ecosystems. In 2024, we deployed high-resolution, solar-powered GPS/4G transmitters to investigate the movement ecology of six juvenile Montagu's Harriers *Circus pygargus*. Three chicks were tagged in nests located in the Lazio region (Viterbo province), while the other three were tagged in Puglia (Foggia province). Our preliminary data reveal notable differences in exploratory behaviour, home range size, and daily distances travelled post-fledging. Furthermore, the tracked birds exhibited distinct migratory routes, with wintering sites located in the western Sahel, spanning the countries of Mali, Niger, and Nigeria. These findings highlight the variability in movement patterns within the species and offer important insights into their migratory strategies.

Monitoring of the post-breeding migration of the Eurasian Dotterel *Eudromias morinellus* using autonomous recording units in the Gran Bosco di Salbertrand Natural Park (Cottian Alps, Piedmont, Italy)

Sergio G. Fasano[1*], *Giuseppe Roux Poignant[1], Luca Maurino[1]*

1 Ente di gestione delle aree protette delle Alpi Cozie - Via Fransuà Fontan 1, 10050 Salbertrand (TO)

*Presenter's email: fasanosg@gmail.com

As part of the project "BiodivTourAlps - Biodiversity and tourism: synergies for the future between Alpine parks" (Interreg VI-ALCOTRA ITALY-FRANCE 2021-2027 Programme), one of the actions implemented by the Ente di gestione delle aree protette delle Alpi Cozie included the monitoring of the post-breeding migration of the Eurasian Dotterel Eudromias morinellus through autonomous recording units. The study area is located in the Gran Bosco di Salbertrand Natural Park (ZSC IT1110010), where there is an important stop-over site constantly monitored since 2003. Between late summer and autumn of 2024, the first year of the investigation, two Wildlife Acoustics Song Meter Micro 2 models were activated, which recorded daily from one hour before sunset to one hour after sunrise between 14 August and 29 October. The audio files were subjected to an initial selection through automatic sound detection and classification, adopting the BirdNET v2.4 model, and experimenting with different analysis software. A manual check of all identifications attributed to the target species was then carried out in order to identify any false positives. Overall, approximately 1.926,4 hours of recordings were obtained, of which 28,1 minutes of audio events relating to the Eurasian Dotterel, recorded between 18 August and 15 October, following one another in an almost continuous manner between 24 August and 17 September (main migratory peak 29-31 August). The preliminary results achieved so far have therefore allowed us to integrate the usual monitoring activities of the target species carried out in the study area with further information on its migratory phenology.

Bound for Buntings: The occurrence of Emberizidae from the lowland hillside to mountain slopes in Abruzzo, Italy

Stefano Civitarese[1,2*], *Sandro Barile[2], Mauro Bernoni[2], Francesco Calandra[2], Augusto De Sanctis[2], Sefora Di Nucci[2], Remigio Doremi[2], Giulia Gagliardi[2], Giulia Pace[2], Mario Posillico[2,3], Bruno Santucci[2], Sandro Tagliagambe[2], Massimo Pellegrini[2]*

