INTERNATIONAL CONFERENCE ON PALEARCTIC STEPPE BIRDS

ECOLOGY AND CONSERVATION CHALLENGES

25-29 MARCH 2025

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ABSTRACT´S BOOK

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PREFACE

We are pleased to present the Book of Abstracts of the *International Conference on Palearctic Steppe Birds: Ecology and Conservation Challenges (ICPSB)*, held in Ciudad Real (Spain) from 25 to 29 March 2025. This event marked two decades since the International Symposium on Ecology and Conservation of Steppe-land Birds (Lleida, Spain, 2004), and has become a key forum for advancing the knowledge and conservation of steppe bird species and their habitats across the Palearctic region.

Palearctic steppes are among the most extensive terrestrial ecosystems worldwide, but they are also one of the most threatened habitats due to human activities. The intensification of traditional land uses, along with the development of new ones such as renewable energy facilities, threaten these environments and their bird communities. Identifying the ecological requirements of steppe bird species and the factors that influence their population size and trends, as well as understanding current and future conservation challenges, such as global warming, is crucial for their preservation.

The 2025 edition of ICPSB brought together over 150 participants from nearly 20 countries, including researchers, students, conservation practitioners, and policy-makers. The programme featured five keynote lectures by renowned international researchers, two roundtable discussions on pressing conservation issues, more than 55 oral presentations, over 35 posters, three workshops, and field and cultural excursions. These contributions reflect the richness and diversity of current research on ecology and conservation of steppe birds across the Palearctic region.

Beyond its scientific achievements, the conference fostered a strong sense of community, promoting collaboration and exchange among professionals working across borders to ensure the future of steppe birds. The collective commitment and enthusiasm displayed throughout the conference were a source of inspiration and hope.

The conference was organised by the Research Group on Steppe Birds (GIAE), the Institute for Game and Wildlife Research (IREC, CSIC-UCLM-JCCM) and the University of Castilla-La Mancha (UCLM), with the collaboration of the Steppe Forward Chair. The Organizing Committee would like to thank all contributors and attendees who helped to make this conference a success. We now look forward to continuing this dialogue and scientific cooperation at the next edition of ICPSB, to be held in Mongolia in 2027.

ICPSB 2025 Organizing Committee

April, 2025

Photo group of the participants of the ICPSB 2025.

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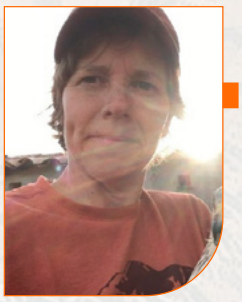

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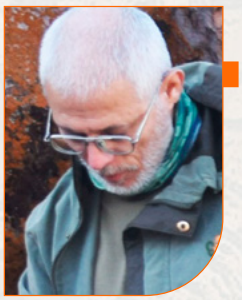

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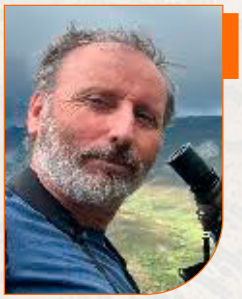

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CONCLUSIONS

We, the Scientific Committee, in this document synthesizes research findings and thematic discussions from this conference, focused on steppe bird ecology and conservation across Palearctic steppes.

Steppe ecosystems support critical bird populations facing severe threats from habitat changes, agricultural intensification, infrastructure development, climate change, and diseases, needing multidisciplinary conservation strategies.

Below, we briefly present the main topics and conclusions grouped by thematic area.

- Population Monitoring and Trends: Robust monitoring frameworks, including citizen science programs and advanced technologies such as passive acoustic surveys and drones, are essential for reliable population estimates. These methods complement traditional surveys, significantly improving spatial coverage and data accuracy. Integrating long-term monitoring data helps identify declining population trends, like the 60% loss of European farmland birds since 1980, highlighting the urgency of targeted conservation efforts.
- Life-history Strategies and Adaptation: Steppe birds exhibit varied adaptive responses to environmental pressures. Lesser kestrels and European rollers adjust breeding timing to warmer springs, but increased frequency of droughts and heatwaves threaten chick survival, notably in kestrels. The Corn Bunting faces reproductive mismatches due to agricultural practices conflicting with its breeding phenology. Similarly, sandgrouse demonstrate resilience through repeated nesting attempts despite high predation-induced nest failure. Understanding these adaptive strategies is critical for effective conservation planning.
- Dynamics and Drivers of Habitat Change: Agricultural intensification and changes in livestock density profoundly impact steppe habitats, reducing biodiversity and triggering significant declines in bird populations. Habitat fragmentation, pesticide exposure, and insufficient protected areas compound these effects. Thus, targeted habitat management practices such as grazing regulation and reducing pesticide use are critical for sustaining viable steppe bird populations.
- Movement Strategies and Migration Patterns: Steppe birds exhibit diverse migration strategies influenced by climatic factors and habitat conditions. Little bustards in Iberia demonstrate partial migrations conditioned by microclimatic refugia. High-resolution GPS tracking illustrates migration corridors and reveals risks associated with infrastructure and habitat change. These findings underscore the necessity of interregional conservation efforts and habitat connectivity.
- Evolutionary and Behavioral Ecology: Research into genotype coexistence and cultural evolution, such as chromosomal inversions in common quails and vocal variations in Dupont's Lark, reveals sophisticated adaptive mechanisms. Advanced biologging techniques enable precise behavior analyses, informing species-specific conservation strategies. Behavioral studies also indicate niche partitioning among sympatric species, highlighting the importance of habitat heterogeneity and management practices to mitigate competitive pressures.
- Impacts of Human Infrastructure: Steppe birds face severe threats from infrastructure expansion, particularly powerlines and photovoltaic plants. Powerlines pose collision risks and habitat displacement, significantly affecting bustard populations. Effective mitigation requires strategic infrastructure placement, development of compensatory measures, and where feasible, burying powerlines despite logistical challenges.
- Conservation Strategies and Policy Implementation: Successful conservation of steppe birds demands integrated strategies combining habitat restoration, management of anthropogenic mortality sources, and adaptive policy measures. Conservation actions, including habitat restoration, translocation projects, and coexistence-based predator control strategies, have demonstrated effectiveness. Additionally, evaluating policy measures such as the EU's Common Agricultural Policy (CAP) highlights the importance of targeted, adaptive agri-environmental schemes that align agricultural practices with ecological requirements. Long-term systematic planning and cross-border collaborations like "Bustards Without Borders" exemplify coordinated efforts essential for achieving conservation goals.

In conclusion, effective steppe bird conservation requires a holistic approach integrating advanced monitoring, adaptive ecological management, informed infrastructure planning, targeted policy measures, and active stakeholder engagement. Continued interdisciplinary research and proactive international collaboration remain imperative to ensure the sustainability and resilience of these vulnerable bird populations.

PLENARY ABSTRACTS

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DYNAMIC LAND USE SHAPES THE BIRD COMMUNITY OF THE EURASIAN STEPPE.

Johannes Kamp
Head of the Conservation Biology Department, University of Göttingen, Germany.

The Eurasian steppes are among the largest grassland biomes globally, stretching from Eastern Ukraine to the Altai mountains. They host large parts of the world populations of some charismatic steppe birds such as Little Bustard, Pallid Harrier, Sociable Lapwing and Black Lark. At the same time, huge populations of farmland birds that are declining all across Europe still thrive in the region. The Eurasian steppes have been formed and maintained by especially dynamic human land use. Traditional grazing systems and livestock numbers collapsed in the early 20th century, and again after the break-up of the Soviet Union in 1991, but are now partly recovering. Grassland was converted to cropland in many areas historically, but economic difficulties in the post-Soviet period resulted in land abandonment over millions of hectares. Land abandonment also triggered carry-on effects, such as an increase in size and area of wildfires. Grazing dynamics also changed with declines and recovery in wild grazers, such as the Saiga antelope, due to variations in the intensity of poaching and conservation management. In my talk, I will summarize twenty years of research on bird communities and on the ecology of selected steppe species across Kazakhstan. I will showcase how post-Soviet and current changes in grazing pressure, cropland abandonment and recultivation as well as fire affect steppe bird occupancy, abundance and live history. I will also illustrate the importance of conditions at wintering and stopover sites for steppe birds. I will conclude with a summary of research priorities, and suggest important areas for cross-Eurasian collaboration.

PLENARY ABSTRACTS

USING PECBMS AND EBBA2 DATA ON STEPPE BIRDS IN EUROPEAN POLICY AND RESEARCH.

Alena Klvaňová

Head of monitoring and research department, Pan-European Common Bird Monitoring Scheme manager, Czech Society for Ornithology and European Bird Census Council, Prague, Czechia.

The main aim of the presentation is to introduce how citizen science data on European bird populations, including the steppe species, have been gathered, analysed, and used in research and policy on a supra-national European level.

Pan-European Common Bird Monitoring Scheme (PECBMS) is one of the core programmes of the European Bird Census Council (EBCC). Its main aim is to use common birds as indicators of the general state of nature using large-scale and long-term monitoring data on changes in European breeding bird populations. Today, the scheme gathers data from 30 European countries and annually produces indices of 170 bird species. The main outputs are the bird indicators, most notably the Farmland Bird Index (FBI). The European Commission has accepted the FBI as one of the sustainable development indicators (SDI), agro-environmental indicators (AEI), and Pan-European Streamlining European Biodiversity (SEBI) indicators. The 39 species in the FBI are habitat specialists inhabiting open countrysides such as farmland, grassland, and steppes. Recently, the EU regulation on nature restoration includes obligations for Member States to achieve an increasing trend at the national level of FBIs by 2030 and thereafter.

In 2022, EBCC started another project, EBBA Live, aiming to update data on species' distributions more frequently, ensure they are harmonised across Europe, and complement the role of atlases such as the European Breeding Bird Atlas (EBBA2). To date, resulting maps are available online, showing the occurrence of 50 farmland bird species based on data from general bird monitoring projects and the new 10 km modelled distribution maps for the post-EBBA2 period 2018-2022. We also aim to assess changes in distribution using monitoring data, but that is more challenging and deserves further development. However, examples of the estimated change in the probability of occurrence between the EBBA2 period (2013-2017) and the EBBA Live Farmland period (2018-2022) will be shown. Some examples of steppe bird trends and changes in distribution will be introduced, such as the steeply declining Little Bustard, which has also experienced a decrease in distribution, or the Greater Short-toed Lark, which has a stable population trend but has also shrunk in distribution.

PLENARY ABSTRACTS

BUSTARDS AND POWERLINES - A MAJOR CONSERVATION CONCERN.

Joao Paulo da Silva
Researcher at the University of Porto, Center in Biodiversity and Genetic Resources. Portugal.

The rising demand for energy and the transition from fossil fuels to renewable sources are driving a significant global hábitats of overhead power line networks. However, these infrastructures can have serious impacts on biodiversity, particularly birds, which hábi risks of collision and electrocution. Bustards – among the most threatened bird groups worldwide – are especially vulnerable to collisions with overhead power lines. Their unique combination of behavioural and morphological traits increases their susceptibility, making these collisions a major cause of non-natural mortality and a significant threat to multiple species. In this talk, I will address the impacts of power hábitats bustards, from collisions to hábitat háb, and explore how this anthropogenic mortality may affect their populations. I will also discuss why bustards are particularly prone to colliding with overhead power lines and why Bird Flight Diverters, designed to make power lines more visible, have not proven to be truly effective. Additionally, I will highlight the importance of careful planning and the role of collision risk maps. Given that current mitigation measures have not been effective in preventing collisions, compensation strategies are necessary when power lines intersect bustard hábitats.

PLENARY ABSTRACTS

THE PLIGHT OF PALEARCTIC BUSTARDS.

Nigel Collar
Research Fellow, BirdLife International, Cambridge uk, and Co-Chair, IUCN Bustard Specialist Group.

All five species of bustard (Otididae) known from the Palaearctic region have suffered significant negative changes in status since 1900 (two of them since 1800). Great Bustard Otis tarda once had a near-continuous range across the region, but now barely survives in remnant populations too disjunct for gene exchange and still subject to relentless hunting, agricultural intensification and powerline mortalities. Little Bustard Tetrax tetrax had a similar semi-continuous range from North Africa to westernmost China, with major population centres in Iberia and Central Asia, but has suffered often unexplained extinctions in many countries and now a catastrophic collapse in Iberia attributable to sweeping agricultural land-use change and again powerlines, while birds in Central Asia have a worrying dependency on a few unprotected key wintering areas. Arabian Bustard Ardeotis arabs was patchily common across Morocco around 1900, but was exterminated by colonial hunting with rifles. African Houbara Chlamydotis undulata has also suffered from foreign (Gulf State) hunters, whose financial and physical autonomy has totally concealed their impact on the species; the single (doubtlessly well-intentioned) compensatory measure of industrial-scale captive breeding only puts wild populations in further jeopardy through genetic swamping or simple replacement. Identical problems afflict Asian Houbara C. macqueenii: its sedentary populations in Arabia have been exterminated by uncontrolled hunting, while its eastern migratory populations face scientifically unscrutinised pressures from uncontrolled hunting, genetic swamping and powerline proliferation. Moreover, all species face catastrophic losses from near-future temperature rises. Their conservation requires revolutions in the management of habitats and land use at larger scales; in the regulation of houbara hunting, to become truly sustainable without massive ex-situ programmes; and in current endeavours at atmospheric CO2 reduction.

PLENARY ABSTRACTS

30 YEARS STUDYING HARRIERS, BUSTARDS AND STONE CURLEWS: NEW KNOWLEDGE AND LESSONS FOR CONSERVATION.

Vincent Bretagnolle
Senior Scientist CNRS, at Centre d'Etudes Biologiques de Chizé.

In this talk, I use 30 years of data collected in SW France, on our study site, the Long-Term Social-Ecological Research (LTSER) Platform "Zone Atelier Plaine & Val de Sèvre". Since 1994 or 1995, monitoring of 2 Harrier species (Montagu's and Hen), Little Bustard and Stone Curlew has been on-going every year, including nest search, breeding biology surveys, capture and marking, and Radio-tracking and GPS monitoring. I will present long-term data on each of the species and aspects of breeding biology, long term trends, research findings and conservation measures implemented and their effects on population size and dynamics. I will argue that monitoring trends is insufficient to implement sound conservation measures, and that a whole system approach, including food availability and landscape, is needed to understand the patterns observed and implement correct and realistic conservation strategies. I will also discuss the importance of long-term studies to detect population changes and their drivers. Lastly, I will advocate that beyond implementing a whole system approach, we need also to involve local stakeholders, typically farmers but also beyond them (children, citizens, policy makers), as both drivers of change and potential solutions.