1 Dipartimento di Studi socio-economici, gestionali e statistici, Università di Chieti-Pescara, Pescara

2 Stazione Ornitologica Abruzzese ONLUS, Pescara

3 ARDEA, Associazione per la Ricerca, la Didattica e l'Educazione Ambientale APS, Napoli

*Presenter's email: stefanocivitarese@gmail.com

During a multi-year research project, we sampled 219 points twice along 17 routes from April to June 2024, assessing the occurrence of five Bunting species in Abruzzo: *Emberiza calandra*, *E. cirlus*, *E. citrinella*, *E. cia*, and *E. hortulana*. The routes were spread across the region according to elevation, significant habitats, and known habitat of the studied species. The research aims at enhancing our understanding of the species' ecology, improving our comprehension of how environmental change affects it. Our preliminary findings summarise the naïve percent frequency of occurrence of singing males across plots and routes. Buntings (recorded for 10' within unbounded plots) were detected in all routes, but for that at the lowest elevation (50-140 m a.s.l.). The number of species/route ranged 1-4 (mean = 2.7; SD = 0.79) and ≥ 3 species were found in 59% of the routes. The Corn and Cirl Buntings were the most frequently detected taxa, occurring on average at 63% (SD = 28%; CV = 0.5%) and 34% (SD = 35%; CV = 1%) of plots in sampled routes, respectively. The Yellowhammer and the Rock Bunting occurred less frequently: 9% (± 13%) and 5% (± 9%) respectively, whilst the Ortolan Bunting was detected at only four points (two routes): 1.8% (± 5%). The median frequency of occurrence of buntings significantly differed on a route basis between species (Kruskal-Wallis: Hc = 31.5; $p < 0.001$), but for the Yellowhammer vs. the Rock Bunting (Dunn's post hoc: $Z = 0.58$; $p > 0.5$).

Control of the African Sacred Ibis *Threskiornis aethiopicus* through egg sterilization: Preliminary data

Stefano Costa[1*], *Sergio Fasano[1], Laura Gola[1], Irene Pellegrino[2], Marco Cucco[2], Mattia Romani[3], Giulia Miglio[2], Andrea Valisena[2], Luca Bajno[4], Enrico Caprio[4]*

1 Ente di gestione delle Aree protette del Po piemontese

2 Università del Piemonte Orientale

3 Fitobiotech s.r.l.

4 Università di Torino

*Presenter's email:stefano.costa@parcopopiemontese.it

As part of the population control project targeting African Sacred Ibis *Threskiornis aethiopicus*, funded by dedicated MASE resources allocated through the Piedmont Region, the managing authority of the Po Piedmont Protected Areas is implementing interventions to control the species. Among the actions outlined in the Management Plan is the sterilization of eggs through the application of vegetable oils (corn or soybean oil), which prevent embryonic development. This method, also used in urban and natural environments for other problematic species, is preferred over egg destruction or removal, as it encourages adults to continue incubating, thereby reducing the likelihood of a second clutch. In 2024, a suitable heronry was identified for ground-based intervention, targeting nests up to six meters in height. The interventions, carried out on May 27 and June 11, involved the treatment of 28 nests with 76 eggs (2.7 ±1.12 eggs/nest) and 31 nests with 73 eggs (2.4 ±0.98 eggs/nest), respectively, covering 46% and 70% of the nests detected via drone surveys. The second session followed a new wave of egg-laying. Preliminary results are encouraging, with a hatching rate of approximately 1% in the treated sections of the heronry and prolonged presence of adults continuing incubation behavior. The main limitations of this method relate to the accessibility of the heronry, the presence of other nesting species, and the height of the nests. To overcome these constraints, a specially modified experimental drone was tested, yielding promising results.

Preliminary results of the survey on Swift and Sparrow towers in the provinces of Biella and Vercelli: A historical resource for the conservation of synanthropic birdlife

Stefano Costa[1*]

1 Ente di gestione delle Aree protette del Po piemontese

*Presenter's email: steocost@yahoo.it

In the context of biodiversity conservation and the protection of urban birdlife, a systematic survey of swift and sparrow towers was launched in the northern italy's province of Biella and Vercelli. These towers represent important historical and architectural structures, originally built to host synanthropic species such as Common Swifts *Apus apus* and Sparrows *Passer spp.* . The aim of the survey was to map and document the conservation status of these structures, with particular attention to their current usability by bird species. The survey was conducted through direct field inspections and the involvement of local citizens. Over 100 structures were identified, located in both rural and urban settings, many of which are in a state of neglect or have undergone structural modifications that compromise their ecological function. However, some structures were still actively used by swifts and sparrows, confirming their importance for the conservation of these species. The results of the survey form the basis for defining actions aimed at protecting, restoring, and improving structurally swift and sparrow towers, therefore promoting the recovery of their original function and integrating them into environmental education and conservation projects. This work is part of a broader strategy for safeguarding nesting birdlife in anthropized environments, with potential positive impacts on the cultural and natural heritage of the Biella and Vercelli areas.