ORAL ABSTRACTS

ORAL ABSTRACTS

THEMATIC SESSION 1.

POPULATION MONITORING AND TRENDS 1 (METHODS)

821/40. ASSESSING BIRD COMMUNITIES IN MEDITERRANEAN AGRICULTURAL LANDSCAPES THROUGH ACOUSTIC MONITORING: BIRDNET, MERLIN AND ACOUSTIC INDICES.

AUTHORS:

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ABSTRACT

Monitoring biodiversity is essential for its conservation. Traditional methods currently used are fundamental for assessment; however, especially in the case of birds, these methods are labor-intensive, prone to bias, and depend on the observer's experience among other variables. With technological advances, acoustic monitoring has emerged as a promising tool, enabling the automatic, cost-effective collection of data across large areas while avoiding observer bias. From recordings obtained with this procedure, it is possible to: 1) automatically identify recorded bird species using applications like BirdNET and Merlin, and 2) calculate acoustic indices useful for assessing bird biodiversity, providing insights into species richness, abundance, and community composition. This study aims to determine the utility of brief acoustic recordings as monitoring tools for avian fauna in Mediterranean agricultural landscapes dominated by herbaceous crops or olive groves, most often rainfed. From 149 acoustic recordings, each lasting 10 minutes, obtained from ten important steppe bird areas in southern Iberian Peninsula, species lists were generated using BirdNET and Merlin, six acoustic indices (ACI, ADI, AEI, BI, H', and NDSI) were calculated, and the quality of this information was evaluated by comparing it with species inventories obtained from in-situ audio-visual censuses conducted by expert researchers. This work was conducted using raw acoustic recordings as obtained in the field, and on recordings filtered to remove, at least partially, geophonies (wind) and anthropophonies, which are abundant in these open, windy areas. The results show that, although brief acoustic monitoring, in absolute terms, only captures a variable fraction of the total bird biodiversity observed in situ, it can indeed be useful for defining important bird areas and identifying environmental issues that impact the integrity of bird communities in Mediterranean agricultural landscapes.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends, Impact of infrastructures, and conservation strategies and policy mechanisms: Present and future.

ORAL ABSTRACTS

821/41. SPECIFIC MONITORING METHOD FOR THE COMMON QUAIL (COTURNIX COTURNIX) DURING THE BREEDING SEASON.

AUTHORS:

Laguna, E., Sánchez-garcía, C.[1], Pinedo Valero, S.[2], Cañizares, J.[2], Gómez, V.[2], Pinedo, A.[2], Pérez, J.[3], Artázcoz, A.[1], Molina, S.[1], Selva, J.[4], Moral, Á.[5], Llorente, D.[6], Quevedo, P.[6], Rustarazo, C.[6], Briega, C.[6], Sánchez, D.[6], Castillo-contreras, R.[1], Torres, J.[1], Rodríguez- Teijeiro, J.[7], Sánchez Mora, J., Bañez, J., Olmedo, J., Rivas, T., Cuesta, J., Carpintero, D., Lillo García, P.

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ABSTRACT

The common quail is a difficult species to monitor due to its eco-ethological characteristics, social-sexual system and migratory behaviour. It is a very elusive bird whose detection is mainly based on the calls of the males, which are constantly moving in search of females. Yearlings born in early spring can become breeders in the same year, hence population numbers depend on the time period, habitat suitability, and females' occurrence. Using a specific monitoring method developed by researchers from the University of Barcelona, we monitored quails in Spain through the estimation of male density by age class at 18 different study sites during the entire breeding season, from the first detection of quails in each study area until the cereal harvest. This was achieved through detection, capture, and ringing of quails at 10 points separated by 750-1000 meters in each site, every 7 days. During spring-summer of 2023 and 2024, we applied this methodology in the study sites located at provinces covering different areas of Spain: north (León, Palencia, Burgos and Navarra), centre (Cuenca, Toledo and Guadalajara) and south (Ciudad Real, Albacete and Badajoz). In total, we gathered data from over 352 field census days where 2648 quails were detected (7.54±[SD]7.82 quails/census day) and 716 ringed, with an average density of 2.81±3.03 quails/km^2. Higher overall and age class densities were reported in the north than in south and centre areas. Overall and juvenile densities were higher in the study areas above 800 meters. Also, higher juvenile densities were reported in irrigated areas. An opposite temporal pattern was observed among juvenile and adult densities, with an increase in juvenile density across the breeding season. Our results confirm the need to implement specific quail monitoring systems to conserve and manage quail populations.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Keywords: active method, capture, males, ringing, census

ORAL ABSTRACTS

821/74. BIRDNET, A USER-FRIENDLY ACOUSTIC ALGORITHM, COMPLEMENTS TRADITIONAL FIELD CENSUSES FOR DESCRIBING GRASSLAND BIRD COMMUNITIES IN EUROPE.

AUTHORS:

Henry Ramilo, M., Giralt Jonama, D.[1], Pérez Granados, C.[1], Bota Cabau, G.[1], Traba Díaz, J.[2], Cabodevilla Bravo, X.[1], Hass, A.[3], Westphal, C.[3], Hannappel, I.[3], Reitalu, T.[4], Helm, A.[4], Pass, E.[5]

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ABSTRACT

Monitoring grassland bird species is integral in understanding grassland composition and status in order to apply appropriate conservation strategies and management decisions. Traditionally field point-count surveys have been commonly used to monitor birds' communities. However, field censuses are resource-demanding and usually carried out a few times per season. An alternative or complementary option to these surveys could be passive acoustic monitoring. Passive acoustic monitoring has already proven to be cost-effective for monitoring vocally-active species, especially when coupled with automated sound recognition software, such as BirdNET, which allow us to efficiently process large volumes of acoustic data. However, there is a lack of knowledge regarding the ability of BirdNET to monitor open-habitat birds, such as those typical of grasslands or steppes. Here, we aim to assess the use of BirdNET in classifying grassland bird species as a complementary method to point count surveys. We conducted two-point count surveys during the springs of 2022 and 2023 in 32 grasslands (each) in Estonia, Germany and Spain. Automated recording devices were active for one week between both censuses, programmed to record consecutively for 10 minutes from dusk to dawn. On average, BirdNET increased the number of species detected per country by 17% and 23% per grassland . We additionally found a negative and significant relationship ($R^2 = 0.14$ $p < 0.001$) between the number of species added by BirdNET and the number of species detected during the field censuses, which suggest that both methods are complementary. Our findings highlight the ability of BirdNET to complement traditional methods for detecting species' presence. Our results suggest that future research should consider combining traditional and automatic acoustic classification technology methods for a greater understanding of species composition in open-habitat ecosystems.

RELATED TOPICS (UP TO THREE)

- Keywords: Autonomous recording unit; BirdNET; Grasslands; Passive acoustic monitoring; Steppe birds

ORAL ABSTRACTS

821/83. THE STUDY OF THE DISTRIBUTION AND RESOURCES OF THE SAKER FALCON IN MONGOLIA.

AUTHORS:

Damba, I., Damba, I.[1], Galbadrakh, M.[2], Turmunkh, E.[2], Batbold, E.[2]

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(1) Head of Laboratory, Institute of Biology, Mongolian Academy of Sciences, (2) Researcher at Institute of Biology, Mongolian Academy of Sciences

ABSTRACT

The Saker Falcon Falco cherrug is listed as a globally threatened species "Endangered" by the IUCN, regionally "Vulnerable" status within a National bird of Mongolia. Recently population has declined due to the impact of many human activities, including electrocution on power lines, unsustainable capture in the falcon trade, agrochemical impacts, loss degradation of steppes through agricultural intensification, climate change, decline of its main prey species through habitat changes to be particularly severe in the species's central Asian breeding grounds. Surveys are urgently needed to produce more robust and less uncertain population estimates, in particular for China, Russia, and Mongolia. Further research to monitor key populations and to clarify the extent of anthropogenic threats and their effect on population trends is vital. The main goal of this study is to scientifically determine the size and distribution of the saker falcon population and the potential export from Mongolia to foreign countries. Based on habitat modeling, it was determined that the Saker falcon can spread in 706,015 km2 (45%) of the total territory of Mongolia. Saker falcon population in our country is transferred to the total area where it can spread, it has an average of 8,600±630 individuals. About 22% of the total population is young birds. The density of the saker falcon was calculated as 1.22 individuals per 10 km2. Due to the relatively large number of exported (large-bodied, female) saker falcons being exported for many years, the structure of the saker falcon population is naturally unstable, so further research needs to be performed on saker falcon population, distribution, resources, breeding biology, and population structure will be conducted regularly every year during the breeding season in Mongolia.

Keywords: population number, distribution, export

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/110. DRONES AND BIODIVERSITY: IMPACT ON LANZAROTE'S AVIFAUNA.

AUTHORS:

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ABSTRACT

The use of drones offers new opportunities for biodiversity research and conservation but raises concerns about impacts on wildlife, particularly birds. In 2024, the Cabildo of Lanzarote and SEO/BirdLife conducted a study to develop guidelines for drone use in sensitive areas. Experimental flights assessed responses of key bird species, including the Houbara bustard (Chlamydotis undulata), and six other species of interest.

The study, conducted in protected areas such as "Llanos de La Corona" and "Islets of Northern Lanzarote and Famara," used a Mavic 3T drone with altitudes of 60–100 m and minimum distances of 100 m. Bird behaviors were monitored before, during, and after drone interactions, focusing on alertness, camouflage, and flight responses.

Results showed that at altitudes above 100 m, most birds, including the Houbara bustard, exhibited no significant reactions. At 60 m, alert and camouflage behaviors increased, indicating higher disturbance levels. Environmental conditions and habituation also influenced responses.

The findings emphasize the need for minimum distances of 100 m and safe flight altitudes to minimize impacts. While drones are valuable for monitoring, their use requires strict regulations and mitigation measures. Expanding studies to other species and seasons is recommended to develop comprehensive guidelines that ensure biodiversity conservation.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

THEMATIC SESSION 2.

LIFE-HISTORY STRATEGIES

821/16. SURVIVING THE HEAT: CLIMATE CHANGE CHALLENGES FOR STEPPE BIRDS.

AUTHORS:

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ABSTRACT

Steppe birds are generally adapted to hot and arid environments as they inhabit dry grasslands and semi-deserts where temperatures can be high, particularly during the summer. However, the intensification of climate change may challenge their resilience, making it harder for them to cope with more extreme and prolonged heatwaves or altered precipitation patterns. Despite limited data on the effects of climate change on steppe birds, this knowledge is essential for guiding adaptive conservation efforts. This study synthesises research findings on the effects of extreme climatic events and forecasted climate change on two steppe bird species, the lesser kestrel (Falco naumanni) and the European roller (Coracias garrulus). Both species display significantly plasticity in the onset of breeding, showing earlier laying dates in response to warmer and drier springs. However, predicted shifts towards drier and warmer springs may cause a mismatch between the timing of reproduction and food peak availability. Using NDVI (Normalised Difference Vegetation Index) as a surrogate of habitat quality and prey availability around colonies (i.e., higher vegetation biomass indicates higher prey abundance), our findings suggest that extreme climatic events, such as droughts, will likely have a greater impact on lesser kestrel fledging success than gradual temperature increases. Additionally, we investigated the impacts of exposure to high temperatures on survival, mass gain and physiological stress of nestlings in both species. In lesser kestrels, high temperatures significantly increased stress levels, causing 36% mortality from hyperthermia or acute dehydration. Heatwaves also impaired chick development, with potential carry-over effects on post-fledgling survival. In contrast, rollers exhibited greater resilience, with no recorded mortality and recovery from mass losses, suggesting higher thermal tolerance. Overall, our results show that climate change can exacerbate both lethal and sublethal fitness costs for steppe birds, ultimately affecting population dynamics and the long-term survival of these vulnerable species.

RELATED TOPICS (UP TO THREE)

- Climate change

ORAL ABSTRACTS

821/52. CORN BUNTING (EMBERIZA CALANDRA) IN THE ABYSS: DISCREPANCY BETWEEN HABITAT PREFERENCES AND BREEDING SUCCESS.

AUTHORS:

Vögeli, M., Siffert, O.[1], Séchaud, R.[2], Bradley, L.[3], Christen, W.[4], Duplain, J.[5], Mazenauer, J.[6], Lattion, C.[3], Lombardo, L.[7], Longchamp, L.[5], Monod, S.[8], Michler, S.[9], Rothenbühler, B.[10], Winkler, L.[8], Kormann, U.[11]

AFFILIATIONS:

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ABSTRACT

Throughout evolutionary history, avian species traditionally associated with steppe ecosystems have demonstrated remarkable adaptive plasticity. Many steppe birds have successfully colonized agricultural landscapes in Europe and use farmland as a surrogate habitat. However, many of these species have declined drastically, potentially due to a discrepancy between habitat preferences and breeding success. This might also apply to the Corn Bunting (Emberiza calandra), whose Central and Northern European populations have experienced large-scale declines in recent decades. In Switzerland, the Corn Bunting has declined by 80% since the 1980s and is now classified as "critically endangered". Here we compare habitat preferences and reproductive success and determine breeding phenology in the five extant Swiss populations using data from 2023 and 2024. First territorial males sang in mid-March and pairs began to mate in mid-April, whereas fledglings were not detected before mid-May, but then until the end of July. An analysis of 274 territories revealed strong preferences for extensive meadows, fallow land and wildflower areas, financially subsidized as ecological focus areas (60% of territories), whereas only 33% was associated with intensive meadows and crops. Breeding success was significantly higher on ecological focus areas than on intensive meadows and crops. The discrepancy between the available and preferred habitat, and the relationship with the realized breeding success was therefore striking. However, successful broods on the most frequently occupied habitat type, extensive meadows, required additional nest protection measures due to early mowing. Hence, existing agri-environmental measures have positive effects on the Corn Bunting but are not sufficiently adapted to its breeding phenology. Consequently, we propose different measures to save this species from extinction in Switzerland. Our results underscore the importance of ecological focus areas for Corn Bunting conservation in Switzerland, and the importance of spatially targeted agri-environmental schemes for the conservation of steppe birds inhabiting European farmland.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Population monitoring and trends
- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/87. MALARIA-LIKE PARASITES OF EUROPEAN ROLLERS BREEDING IN A SEMI-ARID ZONE.