Pre-breeding migration and stopover patterns of Eurasian Woodcocks wintering in Italy

Susan Ellen McKinlay[1*], *Alessandro Tedeschi[2], Michele Sorrenti[3], Vincenzo Cavaliere[4], Lorenzo Serra[5], Federico De Pascalis[5], Pierfrancesco Micheloni[4], Diego Rubolini[1]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Via Celoria 26, Milano, Italy

2 Associazione "Amici di Scolopax", Via Roma 57, Mugnano del Cardinale, AV, I-83027, Italy

3 Ufficio Studi e Ricerche Faunistiche e Agro-ambientali Federazione Italiana della Caccia, Via Garigliano 57, 00198, Rome, Italy

4 Dipartimento di Medicina Veterinaria e Produzioni Animali, Università degli Studi di Napoli Federico II, via F. del Pino n. 1, 80137, Napoli

5 Area Avifauna Migratrice, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Ozzano dell'Emilia, Italy

*Presenter's email: susan.mckinlay@unimi.it

Understanding the spatial and temporal variations in migratory behavior is crucial for the effective conservation and management of migratory species. We used satellite telemetry to investigate the pre-breeding migration patterns of Eurasian Woodcocks *Scolopax rusticola*, a species which is subject to intense hunting pressure across its distribution range. Between 2019 and 2025, we deployed GPS-GSM transmitters on 178 individuals wintering or migrating along the Italian peninsula and in several islands, including Sicily, Sardinia, and Pantelleria, and obtained 108 pre-breeding migration episodes from 89 individuals. Among 101 of these episodes with sufficient data, the mean onset of pre-breeding migration was 12 March ± 11.85 (s.d.), with the earliest departure date being February 12. In total, we tracked 82 complete pre-breeding migrations (up to 2024). Most woodcocks migrated to putative breeding sites in northwestern Russia, along migration routes that were 3711.63 km ± 1405.23 long. Birds spent 48 ± 19 days migrating, with frequent stopovers (2–28 days), on average 4.51 ± 1.92 stopovers per migration episode. Furthermore, we highlight key stopover regions in the northwest part of the Balkans during March-April. Our findings suggest that ring recoveries have underestimated the significance of Russia—particularly Siberia—as a key origin of populations wintering in northern Italy. Siberia, in fact, is part of the breeding range of the woodcocks we tracked. We provide the first insights into inter-individual variation in stopover behaviour during pre-breeding migration of this intrapalearctic migrant.

Satellite tracking of pre-breeding migration of Song Thrushes *Turdus philomelos* wintering in Italy

Susan Ellen McKinlay[1*], *Giuseppe La Gioia[2], Sergio Scebba[3], Giorgio Cadone[4], Domenico Campanile[4], Marco Ragni[4], Simona Tarricone[4], Diego Rubolini[1], Michele Sorrenti[5]*

1 Dipartimento di Scienze e Politiche Ambientali, Università degli Studi di Milano, Via Celoria 26, Milano, Italy

2 Ass.Or.Me., Via Saponaro 7, Lecce, I-73100, Italy

3 Gruppo Inanellamento Limicoli, Via Traversa Napoli 58, Pozzuoli (NA), I-80126, Italy

4 Regione Puglia, Dipartimento Agricoltura, Sviluppo Rurale ed Ambientale, Sezione Gestione Sostenibile e Tutela delle Risorse Forestali e Naturali, Lungomare Nazario Sauro 33, Bari, I-70121, Italy

5 Ufficio Studi e Ricerche Faunistiche e Agro-ambientali Federazione Italiana della Caccia, Via Garigliano 57, Roma, I-00198, Italy