AUTHORS:

Veiga Neto, J., Veiga Neto, J.[1], Václav, R.[2], Megía-palma, R.[3], Bensch, S.[4], Valera Hernández, F.[5]

AFFILIATIONS:

(1) Department of Conservation Biology and Global Change. Biological Station of Doñana. Seville, (2) Institute of Zoology. Slovak Academy of Sciences. Bratislava, (3) Department of Biodiversity, Ecology and Evolution. Complutense University of Madrid. Madrid., (4) Department of Biology. Lund University. Skåne., (5) Department of Functional and Evolutionary Ecology. Experimental Station of Arid Zones. Almería.

ABSTRACT

In the current context of global change, habitats are undergoing a rapid transformation, affecting host-parasite relationships. Avian-malaria like parasites constitutes an ideal system to study such consequences due to their high prevalence and well-documented biology. However, research has focused primarily on passerines while other bird taxa, such as steppe birds, are seldom investigated. To fill this gap, it is essential to first characterize the patterns of avian malaria parasitism and subsequently examine how habitat perturbations might influence these interactions. We monitored the malaria-like parasite lineages of the transaharian migrant European roller (Coracias garrulus) breeding in a semiarid area in southeastern Spain, which is experiencing substantial habitat alterations due to solar plant expansion. Three species of avian malaria-like parasites have been morphologically described for rollers (Haemoproteus coraciae, Leucocytozoon eurystomi and Leucocytozoon bennetti), but there is only one molecular lineage of H. coraciae described. We surveyed during three years adult rollers (N= 140 samples) to identify the linages present, and explore the prevalence and diversity of malaria-like parasites. We found high prevalence of Haemoproteus (97.8%) and Leucocytozoon (90%) by means of PCR. Smears screening produced similar results for Haemoproteus (98.6%) but not for Leucocytozoon (23.7%). We found nine lineages of Haemoproteus (eight not described), and five lineages of Leucocytozoon (all not described). Coinfections with Haemoproteus and Leucocytozoon were frequent (88%), while coinfections with different Haemoproteus lineages were common (69.11%) and with different Leucocytozoon lineages were scarce (7.94%). We revealed a highly efficient transmission network and high parasite diversity in rollers breeding in semi-arid environments, contrasting with prior studies in extreme habitats. Understanding these parasitic relationships before a significant habitat disruption is crucial for assessing the ecological and evolutionary impact of such changes and allowing to identify effects over steppe birds population dynamics and conservation.

RELATED TOPICS (UP TO THREE)

- Life-history strategies
- Evolutionary and behavioral ecology
- Conservation strategies

ORAL ABSTRACTS

821/96. LOW BREEDING SUCCESS IN TWO DECLINING STEPPE BIRDS REVEALED BY REMOTE TRACKING AND FIELD DATA.

AUTHORS:

Marques Vila Ferraz, G., Pacheco, C.[1], Venâncio, L.[1], Fernández-Tizón, M.[2], Marques, T.[3], Célio Alves, P.[4], Paulo da Silva, J.[3], Mougeot, F.[2]

AFFILIATIONS:

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ABSTRACT

The Iberian Peninsula is an important European stronghold for steppe birds, which are particularly vulnerable to habitat changes primarily driven by agricultural intensification. Despite alarming population declines, key demographic parameters, such as breeding success, remain unknown for most species due to challenges in locating nests and chicks. Assessing reproductive success and the main causes of breeding failure is essential for understanding these declines. Many species, such as sandgrouses, are not only elusive and difficult to survey but also nest on the ground, making them particularly vulnerable to predation and nest destruction during farming activities. Here, we used remote tracking (GPS and accelerometer) and field data to investigate the reproductive biology of the black-bellied (Pterocles orientalis) and pin-tailed sandgrouse (Pterocles alchata) in the Iberian Peninsula.

By combining remote nest detection with fieldwork, we monitored the breeding of both species over four years (2021-2024) in two populations in southwestern Iberia, enhancing our understanding of their breeding success and the variables influencing it. We remotely detected and monitored 97 P. orientalis and 66 P. alchata breeding attempts and conducted fieldwork to check nest contents, determine causes of failure, and assess productivity. Our findings revealed very low hatching success for both species (25% for P. orientalis; 29% for P. alchata), with predation as the main driver of nest failures. Sandgrouse have an extended, 6-month breeding season as an adaptation to high failure rates, producing an average of 3 clutches per year, with some producing up to 5. Additionally, we observed very low productivity (0.52 chicks per female per year for P. orientalis and 0.41 for P. alchata) and a skewed sex ratio favouring males in both species. These results emphasize the need for effective conservation strategies to boost productivity and reverse sandgrouse population declines.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Population monitoring and trends

ORAL ABSTRACTS

821/99. ESTIMATING APPARENT SURVIVAL OF PIN-TAILED-SANDGROUSE (PTEROCLES ALCHATA) THROUGH NON-INVASIVE GENETIC MARK-RECAPTURE.

AUTHORS:

Giralt Jonama, D., Sanz Pérez, A.[1], Godinho, R.[2]

AFFILIATIONS:

(1) Post-doctoral position, (2) Senior researcher.

ABSTRACT

Survival is a key parameter in population dynamics with increasing importance in the conservation strategies of wildlife populations. Survival probability in birds is often estimated by known-fate or live-encounter data obtained through different physical mark-capture-recapture methodologies (bands, GPS devices, etc.). However, for secretive and/or threatened species, non-invasive DNA sampling is gaining popularity to estimate several demographic parameters because may allow a highly accurate individual identification without disturbing the animals and with larger sample sizes than traditional approaches, thus increasing accuracy of population estimates. In this work, we estimate for the first time annual apparent survival of Pin-tailed sandgrouse (Pterocles alchata) males and females with Capture-Recapture from non-invasive genetic samples (faeces and feathers), collected in the Lleida plain (Catalonia, NE Spain) during four consecutive pre-breeding seasons (2021-2024). Our preliminary results confirm a high success rate in the molecular identification of individuals from the faeces of this species and will serve to assess sex and time-dependency on both apparent survival and recapture probability. These results will be useful to better understand the role of survival and the natural and non-natural factors that may be driving the dynamics of this population.

RELATED TOPICS (UP TO THREE)

- Life-history strategies
- Population monitoring and trends

ORAL ABSTRACTS

THEMATIC SESSION 3.

POPULATION MONITORING AND TRENDS 2 (RESULTS)

821/15. POPULATION STATUS AND TRENDS OF THE LITTLE BUSTARD IN ITS EASTERN RANGE.

AUTHOR:

Campeau, L.

ABSTRACT

This presentation summarise the existing data regarding Little Bustard numbers during breeding, migration and wintering over the bird's Eastern range. Introducing published and unpublished data from researchers from Russia, Central Asia and the Middle East, it aims to provide a global estimate for the region by conflating national results. It also highlights the strengths and weaknesses of the various methodologies used over the area. This presentation concludes that the great recovery of the species, which followed the collapse of the Soviet Union when many cultivated steppe areas were abandonned, has started to plateau and even to be reversed, albeit to various degrees. On the one hand, populations at the very Eastern edge of the Little Bustard's range seem to be doing well, with numbers in both breeding (Kazakhstan and Kyrgyzstan) and wintering areas (Uzbekistan and Tajikistan) seeing recent increases. On the opposite, many recovered populations in Russia have started contracting again in the face of a re-intensification of agriculture, a trend seen in the bird's main wintering ground in Azerbaijan, where numbers have been relatively stable or worse over the last decade.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Movement strategies and migration patterns
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems

ORAL ABSTRACTS

821/26. DEMOGRAPHY AND VIABILITY OF A REINFORCED NORTH AFRICAN HOUBARA BUSTARD POPULATION.

AUTHOR:

Hingrat, Y.

ABSTRACT

Conservation translocations are increasingly used to restore declining species, including species from desert and arid ecosystems. However, such ecosystems are more than ever at risk of irremediable degradation and desertification, potentially impeding translocation success. The North African houbara bustard (Chlamydotis undulata undulata) has been declining primarily due to unregulated hunting and poaching. Since 1998, about 180 000 captive bred houbara have been translocated across North Africa to reinforce wild populations and supplement regulated hunting grounds. Long term individual and population monitoring in a managed area in Eastern Morocco revealed the ability of released houbara to survive and breed successfully leading to positive and significant impact of translocations on the population size. However, Integrated Population Models predict that under current management the population is not viable on the long term, mainly due to decrease in survival and productivity rates playing a key role in driving the dynamics of the population. Studies on the relationship between, demographics and habitat suitability (SDM) are pointing at potential limitation in the availability of hight quality habitats, food resources and intrinsic population regulation mechanisms (density dependence). Additionally, in regions already under significant changes, human land use and climate change scenarios forecast a significant niche restriction for the species. All together these results advocate the need to re-evaluate current management in terms of translocation effort, protection and hunting regulation.

RELATED TOPICS (UP TO THREE)

- Demography
- Conservation
- Climate change

ORAL ABSTRACTS

821/49. LONG-TERM CONTINUED DECREASE IN PRODUCTIVITY OF MONTAGÚS HARRIERS (CIRCUS PYGARGUS) ACROSS SPAIN EXPLAINS RECENT TRENDS AND PREDICTS FURTHER DECLINE.

AUTHORS:

Arroyo, B., Pinilla, J.[1]

AFFILIATIONS

(1) SEO/BirdLife, Dos Hermanas, Sevilla

ABSTRACT

The Montagu´s harrier is a raptor characteristic of farmland habitats in Europe. Being a ground nesting bird breeding inside crops, it risks nest and nestling destruction during mechanical harvest operations. Spain holds an important part of the European breeding numbers, but the most recent national census (2017) concluded that the species had declined ca. 25% since the previous census in 2006.

Using information compiled by the Iberian Group of Harriers and provided by 9 regional governments of Spain, totaling more than 20 000 nests monitored in recent decades, we analyze temporal trends in productivity (chicks fledged/breeding pair), success rate (proportion of breeding pairs raising at least one fledgling) and fledged brood size (chicks fledged/successful nest). We report a significant decline in productivity (from more than 2 fledglings/pair in the mid 1990s to less than 1.4 in recent years), associated with an increase in failure rate.

Additionally, using Vortex 10 we implemented two Population Viability Analyses. The first one used the 2006 census data as initial population size. Considering published adult and juvenile survival estimates (from studies in France), and the average productivity observed between 2006 and 2016, the predicted population size in 2017 was ca. 28% lower, consistent with the census data that year. Another PVA considering the 2017 census data as initial population size, the same adult and juvenile survival estimates, and the average productivity observed between 2017 and 2023 predicted a 57% population decline by 2035 (18 years or three generations). This implies that the species could be considered "in danger" according to UICN criteria.

We highlight the conservation management implications of these results.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Conservation strategies and policy mechanisms: Present and futur

ORAL ABSTRACTS

821/56. SIGNIFICANT DECLINE OF THE HOUBARA BUSTARD IN THE CANARY ISLANDS.

AUTHORS:

Ucero, A., Alonso López, J.[1], Palacín Moya, C.[2], Abril Colón, I.[3], Álvarez Martínez, J.[4]

AFFILIATIONS

(1) Profesor de investigación. Museo Nacional de Ciencias Naturales. Madrid, (2) Doctor. Museo Nacional de Ciencias Naturales. Madrid, (3) Doctora. Centro de Magisterio La Inmaculada. Granada, (4) Investigador Postdoctoral. Instituto Mixto de Investigación en Biodiversidasd. Asturias

ABSTRACT

Species' declines are caused by a combination of factors that affect survival and/or breeding success. We studied the effects of a set of environmental and anthropogenic variables on the disappearance of Canarian Houbara Bustards Chlamydotis undulata fuertaventurae on Fuerte ventura (Canary Islands), once the main stronghold of this endangered bird. Of 83 male display sites detected in 1997–1998, only 29 remained occupied in 2020–2021 (a 65% decrease in only 23 years). We compared habitat quality, density of conspecifics, other steppe birds and crows, presence of human infrastructure, and degree of environmental protection between these 29 extant sites and the 54 extinct sites using univariate analyses and generalised linear models (GLMs). The most influential variable in the abandonment of display sites was the Normalised Difference Vegetation Index (NDVI), an indicator of green vegetation productivity, which suggests a strong effect of habitat aridification due to climate change on the population's extinction process. Powerline density was the second most important factor. This suggests that houbaras have survived where a greater abundance of food resources has enabled a higher breeding success, and where powerline fatalities have caused lower mortality over the years. Higher densities of houbaras, and other steppe birds and crows at extant display sites confirmed the better habitat quality in these areas. Extant display sites, located generally in protected areas, also had lower densities of human infrastructure (e.g. buildings, roads). We discuss the conservation implications of these results and provide management recommendations for this endangered subspecies.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Impact of human infrastructures

ORAL ABSTRACTS

821/66. STATUS AND MIGRATION THE EASTERN GREAT BUSTARD POPULATION BREEDING IN THE UVS NUUR BASIN OF WESTERN MONGOLIA.

AUTHORS:

Purev-Ochir, G.[1], Dieuleveut, T.[2], Chorgaar, S.[3], Gungaa, A.[4], Hingrat, Y.[5]

AFFILIATIONS

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ABSTRACT

The Great Bustard (Otis tarda) recently listed as Endangered under criteria A3cd+4cd and regionally Vulnerable, comprises two subspecies, the Western GB (Otis tarda tarda) and the Eastern GB (Otis tarda dybowskii). The Eastern GB breeds in Mongolia, Russia, and north-east China. In Mongolia, while the status, ecology and migratory behavior of northern and eastern populations have been partially studied, the western population breeding in the Uvs Lake Basin (UNESCO World Heritage and Ramsar site) remains poorly documented. Here we report preliminary results of spring and fall population surveys and satellite tracking of 4 individuals. Spring counts were conducted over an area of 2900 km2 in the northern transborder steppe lands across Mongolia and Tuva Republic of Russia. We identified two main breeding areas totaling about 185 bustards. Fall counts, conducted in croplands of the south-eastern plains of the basin (Barunturun), revealed post-breeding and premigration aggregations of adults and juveniles of up to 120 individuals. Tracking data showed that bustards departed for migration mid-November, travelling up to 2000 km to winter south of the Yellow River in China. This first study of the Eastern Great Bustard population in the Uvs Lake basin highlighted the importance of the area for the subspecies, offering suitable breeding sites in less populated protected areas in the north and premigration foraging sites in croplands in the east. More surveys and tracking are needed to assess migratory behaviors of individuals, monitor the trend of the populations and identify the threats along the annual cycle of this unique population.