*Presenter's email: susan.mckinlay@unimi.it

The miniaturization of individual tracking devices has greatly enhanced our ability to remotely track the migratory movements of even relatively small species (50-100 g). One such species is the Song Thrush *Turdus philomelos*, a short-distance, intra-palearctic migratory passerine with a broad wintering range spanning all Mediterranean countries. In many of these regions, the species faces intense hunting pressure. Identifying its migration routes and phenology is therefore essential for informing management initiatives targeting this game species. Between 2021 and 2024, a total of 48 Song Thrushes were captured using mist nests between early December and January across three Italian regions: Sardinia, Marche and Puglia. They were fitted with the smallest available Argos PTT tags (2 g). We documented 31 pre-breeding migrations. Among 26 of these migrations with sufficient data, the mean onset of pre-breeding migration was 19 March ± 16.88 (s.d.), with

the earliest movement northeastward recorded on 31 January. Due to widespread tag failures, we obtained complete migration tracks only for six individuals. Three of these migrated to putative breeding sites in Russia east of the Urals, two to sites west of the Urals, and one to Romania. Our findings suggest that Song Thrushes wintering in central-southern Italy originate from a wide geographical range, spanning from eastern Europe to East Siberia, highlighting the importance of Mediterranean countries for different breeding populations.

Monitoring breeding birds in recovering mountain grasslands of the Northern Apennines

Tommaso Campedelli[1], Guglielmo Londi[1*], *Simonetta Cutini*[1], *Davide Ridente*[1], *Gianpiero Calvi*[2]

1 D.R.E.Am. Italia, Stia Pratovecchio (Arezzo)

2 Studio Pteryx, Basiano (Milano)

*Presenter's email: londi.guglielmo@gmail.com

The LIFE20 NAT/IT/001076 ShepForBio project aims to promote grazing as a tool for the sustainable management of grassland habitats (5130, 6210, 6230) through active interventions (shrub clearance) and support for both existing and new livestock farming in the Foreste Casentinesi National Park and Pratomagno areas (Northern Apennines, Italy). Here, we present preliminary bird monitoring results (pre-intervention). The study area was divided into 10 macro-areas. A sampling plot method was chosen (182 plots of 1.5 ha each: 111 in intervention areas, 72 in control areas, each surveyed once in spring 2022). Exploratory statistical analyses (similarity, analysis, indicator species, correspondence) were conducted to provide an initial characterization of the breeding bird communities. Overall, the breeding bird community was rich and diverse, characterized by species of open habitats and ecotones, including some of European (*Lullula arborea*, *Anthus campestris*, *Lanius collurio*) or local (*Jynx torquilla*, *Alauda arvensis*, *Oenanthe oenanthe*, *Saxicola rubicola*) conservation concern. However, the presence of many forest species highlights the integration of these open habitats within a predominantly forested landscape. The analysis clearly distinguishes the Pratomagno macro-area, where mountain species linked to grasslands (e.g., *A. arvensis*, *O. oenanthe*) and ecotonal areas between woodland and grassland (e.g., *Prunella modularis*, *Anthus trivialis*) were recorded. All of these species are very rare in the other macro-areas, which showed general homogeneity and were characterized by more thermophilous open habitat species (*L. collurio*, *Chloris chloris*, *Emberiza calandra*). Overall, the composition of bird communities was comparable in intervention and control areas.

Akritas Cape: A new raptor migration hotspot in the Balkans

Ugo Mellone[1*], *Nikos Tsiopelas*[2], *Christos Barboutis*[2]

1 MEDRAPTORS (Mediterranean Raptor Migration Network), 27100, Pavia, Italy

2 Hellenic Ornithological Society/BirdLife Greece, 52 Ag. Konstantinou Str., Athens 10437, Greece

*Presenter's email: u.mellone@gmail.com

A previously unknown raptor migration hotspot has been identified in Southern Greece. During the post-breeding migration of 2024, a total of 11,790 individuals were recorded in 15 days, including 11,606 European Honey Buzzards. GPS tracking data from Finnish and Hungarian populations further highlight the site's significance, suggesting it could become the third migration hotspot for the species in the Mediterranean, alongside the Straits of Gibraltar and Messina. Given the substantial increase in knowledge about raptor migration in Europe, and particularly in the Mediterranean region, over the past 25 years, it is remarkable that such an important watch site remained unknown until now. Plans to develop a wind farm in the area raise concerns not only for the direct fatalities, but also because it could lead to the loss of functional habitat which is essential for gaining sufficient uplift to reach optimal altitudes, ensuring a successful crossing to Libya (ca. 400 km).

From the traditional method to controlled hacking in social imprinting: Criteria for the release of the Lanner Falcon *Falco biarmicus feldeggii*

Veronica Cippitelli[1*], *Sara Vincenzi[1], Andrea Benvenuti[2], Giuseppe Puddu[3], Carlo Catoni[2], Giampiero Tirone[3]*

1 Ente Monti Cimini

2 Ornis italica

3 Regione Lazio - RN Lago di Vico

*Presenter's email: veronica.cippitelli01@gmail.com

As part of LIFE Lanner (Action C.2), this work analyzes the progressive refinement of wild release techniques for 14 young Lanner Falcons *Falco biarmicus feldeggii* from 2020 to the present. The first release followed the classic hacking method: chicks reared in aviaries with their parents were placed in a hack box at 35 days old, with no human contact. At around 60 days, the box was opened, allowing them to fly freely. In the second year, a different approach was used: a chick raised by its parents was placed in the hack box at 25 days of age, promoting a mild familiarity with humans to reduce stress and discourage premature dispersal. The third approach, closest to the ancient falconry hacking techniques, involved hand-rearing chicks to develop dual imprinting - on both humans and conspecifics. This method allows for non-coercive management of key developmental phases, such as flight training, muscle development, spatial orientation and hunting skills. All releases were conducted in protected natural areas suited to the species' ecological needs, under the supervision of trained handlers. Controlled hacking with socially imprinted chicks ensures post-fledging survival: juveniles typically remain in the release area for about 40 days, undertaking exploratory flights but returning voluntarily. Over time, they gradually became independent from the handlers, eventually dispersing and settling in other areas, including various regions of central and southern Italy. These results highlight the importance of adapting release methods to the behavioral ecology of the species and demonstrate that social imprinting can enhance both site fidelity during early independence and long-term survival prospects.

The overlooked importance of post-breeding moult aggregations for Audouin's Gull conservation

Vincenzo Cavaliere[1], Antonio Nicodemo[2], Rosario Balestrieri[3]*

1 Department of Veterinary Medicine and Animal production, University of Naples Federico II, via F. Del Pino n.1, 80137, Napoli

2 ARDEA – Associazione per la Ricerca, la Divulgazione e l'Educazione Ambientale – via Ventilabro, 6 80126 Napoli

3 Stazione Zoologica Anton Dohrn – CRIMAC, Calabria Marine Centre, Dep. of Integrative Marine Ecology, c. Torre Spaccata 87071, Amendolara (CS), Italy

*Presenter's email: nicodemoantonio02@gmail.com

The Audouin's Gull *Ichthyaetus audouinii* is a Mediterranean endemic species classified as Near Threatened and protected under various international and European conservation directives. While conservation efforts have traditionally focused on breeding sites, this study emphasizes the crucial role of the post-breeding moult period in the species' biology and conservation. During this approximately three-month period following reproduction, adult gulls gather in specific coastal areas characterized by low human disturbance and abundant food resources. These moult sites may be as critical to the species' survival as their breeding grounds. Data were collected through remote photography at a key post-breeding moult aggregation site at Lake Fusaro, Italy, between July and October 2023. Over 5,000 digital images were analysed, yielding 163 moult records, including detailed histories for 30 ringed individuals. The study assessed moult progression both at the individual level and within the flock, including unringe d birds. The findings underscore the importance of post-breeding aggregation sites within the species' annual cycle. Conservation strategies should therefore expand beyond breeding site protection to include the preservation of these essential moulting areas. Further research is needed to identify and characterize additional key moult sites throughout the species' range.

ANALYTICAL INDEX

XXIII CIO

Arrivederci

al

2027

XXII Convegno Italiano di Ornitologia
Lecce, 8-12 settembre 2025