RELATED TOPICS (UP TO THREE)

- subspecies, population, migration, Asia

ORAL ABSTRACTS

THEMATIC SESSION 4.

DYNAMICS AND DRIVERS OF HABITAT CHANGE IN STEPPE AND PSEUDO-STEPPE ECOSYSTEMS

821/11. FUNGICIDE EXPOSURE IN DECLINING IBERIAN STEPPE BIRDS.

AUTHORS:

Mougeot, F., Fernandez-vizcaino, E.[1], Cabodevilla Bravo, X.[2], Fernández-Tizón, M.[3], Ortiz-santaliestra, M.[4]

AFFILIATIONS:

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ABSTRACT

Steppe birds are declining at alarming rates, mainly because of land use changes and agricultural intensification. The use of pesticide-treated seeds is a common practice in modern agriculture and poses new threats. Coating seeds with pesticides allows to reduce the amount of chemicals used, but the ingestion of pesticide treated seeds by granivorous animals can have important toxic effects. We characterized exposure to pesticides used as seed treatment in four species of declining steppe birds (two bustards and two sandgrouse species) in central Spain, using three complementary approaches: i) detection of pesticides in faeces collected during the winter cereal sowing season (197 samples collected over 2 years), ii) diet analyses using DNA extracted from faeces and metabarcoding, to quantify the importance of crop plant consumption; and iii) GPS data to study bird movements and habitat use (n=14 sandgrouse). During winter cereal sowing, cereal crop consumption increased in all study species. Screening faeces for pesticides, we detected recent exposure to triazole fungicides in great bustard (26%, n=42), pin-tailed sandgrouse (20%, n=90) and black-bellied sandgrouse (15%, n=39), but not in little bustard (n=26), which consumes leaves rather than seeds. GPS data showed home range shifts of sandgrouse (from semi-natural habitats to agricultural habitats) that coincided with winter cereal sowing times. All the results point to a high risk of pesticide coated seed consumption by granivorous sandgrouse and great bustards during cereal sowing, with potential sub-lethal effects that can adversely affect their survival and future reproduction.

RELATED TOPICS (UP TO THREE)

- 2. Life-history strategies
- 8. Conservation strategies and policy mechanisms: Present and future
- 4. Movement strategies and migration patterns

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GIAE Grupo de Investigación en Aves Esteparias
Organizers: Universidad de Castilla-La Mancha · CSIC · irec
Supporters: CÁTEDRA STEPPE FORWARD

ORAL ABSTRACTS

821/13. DYNAMIC OCCUPANCY MODELS AND CITIZEN SCIENCE REVEAL STEPPE BIRDS RANGE DYNAMICS AND PRIORITY CONSERVATION AREAS.

AUTHORS:

Contreras Martín, R., Fandos Guzmán, G.[1]

AFFILIATIONS:

(1) Profesor ayudante doctor. Departamento de Biodiversidad, Ecología y Evolución, UCM. Madrid

ABSTRACT

Steppe birds are one of the most threatened bird communities in Europe due to the accelerated process of land-use change currently taking place. Specifically, their conservation is a priority in Spain, a country that harbors a large portion of the populations of these species. It is essential to analyze in detail their distribution dynamics and main threats to implement effective conservation measures. In this study, we explore the usefulness of citizen science and its integration with dynamic occupancy models to estimate how the probability of occupancy of a species changes in a given area over time, considering both colonization and extinction, as well as imperfect detection. Finally, we compare the distribution predictions for steppe birds with protected areas and high-impact zones due to renewable energies –specifically photovoltaic energy–, thus allowing us to prioritize the most valuable areas for their conservation. We found a decline in the potential distribution for steppe birds over time. Additionally, we identified areas with high steppe bird richness and a high degree of overlap with threats, which also lack any protection, making them areas where conservation measures should be maximized for this highly threatened group of birds.

Keywords: citizen science, conservation areas, dynamic occupancy models, renewable energy, steppe birds

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends.
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems.
- Impact of human infrastructures.

ORAL ABSTRACTS

821/63. HABITAT STRUCTURE AND LANDSCAPE COMPOSITION DETERMINE THE OCCURRENCE OF STEPPE BIRDS IN NATURAL GRASSLANDS AND SHRUBLANDS.

AUTHORS:

Cabodevilla Bravo, X., Bota Cabau, G.[1], Traba Díaz, J.[2], Pérez Granados, C.[1], Henry Ramilo, M.[1], Giralt Jonama, D.[1]

AFFILIATIONS:

(1) Ctr. de Ciència i Tecnologia Forestal de Catalunya, (2) Universidad Autónoma de Madrid

ABSTRACT

Grasslands and shrublands are crucial for steppe bird species, especially when located within an agricultural landscape, providing them with shelter, breeding sites and food. However, these habitats are disappearing as a consequence of agriculture intensification and the abandonment of extensive livestock, leading to habitat fragmentation and loss of connectivity. In this work we assess the importance of both local (patch size and shrub cover) and landscape characteristics (connectivity and proportion of fallows in the surroundings) in the occurrence of various steppe bird species in grasslands and shrublands within an agricultural matrix dominated by cereal crops of the Lleida plain (NE Spain). In order to identify the presence of birds at each sampling site, we conducted two point counts during the springs of each year (2022 and 2023) in 32 plots of 1 to 10 ha. Additionally, we did one week of passive acoustic monitoring between both censuses (recordings were made around dawn and analysed using BirdNET for species identification). We modelled the occurrence of 13 species typical of open habitats and steppes using a Bayesian framework, combining data from both surveys. Our results showed that the response is species-specific, and in most cases the occurrence was more conditioned by the landscape composition than by local scale features. The occurrence of most species (61,5%) was positively related to the amount of grasslands and shrublands (connectivity) and of fallows in the surrounding area. Moreover, we also found that at a local scale, patch size tended to have a positive effect in most of the species (46%), whereas, for some species, the abundance of shrubs larger than 50 cm affected negatively their presence. Therefore, our results provide evidence that isolated patches of grasslands and shrublands are not as suitable for steppe birds, as those with good connectivity and nearby fallows.

RELATED TOPICS (UP TO THREE)

- Topic 5
- Topic 8

ORAL ABSTRACTS

821/76. CONTRACTIONS IN THE DISTRIBUTION OF FARMLAND AND STEPPE BIRD SPECIES IN SPAIN IN RELATION TO AGRICULTURE INTENSIFICATION.

AUTHORS:

Chamizo Hermosilla, D., Seoane Pinilla, J.[1], Morales Prieto, M.[2], Tarjuelo, R.[3]

AFFILIATIONS:

(1) Profesor Titular. Universidad Autónoma de Madrid., (2) Catedrático. Universidad Autónoma de Madrid., (3) Investigadora postdoctoral. Museo Nacional de Ciencias Naturales.

ABSTRACT

Farmland birds linked to open agricultural environments, particularly steppe birds, have experienced significant declines for decades. These declines are due to changes in the management and surface area of different agricultural land uses, driven by agricultural intensification. These changes have reduced both the availability and quality of habitats for these species.

To determine the relationship between agricultural management and changes in bird distribution at the peninsular scale, we evaluated how various agricultural management variables relate to changes in species richness distribution patterns. This includes both farmland birds and strictly steppe birds, as well as changes in the distribution of some species of conservation interest between Atlas II (1998-2002) and Atlas III (2014-2018) of Breeding Birds of Spain.

Our models showed a pronounced decline in the richness of all studied groups of species between the two periods, with a negative relationship to agricultural yields and fallow areas, and a positive relationship to arable crops. Other land use variables showed fewer uniform effects.

These results suggest that changes in land use and crop management to increase yields in cereal agroecosystems, to which steppe birds are closely linked in Spain and Europe, have contributed to a decrease in the richness and have promoted contractions in the distribution ranges of birds occupying cereal agricultural environments at the peninsular scale.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends.
- Movement strategies and migration patterns.
- Impact of human infrastructures.

ORAL ABSTRACTS

821/119. EFFECTS OF FARMING SPECIALISATION ON STEPPE BIRDS IN SOUTHERN PORTUGAL.

AUTHORS:

Santana, J., Leitao, P., Flores Ribeiro, P., Beja, P., Lomba, A., Pedroso, R., Morgado, R., Martins, R., Catry, I., Marques, T., Ferraira Moreira, F.

ABSTRACT

The benefits of low-intensity mixed livestock-crop farming systems for Mediterranean farmland biodiversity have been widely documented. However, little is known about the effects of farming specialisation, even though the European Union's Common Agricultural Policy (CAP) has promoted the replacement of mixed systems by specialised livestock and crop systems. We investigated how specialisation affects birds in the Mediterranean steppes of southern Portugal, by analysing spatial associations between farming systems, land uses, and birds' species richness and occurrence. We found a dominant landscape gradient contrasting specialisation in either sheep or cattle production. The sheep farming system was positively related to the richness of woodland/shrubland-related species, and the occurrence of Thekla lark/ crested larks (Galerida thecklae/ cristata, hereafter Galerida larks) and calandra lark (Melanocorypha calandra), while the cattle system was negatively related to these species. The specialised crop system, when associated with olive groves (< 10% of the area), was negatively related to fallows-related steppe bird species, calandra lark and greater short-toed lark (Calandrella brachydactyla) and positively so to overall species richness and that of woodland/ shrubland-related species. Land uses had strong effects on birds, regardless of the farming systems they were embedded in. Fodders were positively related to woodland/shrubland- and cereal-related bird species, corn bunting (Emberiza calandra) and zitting cisticola (Cisticola juncidis). Rainfed grain cereals were positively related to cereal-related bird species, zitting cisticola and common quail (Coturnix coturnix). Pastures were positively associated with fallows- and ploughed-related bird species, calandra lark, little bustard (Tetrax tetrax), and Galerida larks. Results suggest that programs for steppe bird conservation should consider both farming systems and land uses. CAP should promote diversified farming systems with reduced livestock densities along with high-quality habitats for steppe birds like pastures, fallows, rainfed grain cereals and semi-natural features.

RELATED TOPICS (UP TO THREE)

- Agricultural practices; Farming systems specialisation; Land uses

ORAL ABSTRACTS

THEMATIC SESSION 5.

MOVEMENT STRATEGIES AND MIGRATION PATTERNS

821/55. STONE-CURLEWS SHOW A REMARKABLE VARIABILITY IN MOVEMENT PATTERNS: A CASE STUDY IN NORTHERN MOROCCO.

AUTHORS:

Hingrat, Y.[1], Cerritelli, G., Azar, J.[2], Baratti, M.[3], Lesobre, L.[4], Giunchi, D.[5]

AFFILIATIONS:

(1) Research Manager. Reneco International Wildlife Consultants. United Arab Emirates, (2) Project Manager. Reneco International Wildlife Consultants. United Arab Emirates, (3) Researcher. Italian National Research Council. Italy, (4) Head of Conservation Genetics. Reneco International Wildlife Consultants. United Arab Emirates, (5) Researcher. University of Pisa. Italy

ABSTRACT

Basing on their life stages and environmental conditions, birds may exhibit different movement strategies. Several populations of the Eurasian Stone-curlew (Burhinus oedicnemus) in the Mediterranean region are partially migratory with the proportion of migrant individuals varying widely even among nearby populations. Understanding the factors behind this variability is challenging due to limited tracking data across the species' distribution range, particularly for populations at lower latitudes, where we might expect a higher number of sedentary individuals. This study examines movement strategies within a Moroccan Eurasian Stone-curlew population. Satellite tracking data from 38 individuals captured in North Morocco where analyzed, with each bird tracked on average 318 days. Data was analyzed using Hidden-Markov Models to categorize each fix into short or long-range movement and by fitting nonlinear mixed-effects models to Net Square Displacement to identify distinct movement patterns. Results showed that 20% of tracked individuals were year-round resident, while the majority exhibited various migration patterns. Among the migratory birds, two patterns emerged: those travelling shorter distances (< 700 km) showed variable movement timing and patterns, while long-distance migrants (> 1400 km) demonstrated consistent movement patterns moving southward to wintering sites, reaching as far as Mauritania, Senegal and Mali. After completing autumn migration, some stone-curlews stayed at one wintering site (n = 16), while others moved between 2-5 sites, up to 257 km apart. These findings suggest that variability in migratory behaviour persists, with migration remaining the predominant choice even in lower latitude populations. Moreover, Northern Morocco has been revealed as an important area, hosting both a breeding population and a wintering one, with a mixture of stone-curlews from both Moroccan and European populations. These results have important implications for managing the species at appropriate scales and for understanding the environmental factors shaping its migratory behavior.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

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GIAE Grupo de Investigación en Aves Esteparias

Organizers: Universidad de Castilla-La Mancha · CSIC · irec

Supporters: CÁTEDRA STEPPE FORWARD

ORAL ABSTRACTS

821/69. MOVEMENT ECOLOGY OF LITTLE BUSTARDS (TETRAX TETRAX): MIGRATION STRATEGIES, CONNECTIVITY AND CORRIDOR FEATURES ACROSS THE IBERIAN PENINSULA.

AUTHORS:

Morales Prieto, M.[1], González del Portillo, D., Arroyo, B.[2], García de la Morena, E.[3], Bota Cabau, G.[4], Silva, J.[5], Marques, T.[5]

AFFILIATIONS:

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ABSTRACT

The study of movement ecology is crucial for understanding the factors and pressures affecting migratory species, which often lead to interindividual differences in migratory strategy. We studied the migratory ecology of little bustard, a steppe bird that has suffered a sharp decline, mainly due to agricultural intensification. Using 105 birds tagged across most of the main Iberian regions where the species is present (Alentejo, Extremadura, Ebro Valley, Northern Plateau, Southern Plateau and Guadalquivir Valley), we analysed the ratio of migratory and resident birds in each population, and connectivity during summer, winter and prenuptial periods.

Additionally, we described migration features like length, duration and daily timing. Using Brownian bridge kernels, we delineated the species' Iberian migratory corridors, and with Step Selection Functions, we identified their main topographic and land-use features. Our results corroborate that little bustards are partial migrants, with proportions varying between populations: Alentejo (94.74%) and Northern Plateau (93.75%) had the highest proportion of migrants, followed by Guadalquivir Valley (81.82%), Extremadura (65.38%), Southern Plateau (55.56%) and Ebro Valley (25.93%). Migratory connectivity varied between periods: prenuptial and summer migrations showed a trend to move northwards, while birds move southwards for winter.

From the 253 migrations analyzed, we found three routes: one corridor connecting the Northern Plateau with the Southern Plateau and Extremadura, another one connecting the Northern Plateau, Extremadura, Alentejo and Guadalquivir Valley, and the last one within the Ebro Valley, and between the Ebro Valley and the Southern Plateau. Finally, we found that little bustards migrate at night through areas dominated by herbaceous cover (avoiding tree-covered land and water bodies) and follow areas with low elevation and terrain roughness. Our results highlight the importance of developing an inter-regional conservation strategy to protect the breeding and wintering quarters, as well as corridors, thus supporting metapopulation viability.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

ORAL ABSTRACTS

821/88. FACTORS AFFECTING SURVIVAL OF GPS TAGGED STEPPE LAND BIRDS.

AUTHORS:

Marques, T., Paulo da Silva, J.[1], Arroyo, B.[2], Benítez, A.[3], Berger-geiger, B.[4], Bota Cabau, G.[5], Faria, N.[6], Marques Vila Ferraz, G.[1], Gameiro, J.[1], Giralt Jonama, D.[5], Martín, C.[7], Morales Prieto, M.[8], Mougeot, F.[2], Pérez-garcía, J.[9], Pacheco, C.[1], González del Portillo, D.[8], Sánchez García, A.[10], Palacios González, M.[10], Valerio, F.[1], Mañosa, S.[11]

AFFILIATIONS:

(1) BIOPOLIS | CIBIO. University of Porto. Portugal., (2) Instituto de Investigación en Recursos Cinegéticos. Ciudad Real, Spain., (3) Department of Biogeography and Global Change, Museo Nacional de Ciencias Naturales (BGC-MNCN-CSIC),, (4) University of Konstanz, Germany., (5) Centre de Ciència i Tecnologia Forestal de Catalunya, Spain., (6) InnovPlantProtect. Elvas, Portugal., (7) Department of Biodiversity, Ecology and Evolution, Complutense University of Madrid, Spain., (8) Terrestrial Ecology Group (TEG). Department of Ecology. Autónoma University of Madrid, Spain., (9) Ecology Area, Dpt. Applied Biology, University Miguel Hernández of Elche. Spain., (10) Junta de Extremadura, Spain., (11) Departament de Biologia Evolutiva, Ecologia i Ciències Ambientals, Universitat de Barcelona, Spain.

ABSTRACT

GPS tracking technologies have become increasingly prevalent in ornithological research, providing valuable insights into bird ecology and supporting conservation efforts. These devices come in various designs, varying in weight, size, colors and format. Selecting an appropriate transmitter is crucial for the well-being of tagged individuals and successful data collection. However, while GPS tracking enhances our ecological understanding, it also presents risks that must be carefully evaluated to avoid compromising the birds' survival capacity.

This study focuses on the potential adverse effects associated with the use of GPS transmitters in non-passerine steppe birds, a group of species described as sensitive or highly sensitive to capture and manipulation. In recent years, remote tracking technology has been increasingly applied to steppe birds in the Iberian Peninsula, providing an extensive dataset that enables to comprehensively assess the potential impact of this technology on bird survival.

We collected data from 2000 to 2024 on more than 800 individual birds from five steppe species: the little bustard (Tetrax tetrax), Montagu's harrier (Circus pygargus), European stone curlew (Burhinus oedicnemus), black-bellied sandgrouse (Pterocles orientalis), and pin-tailed sandgrouse (Pterocles alchata). These threatened species vary in body size, sexual dimorphism, migratory patterns, and feeding and reproductive strategies, which may influence their response to tracking devices. Birds were tagged with a variety of tracking devices that varied both within and between species, differing in technology, manufacturer, model, size, color and reflectance. Transmitter weights ranged from 1% to 6% of the birds' body weight.

Cox proportional hazards regression models were used to test the variation of survival in relation to the above-mentioned variables, including the proportion of logger weight in relation to birds' body weight. Our results may provide valuable recommendations to reduce the potential impacts of remote tracking technologies on the survival of steppe birds and other species.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

ORAL ABSTRACTS

821/112. MICROCLIMATE REFUGIA AVAILABILITY SHAPES ENVIRONMENTAL NICHES AND PREDICTS MOVEMENT STRATEGIES OF LITTLE BUSTARDS.

AUTHORS:

Franco, A., Ramos, R., Zalewska, K., Gilroy, J., Paulo da Silva, J.

ABSTRACT

Understanding species' environmental niches is crucial for predicting biodiversity responses to climate change and identifying areas where environmental suitability may decline. However, these niches are often described at coarse spatial and temporal scales, which lack consideration for the variability in conditions that individuals experience within populations. Individuals inhabiting different sites may differ in their ability to access microclimate refugia or adopt various movement strategies to avoid unsuitable conditions. This individual variability is poorly understood but could be key to assessing species' capacity to adapt to climate change.

We used an 11-year satellite tracking dataset alongside high-resolution habitat and climate data to understand the environmental niche of the endangered little bustard (Tetrax tetrax) at the warm edge of its range in Southern Europe. Our study focused on both breeding and post-breeding seasons, aiming to determine if local conditions experienced during breeding could predict individual movement strategies in the post-breeding season. We also explored whether the distance travelled influenced seasonal niche dissimilarity.

Our findings showed that little bustards in breeding areas with limited microclimate refugia were more likely to travel longer distances to their post-breeding sites. Migratory individuals maintained similar environmental niches across seasons, while resident birds and short-distance migrants displayed a "niche switching" strategy. Temperature and microclimate refugia availability during the breeding season predicted individual differences in migratory behaviour and environmental niche tracking. As global warming leads to increasing temperatures and reduces microclimate refugia, little bustards may be forced to migrate earlier and travel longer distances after breeding. These insights can inform conservation strategies for little bustards and other endangered grassland bird species.

RELATED TOPICS (UP TO THREE)

ORAL ABSTRACTS

821/123. POST-BREEDING DISPERSAL PATTERNS AND ECOLOGICAL NICHE MODELLING OF LESSER KESTREL IN THE IBERIAN PENINSULA.

AUTHORS:

Hernández Cabello, J.[1], Rodríguez-moreno, B.[2], Morales Prieto, M.[3], Garcés-toledano, F.[2], Martínez-dalmau, J.[2], Olea, P.[3]

AFFILIATIONS:

(1) Universidad Autónoma de Madrid (UAM), (2) Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat (GREFA), (3) Departamento de Ecología y Centro de Investigación en Biodiversidad y Cambio Global (CIBC), Universidad Autónoma de Madrid (UAM)

ABSTRACT

The post-breeding period is a crucial phase for migratory birds but remains understudied despite its ecological significance (energy replenishment after the reproductive effort, molting, building fat reserves before migration). During this phase, individuals move outside their breeding areas in a dispersive phenomenon known as pre-migration, which seems particularly frequent in birds from steppe environments, such as the endangered lesser kestrel (Falco naumanni). This study analyzes the patterns of 76 pre-migratory dispersions of 54 adult lesser kestrels tracked with GPS. Additionally, using dynamic Brownian Bridge Movement Models (dBBMM) to estimate the individuals' space use (Utilization Distributions, UD) each year, we performed an ecological niche modeling using environmental variables at a landscape scale through a hierarchical generalized additive model (HGAM). The results show a high diversity of dispersal strategies among individuals from different regions of origin and site fidelity during successive years. No significant differences between the movements of males and females were observed. The mapping of space use reveals two major corridors (North-East and Western) and a large number of areas of pre-migratory stay scattered across much of the Iberian Peninsula. Our niche model indicates a lower use of irrigated crop areas and with high precipitation, as well as a greater use of climatically stable areas. The findings highlight the complex relationship of this phenomenon with the exploitation of trophic resources, which is vital in this phase previous to fall migration, and the urgent need to develop interregional action plans that consider these corridors and pre-migratory areas for the conservation of the lesser kestrel.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Movement strategies and migration patterns

ORAL ABSTRACTS

THEMATIC SESSION 6.

EVOLUTIONARY AND BEHAVIORAL ECOLOGY OF STEPPE BIRDS 1

821/24. COEXISTENCE OF TWO DIVERGING LINEAGES OF COMMON QUAILS IN SOUTHERN SPAIN.

AUTHORS:

Vinagre Izquierdo, C., Sanchez-donoso, I.[1], Rodríguez-teijeiro, J.[2], Vilà, C.[3]

AFFILIATIONS:

(1) Posdoctoral Researcher, Conservation and Evolutionary Genetics Group, Estación Biológica de Doñana., (2) Professor Departament de Biologia Evolutiva, Universitat de Barcelona., (3) Principal Investigators. Conservation and Evolutionary Genetics Group, Estación Biológica de Doñana.

ABSTRACT

Chromosomal inversions play a vital role in species diversification and adaptation by limiting recombination and maintaining adaptive gene combinations. A large chromosomal inversion was previously identified in common quails (Coturnix coturnix) and it is associated with differences in body size, migratory behavior and pigmentation among karyotypes. This study explores the phenology and coexistence of three karyotypes–homozygotes for the standard chromosome (AA), heterozygotes (AB), and homozygotes for the inversion (BB)–within the same region in southern Iberia, specifically in and around Doñana National Park. Through year-round sampling, we investigated (a) the frequency and seasonal patterns of karyotypes in wild quail populations, (b) the relationship between the inversion and phenotypic diversity in morphology, migration, and pigmentation, and (c) the mechanisms supporting genotype coexistence. Results revealed a persistence of all three karyotypes across seasons, with an AB predominance and fewer homozygotes for the inversion (BB) than expected under equilibrium. Consistent with previous research, we found that the inversion was significantly associated with phenotypic traits like body mass, wing shape, and coloration. Stable isotope analysis further revealed distinct carbon (d13C) and nitrogen (d15N) values between AA, AB, and BB individuals, with AA differing from BB and AB quails in migratory behavior and diet. These results suggest that divergences between quails with and without the inversion go beyond migration, potentially involving dietary differences within the same habitat. This divergence may explain the stable coexistence of the three karyotypes and hints at an emerging separation between two lineages, with AA quails adapting a unique feeding strategy. These findings highlight the importance of chromosomal inversions in sustaining genetic diversity and supporting adaptive strategies in steppe birds, even amid ongoing gene flow and environmental pressures.

RELATED TOPICS (UP TO THREE)

- Evolutionary and Behavioral Ecology of Steppe Birds, Movement Strategies and Migration Patterns and Life-History Strategies

ORAL ABSTRACTS

821/25. CULTURAL EVOLUTION AND CHANGES IN THE SONG OF THE DUPONT'S LARK (CHERSOPHILUS DUPONTI) OVER TIME AND SPACE.

AUTHORS:

Alonso Moya, C., Traba Díaz, J.[1], Bota Cabau, G.[2], Lahoz-monfort, J.[3], Laiolo, P.[4], Méndez, M.[5], Serrano, D.[6], Tella, J.[6], Vögeli, M.[7], Pérez Granados, C.[8]

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(1) Terrestrial Ecology Group & Centro de Investigación en Biodiversidad y Cambio Global, Madrid, (2) Forest Science and Technology Center of Catalonia, Solsona, (3) Instituto Pirenaico de Ecología, Jaca, (4) Instituto Mixto de Investigación en Biodiversidad, Mieres, (5) iDiv, Leipzig & Martin Luther University Halle-Wittenberg, Halle, (6) Departamento de Biología de la Conservación y Cambio Global EBD-CSIC, Sevilla, (7) Swiss Ornithological Institute, Sempach, (8) Departamento de Ecología, Universidad de Alicante, Alicante

ABSTRACT

Learned vocalizations on birds often vary across time and space, providing critical evidence for the study of cultural evolution in animals. However, our current knowledge on this process is very limited, being nonexistent for steppe passerines. This study focuses on analysing the cultural evolution of the endangered Dupont's Lark (Chersophilus duponti) by comparing recordings of > 200 males from 2004-2006 and 2024 at 19 localities in the Ebro Valley. Population size was also estimated in both periods at each locality. We compared changes in four parameters of the species' vocal behaviour: i) individual and population song repertoire size, ii) persistence of song types within localities, iii) the patterns of song sharing (i.e. % of song types shared among males) over distance, and iv) the relationship between individual and population song repertoire with population size, and its shift over time. Song types varied more over time than over space, so that song types' turnover was larger than variation in repertoire size or song sharing over distance. We found a reduced proportion of similar song types shared in both time periods (range 5-40%, mean 16%). In contrast, the individual song repertoire size and the patterns of song sharing over geographic distance, a parameter related to landscape configuration, were more similar between both periods, with only neighbouring males sharing a high proportion of song types. Interestingly, the relationships between individual and population song repertoires and population size were also slightly different in the two periods, likely influenced by the recent extinction of the six smallest populations monitored in 2004-2006. Our study contributes to the understanding of cultural evolution in a resident and patchily distributed steppe passerine and highlights the complex role of vocal culture evolution and how different components of song behaviour may vary differently over time and space.

RELATED TOPICS (UP TO THREE)

- Evolutionary/behavioral ecology
- Population monitoring/trends

ORAL ABSTRACTS

821/73. AN ACCELEROMETRY BASED MODEL TO IDENTIFY THE BEHAVIOURS OF THE LITTLE BUSTARD.

AUTHORS:

Revilla-Martín, N., Paulo da Silva, J.[1], Mougeot, F.[2], Morales Prieto, M.[3], Marques, T.[1], Mañosa, S.[4], Giralt Jonama, D.[5], Bretagnolle, V.[6], Bota Cabau, G.[5], Arroyo, B.[7], Bravo Párraga, C.[8]

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ABSTRACT

Understanding animal ecology and conservation needs requires knowing what animals do in space and time. Tracking devices (e.g. GPS) allow to study with great detail space use, but we often lack information regarding what animals do. Recent advancements in biologging, particularly accelerometry, allow to fill this knowledge gap. In this work, we used accelerometry and machine learning models to classify behaviors in little bustards (Tetrax tetrax), a sexually dimorphic species with sex-specific reproductive roles and declining populations due to habitat loss and degradation. Models were developed and validated with data from captive individuals to identify key behaviors: standing, lying, vigilance, locomotion, foraging, and male courtship. We tested different sampling frequencies, balancing methods, and data-splitting approaches, to account for factors such as interindividual variation and sample size. Our results revealed that models built with data sampled at 10 Hz performed similarly to those at 20 Hz, supporting lower frequency sampling in future applications. Male models, achieving precision and sensitivity above 0.87 in random-split tests, outperformed female models slightly, with male-specific behaviours like courtship and vigilance reaching F1-scores above 0.8 in leave-one-individual-out (LOIO) models. Application of the models to free-ranging little bustards (n=10) showed marked seasonal and sexual differences in time-activity budgets. Males dedicated more time to vigilance, fast locomotion, and courtship in the breeding season, and to foraging in winter. Female behaviours were more consistent year-round, predominantly resting and foraging, although lying behaviour increased during the breeding season likely reflecting incubation. These findings highlight the potential of machine learning models and accelerometry data to accurately monitor and interpret behaviours in free-living little bustards. This study enhances our understanding of little bustard annual behaviour patterns, offering a valuable tool for future research aimed at designing conservation strategies for this threatened species.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Life-history strategies

ORAL ABSTRACTS

821/77. USE OF WASTE DISPOSAL SITES BY THE GLOBALLY ENDANGERED STEPPE EAGLE AQUILA NIPALENSIS IN DHOFAR, SULTANATE OF OMAN.

AUTHORS:

Al Said, T., Al Lamki, F.[1], Hubais, M.[2], Al Amri, S.[3], Bait Said, S.[3], Mcgrady, M.[4]

AFFILIATIONS:

(1) Environment advisor, (2) Environment specialist, (3) Environment technician, (4) Environment consultant

ABSTRACT

Steppe Eagles Aquila nipalensis were counted at three waste disposal sites in Dhofar, southern Oman, during winters 2018–2022. During the study Raysut, the long-time municipal dump for the city of Salalah, was closed and a modern, engineered landfill was opened at Thumrait landfill, about 70 km away. The highest count was of 1122 individuals on 24 January 2019 at Raysut. As expected, eagle numbers increased during the first part of the winter (October–December), peaked during January and February, then declined from February to April as eagles departed on migration. The decline in numbers at Raysut after closure did not result in concomitant increases at Thumrait landfill and A'Saffa. The data confirm that Omani waste disposal sites are used by important numbers of Steppe Eagles.

RELATED TOPICS (UP TO THREE)

- Waste management, raptor conservation and Oman

ORAL ABSTRACTS

821/81. USING ACCELEROMETER DATA TO TRACK THE BEHAVIOR OF ELUSIVE BIRDS: THE CASE OF EURASIAN STONE CURLEW (BURHINUS OEDICNEMUS).

AUTHORS:

Villar Ruiz, A., Bravo Párraga, C.[1], Revilla-Martín, N.[2], González del Portillo, D.[3], Arroyo, B.[4], Bota Cabau, G.[5], Morales Prieto, M.[6], Mougeot, F.[7]

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ABSTRACT

Recent advancements in biologging technology, particularly tri-axial accelerometry, have transformed the study of animal behavior by enabling precise tracking of species' ecological patterns. Tri-axial accelerometry measures acceleration across three axes –surge (X), sway (Y), and heave (Z)–allowing for detailed tracking of an animal's movements and body postures that are impossible to record with other approaches. This technology offers insights into animal activity that are often challenging or impossible to monitor directly in the wild, making it particularly valuable for studying elusive species. In this study, we marked several Eurasian Stone Curlews (Burhinus oedicnemus) in captivity with tri-axial accelerometry GPS devices, to investigate their behavior. Using machine learning techniques, we developed a behavior classification model to identify accelerometer signatures corresponding to key behaviors (e.g., walking, foraging, resting, and lying). Furthermore, we evaluated how the attachment method of tags–either thoracic (close to the center of gravity) or pelvic (leg-loop)–affects the accuracy of behavior classification. To our knowledge, this experiment provides the first classification of several behaviors from accelerometer data in this species, offering researchers a powerful tool to study fine-scale behavioral responses of free-ranging birds to environmental conditions. Our preliminary results are promising and indicate the potential for significant contributions to conservation efforts and advancing research on this elusive bird species. While we are still in the process of finalizing the study, we anticipate conclusive results soon, offering valuable insights that will be ready for presentation at the conference in March 2025.

RELATED TOPICS (UP TO THREE)

- Accelerometry, stone curlew , ecology of movement

ORAL ABSTRACTS

THEMATIC SESSION 7.

IMPACT OF HUMAN INFRASTRUCTURES

821/27. THE GLOBAL IMPACT OF SOLAR PHOTOVOLTAIC EXPANSION ON THE WORLDS BIRDS.

AUTHORS:

Santangeli, A., Cancellario, T.[1], Kujala, H.[2]

AFFILIATIONS:

(1) Balearic Biodiversity Centre, University of the Balearic Islands, (2) Helsinki University

ABSTRACT

Balancing biodiversity conservation with the increasing demand for renewable energy is a critical global challenge. Ambitious targets for expanding the global protected area network to 30% of terrestrial land areas by 2030 are face with a faster than ever increase in solar photovoltaic (PV) expansion, and with the needs to produce food and bioenergy. Here we quantify global trade-offs and synergies between bird conservation and solar PV expansion, while accounting for the need to produce crop and biofuels from open productive landscapes. We combine current area of habitat maps for over 10.000 bird species worldwide, with maps of land suitability for solar PV, crop and bioenergy production. We applied a conservation prioritization tool to conduct spatial analyses, assessing outcomes for all bird species and specific groups, including grassland, ground-nesting grassland, and desert species. Our findings indicate that achieving the 30% protected area target while avoiding areas suitable for solar PV development requires significant trade-offs: several key areas for bird conservation overlap with high-potential solar PV sites. Prioritizing solar PV in these areas results in a reduction of bird distribution coverage by over 10%, relative to an approach that prioritizes all optimal bird habitats regardless of PV suitability. For grassland, ground-nesting grassland, and desert birds, this coverage reduction is more severe, with distribution losses of 25-35% when suitable solar PV areas are spared. Conflicts between bird conservation and solar PV development are most concentrated across temperate and tropical regions, particularly in southeastern North and South America, Southern Africa, the Indian subcontinent, and the Iberian Peninsula in Europe. The findings can help planning for the sustainable energy transition while ensuring biodiversity conservation targets are met.

RELATED TOPICS (UP TO THREE)

- Bird conservation and biogeography conservation planning
- Renewable energy and biodiversity

ORAL ABSTRACTS

821/72. THE EUROPEAN GREEN DEAL MUST BE FULLY IMPLEMENTED: THE ACCELERATION OF RENEWABLE ENERGY ENDANGERS TARGET AND THREATENED STEPPE BIRD SPECIES.

AUTHORS:

Bolonio, L., La Calle, A.[1], Moreno, E.[2], Valera Hernández, F.[2]

AFFILIATIONS:

(1) Associated Professor. . Departamento de Derecho, Universidad de Almería. Almería, (2) Senior Scientist, Department of Evolutionary and Functional Ecology (EEZA/CSIC). Almería

ABSTRACT

The European Green Deal, designed to address global challenges such as biodiversity loss, climate change and energy crisis, will set the path for the functioning of the EU until 2050. The Biodiversity Strategy 2020-2030, one of the main actions included in the Green Deal, aims to guarantee biodiversity conservation in the EU, and ensure that economic development does not jeopardise nature conservation. This Strategy calls for protecting at least 30% of the EU's land and to increase the effectiveness of recovery plans for endangered species. Parallely, the EU Commission has launched new regulations to accelerate the deployment of renewables by creating exemption areas from environmental impact assessment and public participation. The analysis of the impact of renewables on steppe birds can therefore inform the chances of success of the Green Deal. Here we study: i) the impact of the new renewable acceleration regulations on 6 species of steppe birds in Andalusia, and ii) the overlap of large-scale renewable energy projects with the area of application of the recovery plan for steppe birds in Andalusia (AASBRP). We found that: i) the distribution of 6 threatened steppe bird species is poorly covered by protected areas, in no case exceeding 50% (47.7% -11.4%), with the Little Bustard's range being only 17% protected, ii) the efficacy of the steppe birds recovery plan is jeopardized by the deployment of renewables: 92 wind turbines and 4733 hectares of photovoltaic plants have been projected within AASBRP. We conclude that the implementation and acceleration of renewables limits the achievement of the objectives of the Biodiversity Strategy. We discuss the need to increase conservation of steppe birds' range to ensure their protection from renewable development.

RELATED TOPICS (UP TO THREE)

- Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future
- Impact of human infrastructures

ORAL ABSTRACTS

821/75. STEPPE HABITAT COMPENSATION IN SOLAR ENERGY PROJECTS: ANALYSIS OF ENVIRONMENTAL IMPACT STATEMENTS IN SPAIN.

AUTHORS:

Arenas Martínez, G., Martínez Iniesta, C.[1], González Medina, D.[2], Domingo Serrano, J.[3]

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ABSTRACT

Resolution analysis is a complex process due to the volume, heterogeneity, content, and case-specific nature of the projects. However, understanding in detail the information collected in these documents is a crucial step for the proper establishment, maintenance, and control of compensatory measures according to the guidelines set by the administration.

The main objective of this study is to locate, extract, analyze, and interpret the information gathered on the compensation of steppe habitat. The study analyzes the resolutions for photovoltaic solar energy projects issued between 2020 and 2024 by the Ministry for Ecological Transition and the Demographic Challenge and all the autonomous communities in our territory. It examines spatiotemporal compensation requests based on the 1:1 and 1:5 ratios outlined in the Methodological Guide published by the Ministry.

The main methodological phases include access to and systematic collection of published documents, document filtering, data extraction by expert technical personnel, and statistical analysis of all objective parameters. The results focus on the number of authorized and unfavorable projects, target species, and compensatory measures for steppe habitat, broken down by evaluating administrations, project capacity, and surface area. Significant differences are found between the percentages of compensated surface area across different evaluating administrations and autonomous communities, as well as temporal trends within each of them.

The conclusions of this study provide an overview of the evolution of compensatory measures for steppe birdlife, allow for the evaluation of trends and patterns, establish comparisons between different administrative processes, observe the regional variability of criteria, and identify critical points for each administration. Therefore, increasing the understanding of these resolutions can improve the establishment, maintenance, and monitoring of measures, enabling progress and harmonization of criteria across the various regions of our territory.

RELATED TOPICS (UP TO THREE)

- Impact of human infrastructures.
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems.
- Conservation strategies and policy mechanisms: Present and future.

ORAL ABSTRACTS

821/92. IDENTIFYING CONFLICTS BETWEEN RENEWABLE ENERGY DEVELOPMENTS AND TAXONOMIC, FUNCTIONAL AND PHYLOGENETIC DIVERSITY OF STEPPE BIRDS.

AUTHORS:

Medrano Vizcaíno, P., Mougeot, F.[1], Benítez, A.[2]

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ABSTRACT

Biodiversity is significantly affected by human impacts such as land use transformation and climate change. In response, a global transition from fossil fuels to cleaner energy sources such as photovoltaic (PV) energy is underway. Nevertheless, renewable developments can also be problematic for biodiversity, a situation that can be particularly concerning for threatened species. As a case study, we examined the potential conflicts that PV infrastructure could cause on steppe birds (the most threatened group of birds in Europe). Here, we identified hotspot areas in Spain (their main stronghold) for 26 steppe-birds based on multiple biodiversity facets (taxonomic - TD, functional - FD, and phylogenetic diversity - PD), thus ensuring the protection of evolutionary distinctiveness and the diversity of the functional traits that support important ecosystem functions. We overlapped hotspot maps with spatially-explicit maps of photovoltaic infrastructures to identify 1) conflict areas, zones where steppe-birds are currently affected by PV infrastructures, and 2) no-go areas, zones where potential conflicts may arise with future installation of PV infrastructures. We identified 240 hotspot cells with high levels of TD, FD, and PD, from which, 142 cells (59.2%) are currently affected by PV plants. Additionally, we identified 98 very high risk no-go cells (hotspots without PV plants), mostly distributed in Extremadura, Castile-La Mancha, and Castile and León where projected PV developments should be halted. Our approach can be widely replicated in other species and areas, providing key tools to improve the strategic planning of renewable energy while preserving biodiversity hotspots.

RELATED TOPICS (UP TO THREE)

- Impact of human infrastructures
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems

ORAL ABSTRACTS

821/105. ALARMING STATE OF STEPPE BIRD HABITATS IN SOUTHERN SPAIN. ZAPRAES, OLIVE GROVES AND PHOTOVOLTAIC PLANTS.

AUTHORS:

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ABSTRACT

Keywords: InVEST model, Olive groves, Photovoltaic plants, Agricultural intensification

The decline of steppe birds over recent decades is closely linked to the structural modification and loss of their habitat, driven by agricultural intensification and land-use changes. In recent years, olive groves have been extensively introduced into agricultural landscapes in southern Spain. More recently, the potential of this region for solar energy development has attracted a significant number of large photovoltaic projects–a trend that is unlikely to slow down. Furthermore, steppe bird habitats are underrepresented within protected areas despite their high biodiversity value. The lack of legal protections to curb these processes foretells a pessimistic future for steppe bird species. This study aims to assess the current state of steppe bird habitats in Andalusia, focusing on the most critical areas for steppe birds and the influence of two major drivers of habitat degradation in the region: olive groves and photovoltaic plants. A cartographic analysis of current habitat quality and degradation was conducted using the InVEST model (Integrated Valuation of Ecosystem Services and Tradeoffs). The model results were validated with field data collected from 149 sampling points across key steppe bird areas. The findings reveal a highly degraded and fragmented landscape, with a substantial decline in areas of suitable habitat quality. Many important areas for steppe birds are in deteriorating condition, with some having no remaining suitable habitat. The expansion of olive groves and photovoltaic plants into these areas has eliminated large swaths of suitable habitat and fragmented most of the remaining high-quality areas. In the coming years, a significant number of additional photovoltaic projects are planned for Andalusia, many targeting pseudo-steppe areas, which will further exacerbate this already critical situation.

RELATED TOPICS (UP TO THREE)

- Impact of infrastructures, conservation strategies and policy mechanisms: Present and future, State of steppe bird habitat

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Organizers: Universidad de Castilla-La Mancha CAMPUS DE EXCELENCIA INTERNACIONAL; CSIC UCLM irec
Supporters: CÁTEDRA STEPPE FORWARD

ORAL ABSTRACTS

821/109. CURRENT AND FUTURE CONFLICTS BETWEEN UTILITY-SCALE PHOTOVOLTAIC POWER PLANT AND SANDGROUSE DISTRIBUTIONS.

AUTHORS:

Benítez, A., Maeso Pueyo, L.[1], Medrano Vizcaíno, P.[2], Mougeot, F.[3]

AFFILIATIONS:

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ABSTRACT

Photovoltaic (PV) production is growing globally as a prominent strategy for climate change mitigation. Rapid PV growth without proper spatial planning may lead to conflicts with biodiversity conservation. Using ecological niche models for the pin-tailed and the black-bellied sandgrouse (Pterocles alchata and P. orientalis), we identified conflict areas between present distribution, suitable areas and established PV facilities (>1 MW), and used future projections and solar potentiality maps to identify No-Go areas where PV infrastructures should not be installed. Future projections were based on the Shared Socioeconomic Scenarios SSP126 (Sustainable) and SSP585 (Fossil-fueled) for the period 2041-2070. We found that the extent of suitable area in the present scenario was broader for P. orientalis (124.3k km2) than for P. alchata (68.9k km2), but this extent shrunk down by 98-99% (1.1-1.3k km2) and by 53.7-65.1% (24.1k-31.9 km2) under SSP126 and SSP585. The current exposure of sandgrouse distributions and suitable areas to PV facilities range between 2.2-3.7%. These conflict areas were mostly located in the Ebro Valley, west Catalunya, Extremadura, and Castilla-La Mancha. Yet, future exposure may increase up to 9.7-43.8% for P. orientalis and 13.8-72.2% for P. alchata under the Fossil-fueled and Sustainable scenarios, if all PVs are further developed in areas of high solar potentiality. Due to the extreme projected range contractions, very few areas qualify as No-Go areas with low to medium PV potential, and are limited to a few thousands square kilometers distributed sparsely across central and north Extremadura, Ebro Valley, central and eastern Castilla y León. Our results present a looming picture for the conservation of sandgrouse that could be mitigated by implementing a spatial planning of PV plants that does not jeopardize the current and future suitable areas for Iberian sandgrouse.

RELATED TOPICS (UP TO THREE)

- Impact of infrastructure
- Climate change
- Spatial conservation planning

ORAL ABSTRACTS

THEMATIC SESSION 8.

EVOLUTIONARY AND BEHAVIORAL ECOLOGY OF STEPPE BIRDS 2

821/23. GOOD NEIGHBOURS: HABITAT PARTITIONING AND COEXISTENCE IN A STEPPE BIRD COMMUNITY.

AUTHORS:

Cortés Caballero, B., Barrero Diego, A.[1], Traba Díaz, J.[2]

AFFILIATIONS:

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ABSTRACT

The spatial distribution of species within a habitat is a balance between available resources and competition for space. When multiple species with similar ecological niches share the same environment, their coexistence depends on the abundance of resources and potential resource partitioning, factors which help mitigate interspecific competition. In this study, we modeled the potential local-scale distribution of four sympatric steppe passerine species (Eurasian skylark, Dupont's lark, Lesser short-toed lark, and Tawny pipit) in Soria province, central Spain, in order to explore how these species share the available habitat according to their particular preferences to facilitate coexistence. Using MaxEnt-based models with presence-only data, and incorporating habitat structure and food availability data, we generated both continuous and binary habitat suitability maps for each species. By overlapping species binary maps, we identified areas of pairwise and overall species coexistence and absence, unveiling their key environmental features. Our results revealed low spatial overlap among species, likely due to low bird densities in these areas. Each species shared on average between 14 and 23 percent of the territory with at least another species. However, community-level overlap was even lower than the pairwise averages, suggesting evolutionary-driven community structure in which species have adapted to occupy distinct niches. Across study sites, only between 2 and 6 percent of the surface corresponded to coexistence zones for all species, while potential absence areas overall covered an even smaller portion, between 1 and 3 percent of the total area. Additionally, each species showed clear preferences for specific microhabitats, with agricultural lands exerting a particularly negative influence, especially on Dupont's lark. From a conservation perspective, these findings highlight the need for implementing habitat management measures, such as reducing tree density and promoting extensive grazing, to benefit the presence of these species.

RELATED TOPICS (UP TO THREE)

- coexistence, ecological niche, spatial segregation

ORAL ABSTRACTS

821/85. DIRECT AND INDIRECT EFFECTS OF RAINFALL VARIABILITY ON STEPPE BIRD ABUNDANCE UNDER CLIMATE CHANGE: THE SPECIES-SPECIFIC ECOLOGICAL PROFILE MATTERS.

AUTHORS:

Sarda Palomera, F., Joseph, A.[1], Sanz Pérez, A.[2], Giralt Jonama, D.[3], Sarda Palomera, F.[3], Pou Àlvarez, N.[4], Sollmann, R.[5], Titeux, N.[6], Van Dyck, H.[7], Santisteban, C., Bota Cabau, G.

AFFILIATIONS:

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ABSTRACT

Biodiversity in agricultural landscapes is globally declining. In Europe, both farmland and steppe birds are experiencing significant population declines, driven by agricultural intensification and additional human-derived pressures like climate change. In Mediterranean regions, climate change manifests through increased drought events and altered rainfall patterns, compounding the challenges for these bird populations.

In this study, we investigate both the direct and indirect effects of rainfall variability on the abundance of farmland and steppe bird species inhabiting a pseudo-steppe agricultural landscape in the dryland plains of Lleida (Catalonia, NE Spain). This study area is dominated by rainfed winter cereals, interspersed with olive-tree and almond-tree crops, fallows and patches of natural vegetation (open shrubland). We hypothesized that rainfall could impact bird abundance indirectly - by altering important habitat features for the target species such as vegetation cover and height - or directly, by altering other unmeasured ecological variables that could affect survival and reproduction.

To quantify these relationships, we used 13 years of data from a local monitoring project that annually collects data on both farmland and steppe bird species, alongside vegetation structure in major crops (cereal and fallows), using standard line transect protocols. We analyzed data from 147 transects using a combination of distance sampling and structural equation modeling for 37 bird species.

Our findings reveal substantial variability in weather conditions (dry vs. wet years) and crops vegetation structure, resulting in contrasting effects on species abundance. The relationships between bird abundance, rainfall variability, and vegetation structure were species-specific, depending on their ecological traits. Considering these ecological differences will be key to design new conservation and management strategies that help preserving farmland and steppe bird populations under changing future climate conditions.

RELATED TOPICS (UP TO THREE)

- Climate change, pseudo-steppe, vegetation structure

ORAL ABSTRACTS

821/94. INTERANNUAL AND SEASONAL VARIATIONS IN NICHE PARTITIONING BETWEEN TWO SYMPATRIC SAND-GROUSES.

AUTHORS:

Marques Vila Ferraz, G., Valerio, F.[1], Gameiro, J.[1], Marques, T.[1], Célio Alves, P.[2], Mougeot, F.[3], Paulo da Silva, J.[1]

AFFILIATIONS:

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ABSTRACT

Ecologists have long sought to understand mechanisms allowing species with similar niches to coexist, especially in sympatric environments. Traditional studies using low-resolution presence and environmental data have provided insights into these processes but often focus on a single season (mainly breeding) and are limited when environmental conditions have spatiotemporal variation. Recent developments in satellite data and high-resolution biologging enable researchers to better understand species coexistence and distribution in dynamic ecosystems. Sandgrouse (Pteroclidae) are especially well-suited for investigating these processes, with restricted environmental and trophic requirements throughout the year, making them ideal for studying niche dynamics in sympatric conditions.

Here we report on habitat suitability and niche overlap between pin-tailed (Pterocles alchata) and black-bellied sandgrouse (Pterocles orientalis) in a special protection area in southwestern Iberia, where both species occur in sympatry all year-round. We collected high-resolution GPS data from 35 P. alchata and 26 P. orientalis between 2021-2023, matching their locations with 10-meter-resolution environmental and anthropogenic variables from Sentinel-1 and -2 satellite imageries collected every 6 days. We applied random forest models across breeding and winter seasons over multiple years to assess which variables influence each species' niche and habitat suitability. We quantified niche overlap across species, seasons, and years using Horn's R and Schoener's D indices.

Our high-resolution models (10 m) predicted habitat suitability not only at field level, but also within fields. Habitat-related factors significantly influenced both species' niches, with high niche overlap between species and across phenological seasons. Between species, niche overlap was greater during the breeding season, while within species, P. alchata showed higher niche segregation between seasons when compared with P. orientalis. These findings reveal high but incomplete niche overlap, enabling both species to coexist, and enhance our understanding of species-specific habitat preferences and niche dynamics.

RELATED TOPICS (UP TO THREE)

- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems

ORAL ABSTRACTS

821/101. WINTER HABITAT SELECTION OF EURASIAN STONE CURLEW (BURHINUS OEDICNEMUS) IN SOUTH-WEST IBERIA REVEALED BY HIGH-RESOLUTION DATA.

AUTHORS:

Gameiro, J., Tripidaki, E.[1], Pacheco, C.[2], Valerio, F.[3], Guidantoni, F.[4], Venâncio, L.[5], Ramos, R.[6], Crispim-Mendes, T.[5], Paulo da Silva, J.[5], Marques, T.[5]

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ABSTRACT

Agricultural landscapes hold high levels of biodiversity but are under rapid change. Understanding how animals move and where they select their year-round vital activities at a fine scale is crucial to make recommendations on land-use management aiming for their conservation. Here we combined high-resolution movement and remote-sensing data to study the wintering habitat selection of an elusive farmland bird, the Eurasian stone-curlew Burhinus oedicnemus. For this purpose we tagged 37 stone-curlews in Southwest Iberia with solar GPS/GSM devices from 2016 to 2024, resulting in a total of 57 wintering home ranges. We investigated the selection of roosting and feeding sites using land-use, topographic, and remote-sensing variables from both optic and radiometric sensors with a spatial resolution of up to 10m (Sentinel 1 and 2 satellites). Preliminary results based on a subset of individuals revealed that, while roosts and foraging areas were in low-sloped runoff areas with low vegetation, roosts where in the less productive or drier/plowed portions of open areas within crops or grasslands, and often near roads or anthropogenic areas. Conversely, birds selected areas with uniform tree cover, primarily extensive olive groves for foraging, while intensive olive groves were avoided. This is one of the few studies on habitat selection by stone-curlews outside the breeding season, suggesting that the species relies on a range of diverse habitats during winter in Southwest Iberia.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioural ecology of steppe birds
- Life-history strategies
- Movement strategies and migration patterns

ORAL ABSTRACTS

821/106. FEEDING HABITS OF THE MALE LITTLE BUSTARD DURING THE BREEDING SEASON: THE ROLE OF HABITAT AND LAND USE IN DIET SELECTION.

AUTHORS:

Mañosa, S., Cuscó, F.[1], Bravo Párraga, C.[2]

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ABSTRACT

Foraging strategies and diet selection are crucial for individual survival and reproductive success, particularly in endangered species like the Little Bustard (Tetrax tetrax), which is facing significant population declines due to agricultural intensification. However, despite its importance, there is limited understanding of the feeding ecology of this species, especially during the breeding season. In this study, we examined the composition of the breeding diet of male Little Bustard in Catalonia and explored patterns of diet selection. We analyzed 152 droppings collected from 39 lek sites during April 2015 using micro-histological techniques. Our findings revealed that the diet was primarily composed of green material (99.5%) with a minor presence of arthropods (0.05%). A total of 32 plant species were identified, with legumes and weeds (such as Papaveraceae and Compositae) being the most commonly consumed, while cereal grasses (Gramineae) were scarcely eaten. Furthermore, arthropods represented a total of 12 taxa from seven different orders, consisting mostly of Coleoptera. To assess diet selection, we compared proportions of plant consumption with plant availability around the lekking sites. We found that legumes, Papaveraceae, and Compositae were strongly preferred, whereas Gramineae were underrepresented in the diet. Furthermore, diet composition varied depending on land use around the lekking sites: areas with cultivated legumes like alfalfa had less dietary diversity, while diet on leks with higher proportions of old fallows included a higher proportion of weeds. These findings provide important insights into the Little Bustard's feeding ecology and emphasize the role of habitat diversity in supporting the species' foraging needs. This information is essential for developing targeted conservation strategies that address the challenges posed by agricultural intensification and habitat loss.

RELATED TOPICS (UP TO THREE)

- Feeding ecology, diet selection, conservation strategies

ORAL ABSTRACTS

821/122. THE PALAEOECOLOGICAL LINKS BETWEEN CLIMATE CHANGE, VEGETATION CHANGE AND BRITISH FARMLAND BIRDS IN THE ARCHAEOLOGICAL RECORD.

AUTHORS:

Rickard, R., Gillingham, P., Stillman, R., Stevens, C., Stewart, J.

ABSTRACT

Since the 1970s multiple farmland bird species in the UK displayed declines in both distribution and population size, driven by agricultural intensification. A third of the bird species on the 1996 UK Red List of Conservation Concern were associated with agricultural land. Most farmland birds are represented in the archaeological record under the Category F list published by the British Ornithologists' Union Records Committee (BOURC). The list is currently understudied and can be used to study possible changes to bird populations driven by natural processes and human activity. This study aims to investigate the implications of environmental change and human land-use change on farmland birds in Britain from the late Pleistocene to the Medieval period.

Farmland birds were found within the open steppe habitats of the Late Pleistocene. The warming climate of the early Holocene encouraged the spread of woodlands and forests across Britain. The effects of this vegetation change on open habitat bird species are yet unclear, but it is assumed they became rare during the early- to mid-Holocene.

This study will utilise published pollen data to estimate the abundance of open or closed habitats through time in Britain. Pollen records could infer where suitable local habitats occurred in the past and we can compare these with the archaeological occurrences of birds. Using niche models based on the present distribution of focal bird species we will predict the distribution of birds in the past. The predicted past distribution of birds will then be compared with the archaeological records of birds. The results can be used to infer how climate-driven vegetation changes and anthropogenic land-use changes influenced farmland birds over time

ORAL ABSTRACTS

THEMATIC SESSION 9.

CONSERVATION STRATEGIES AND POLICY MECHANISMS: PRESENT AND FUTURE 1

821/18. SCENARIO PLANNING AND PARTICIPATORY PROCESSES: A USEFUL TOOL FOR EUROPEAN STEPPES' CONSERVATION.

AUTHORS:

Pérez Granados, C., Benítez, A.[1], Díaz Esteban, M.[1], Gameiro, J.[2], Lenzner, B.[3], Roura-pascual, N.[4], Gómez Catasús, J.[5], Tarjuelo, R.[1], Marques, T.[6]

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ABSTRACT

The Kunming-Montreal Global Biodiversity Framework (KM-GBF) envisions a world living in harmony with nature by 2050. Aligning international policy and local implementation of effective actions can be challenging. Using European steppes as an example, we illustrate how to reduce this implementation gap by involving a multidisciplinary expert panel that identified a set of 36 conservation actions to achieve the KM-GBF targets. We also identified -through consensus- ten priority actions for immediate implementation. Three of these priority actions address at least five of the first eight KM-GBF targets, those related to the direct causes of biodiversity loss, and collectively cover all the targets when implemented concurrently. These actions include i) effectively protecting priority areas, ii) implementing on-the-ground management actions, and iii) improving the quality and integration of monitoring programs. Our findings provide a blueprint for implementing effective strategies to halt biodiversity loss in European steppes. However, the effective implementation of the actions at long term may be compromised by socio-economic changes. Therefore, we conducted a scenario analysis to assess how different socio-ecological pathways could impact the achievement of the priority conservation actions identified for safeguarding European steppes. To do this, we explored four alternative European socio-economic pathways (Eur-SSPs) scenarios, finding that KM-GBF targets would only be achievable under scenarios with strong commitments to sustainable development and global cooperation. These targets are unlikely to be met in environmentally adverse, resource-demanding scenarios. Based on these insights, we identified six overarching recommendations for European steppes conservation, which included mainly improving public awareness, empowering local communities, and engaging private companies in conservation planning. Our research has the potential to serve as a catalyst for policy makers, prompting a transition from political commitment to tangible actions, thereby facilitating the attainment of the KM-GBF targets in European steppes.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/86. COEXISTENCE CONSERVATION: THE POTENTIAL OF BEHAVIOUR-BASED METHODS TO MITIGATE PREDATION ON STEPPE BIRDS IN FARMLAND ECOSYSTEMS.

AUTHORS:

Tobajas González, J.

ABSTRACT

Farmland ecosystems are severely threatened by agricultural intensification, which has contributed significantly to biodiversity loss. Among the species most vulnerable to these changes are farmland and steppe birds. One factor driving their decline is nest predation by predator species, many of which have increased in population due to habitat modifications and anthropogenic activities. Traditional predator population control methods aimed at reducing their impact have shown limited effectiveness, often requiring significant effort and high costs. Moreover, lethal control methods are increasingly rejected by society which is becoming more committed to animal welfare. This highlights the urgent need for developing and implementing non-lethal methodologies to mitigate predation. Recently, a new discipline within conservation science, known as "coexistence conservation," has emerged to address the coexistence of predators and threatened prey through innovative, non-lethal approaches. This discipline seeks to promote the adaptation of threatened fauna to coexist with their predators without relying on refuges or predator elimination. Coexistence conservation employs behaviour-based strategies rooted in evolutionary processes, aiming to reduce predation by decreasing predator efficiency through methods such as conditioned food aversion, chemical camouflage, and diversionary feeding. In the case of steppe bird species, these methods have significant potential, as the habitat characteristics of steppe ecosystems favour their application compared to other environments. For example, conditioned food aversion has successfully reduced nest predation in red-legged partridges (Alectoris rufa) in Spain. Similarly, chemical camouflage has been effective in decreasing predation on waterfowl species in New Zealand and Finland. For other ground-nesting birds, such as capercaillie (Tetrao urogallus), a combination of chemical camouflage, conditioned food aversion, and diversionary feeding has proven effective. These examples demonstrate the promising potential of these tools. Further development and application could be essential for mitigating predation and improving conservation outcomes for steppe birds.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/91. LONG-TERM SYSTEMATIC CONSERVATION PLANNING FOR TWO DECLINING STEPPE BIRDS IN IBERIA.

AUTHORS:

Valerio, F., Marques Vila Ferraz, G.[1], Marques, T.[2], Mougeot, F.[3], Gameiro, J.[2], Lomba, A.[4], Godinho, S.[5], Guise, I.[6], Paulo da Silva, J.[4]

AFFILIATIONS:

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ABSTRACT

Systematic conservation planning (SCP) is important for optimizing resource allocation devoted to species protection. This is critical in a world of limited funds for conservation and for targeting species characterized by sharp population declines. However, SCP often relies on modelling techniques that rarely consider the effects of autocorrelation within model residuals or the stability of species' suitable habitat over time during prioritization processes. Handling such aspects is of utmost relevance to ensure an adequate prioritization of planning units for conservation investments.

We developed models for two declining steppe bird species, the pin-tailed (Pterocles alchata) and the black-bellied sandgrouse (Pterocles orientalis). We used data from the SEO/BirdLife national census, remote sensing, anthropogenic, and bioclimatic data to develop spatially explicit distribution models (SEDMs), between 2005 and 2022. SEDMs were used to analyze yearly variations and assess the magnitude of long-term habitat loss and fragmentation. Finally, SCP based on SEDMs and land use intensification supported the development of spatial prioritization and conservation targets for both species.

Once autocorrelation was handled, findings pointed out that the species' distribution was associated with low productive areas, with sparse vegetation and lower sheep density, and with higher annual temperatures and diurnal ranges. For both species, the SEDM variation analyses showed different, but always decreasing suitable habitats, patch size, and edge density, reflecting increasing levels of habitat loss and fragmentation. SCP analyses demonstrated appreciable prioritization, in which both protected areas and connectivity were represented. The developed and presented framework is relevant for the long-term prioritization of suitable and resilient areas with optimized costs for species protection, attracting subsidies in low-intensity areas, and considering opportunity costs.

Keywords: Systematic Conservation Planning; Sandgrouses; Remote Sensing; Habitat loss; Fragmentation

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/95. HAEMOSPORIDIAN DIVERSITY IN CAPTIVE AND WILD ASIAN HOUBARA BUSTARD POPULATIONS: IMPLICATIONS FOR CONSERVATION AND ECOSYSTEM STABILITY.

AUTHORS:

Coelho Pacheco, H., Höfle, Ú.[1], Lima-barbero, J.[2], Kheyi, M.[3], Silvestre, M.[3], Carrasco, M.[4]

AFFILIATIONS:

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ABSTRACT

The Asian houbara bustard (Chlamydotis macqueenii), a Vulnerable steppic species, faces threats from poaching, habitat degradation, and climate change, resulting in significant population declines. Conservation programs, including captive breeding, aim to mitigate these threats. However, high population densities and close proximity in breeding centres facilitate the spread of infectious diseases. Monitoring these diseases is crucial to preventing pathogen spillover and associated ecological risks. This study included samples from wild and captive C. macqueenii populations from Kazakhstan (N = 249), Uzbekistan (N = 367), and the UAE (N = 601), analysing the prevalence and diversity of Haemosporidian species in both populations across time. Cytochrome b amplification and sequencing were used to conduct phylogenetic analyses and identify parasite species and lineages, evaluating risks of novel lineage introduction into wild populations. The results revealed a general increase in Haemosporidian prevalence over the last decade, with regional and temporal variation. Overall, Plasmodium accounted for 14.1% of infections, while Haemoproteus predominated, representing 85.9% of all infections. Notably, captive populations in the UAE exhibited the emergence of Plasmodium species previously unreported in the captive Asian Houbara within the region. In Uzbekistan, lineage replacement within the same clade highlighted evolving parasite-host dynamics. In Kazakhstan, previously unreported lineages of Haemoproteus and Plasmodium were recently identified in wild populations. Seven novel lineages were identified, all undescribed, underscoring a significant knowledge gap in Haemosporidian taxonomy. The findings reveal differences in haemosporidian lineages and their proportions between captive and wild populations, underscoring the need for ongoing research and monitoring. Such efforts are essential to mitigate pathogen spillover and its implications for host immunity and ecosystem stability. This study highlights the importance of monitoring and controlling parasitic infections in reinforcement programs, providing insights for managing and conserving C. macqueenii populations.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms;
- Parasite-host dynamics and disease ecology in endangered species.

ORAL ABSTRACTS

821/120. BUSTARDS WITHOUT BORDERS: A COLLABORATIVE APPROACH TO GLOBAL BUSTARD CONSERVATION.

AUTHORS:

Fejes, É., Raab, R.

ABSTRACT

The “Bustards Without Borders” initiative addresses the critical conservation challenges faced by the 26 bustard species worldwide across their natural habitats. This collaborative effort seeks to ensure the long-term survival of these species through integrated and sustainable conservation strategies which meet IUCN best practices, and active community engagement. As part of this initiative, a Multi-species Action Plan (MsAP) is being developed under the framework of the African-Eurasian Migratory Landbirds Action Plan (AEMLAP), an instrument of the Convention on Migratory Species (CMS). This presentation will outline the approach, methodology, and expected outcomes of this innovative strategy. The objectives of the MsAP include:

1. Implementing scientifically robust conservation programs to protect and sustainably restore bustard populations, addressing key threats and focusing on in situ activities.
2. Preserving and enhancing critical habitats essential for the survival of bustard species.
3. Engaging communities in conservation efforts which promote sustainable practices and spread awareness of these species.

Achieving these goals requires comprehensive research to monitor bustard populations and their habitats. The initiative emphasizes strengthening collaboration with governmental and non-governmental organizations to advocate for policies that support bustard conservation measures which meet best practices guidelines. Additionally, educational programs and awareness campaigns will highlight the ecological importance of bustards and their habitats. The anticipated outcomes of the MsAP are: - Stabilizing the status of bustard species. - Significant improvements in the quality and extent of bustard habitats. - Enhanced community participation and support for conservation efforts

ORAL ABSTRACTS

THEMATIC SESSION 10.

CONSERVATION STRATEGIES AND POLICY MECHANISMS: PRESENT AND FUTURE 2

821/30. A DEMOGRAPHIC EVALUATION OF THE CONSERVATION MANAGEMENT OF THE LITTLE BUSTARD (TETRAX TETRAX) IN CATALONIA.

AUTHORS:

Mañosa, S., Bota Cabau, G.[1]

AFFILIATIONS:

(1) Head of Biodiversity and Conservtion research area

ABSTRACT

The dramatic population decline of the little bustard (Tetrax tetrax), a flagship steppe bird species in western European cereal farmland, has been largely attributed to the loss of fallow land. This habitat is critical for the species as courtship, nesting or feeding grounds for adults and chicks. On the other hand, several studies show that little bustard populations are subject to a high rate of adult mortality. Based on fecundity and survival monitoring data and using demographic modelling we find that low breeding success and reduced female survival are co-responsible for the little bustard population decline in Catalonia (NE Spain). An equilibrium finite rate of change can be achieved by raising either female adult survival or fecundity. In both cases, the required increases fall within a biological meaningful range, but a combination of both would be more feasible in practice. Setting farmland aside as managed fallow can boost fecundity to the required equilibrium value, but the potential of this management action is seriously reduced as mortality increases. Socio-economically acceptable amounts of spared-land can only be achieved if actions to reduce mortality are undertaken in combination with providing fallow land. Actions to reduce both natural and anthropogenic mortality have so far been neglected by little bustard conservation programs. Both are needed if we seek to guarantee the long-term viability of the species and an acceptable share of conservation effort from stakeholders. Our results show that a holistic adaptive management approach can be used to evaluate the effectiveness and limitations of conservation decisions and provide insights for future directions.

RELATED TOPICS (UP TO THREE)

- Population viability, Bird Conservation, Fallow land

ORAL ABSTRACTS

821/53. ASSESSING THE EFFECTIVENESS OF CAP MEASURES FOR THE CONSERVATION OF ENDANGERED STEPPE BIRDS.

AUTHORS:

González Pulido, L., Bota Cabau, G.[1], García de la Morena, E.[2], Giralt Jonama, D.[1], Martín, C.[3], Morales Prieto, M.[4], Mougeot, F.[5], Paulo da Silva, J.[6], Sarda Palomera, F.[1], Díaz Esteban, M.[7], Clemente Orta, G.

AFFILIATIONS:

(1) Dinàmica del paisatge i biodiversitat, Centre Tecnològic Forestal de Catalunya (CTFC), Lleida, (2) Biodiversity Node, S.L., Madrid, (3) D. de Biodiversidad, Ecología y Evolución, Facultad de Biología, Universidad Complutense de Madrid, (4) Grupo de Investigación TEG-UAM, D. Ecología, Universidad Autónoma de Madrid, Madrid, (5) Instituto de Investigación en Recursos Cinegéticos (CSIC-UCLM-JCCM), Ciudad Real, (6) CIBIO/InBIO Associate Laboratory, Universidade do Porto, Porto, Portugal, (7) D. Biogeografía y Cambio Global, Museo Nacional de Ciencias Naturales MNCN-CSIC, Madrid

ABSTRACT

Under the new Common Agricultural Policy (CAP), it is compulsory to evaluate directly whether measures included in the member states' Strategic Plans reach their environmental and social objectives. Reverting the decline of farmland birds is one of the key environmental objectives. Within them, endangered steppe birds are especially relevant due to their rarity and threat status. This study will analyze the available tracking data for steppe birds living in Spanish agricultural habitats in different regions (e.g. Castilla-La Mancha, Extremadura, Catalonia, Andalusia), comparing use of areas with CAP measures targeted on their conservation (the eco-scheme "Biodiversity sites on arable land and permanent cropland" and Rural Development interventions targeting farmland birds) with use of control areas without such measures. Whenever possible, we will follow BACI designs including tracking data previous to the application of measures. We will use tracking data for, at least, little bustards Tetrax tetrax, sandgrouses Pterocles alchata and P. orientalis and European stone curlews Burhinus oedicnemus, provided by members of the Research Group on Steppe Birds (GIAE). Results will provide relevant insights into the role of CAP measures for the conservation of steppe birds in agricultural environments.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/60. RESTORATION OF IBERIAN SHRUB STEPPES: EFFECTS ON ARTHROPOD BIOMASS AND DUPONT'S LARK POPULATIONS.

AUTHORS:

Traba Díaz, J., Santos, A.[1], Pérez Granados, C.[2], Barrero Diego, A.[3], Bustillo-de La Rosa, D.[3], Gómez Catasús, J.[4], Hervás, I.[5], Zurdo, J.[3], Reverter, M.[3]

AFFILIATIONS:

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ABSTRACT

Iberian shrub steppes have undergone significant transformation over recent decades mainly due to grazing abandonment, agricultural intensification, and afforestation. The deterioration of these habitats has contributed to declines in steppe bird populations, which are among the most threatened bird groups in Europe. Effective conservation of steppe birds may necessitate active habitat restoration, though evidence on management practices and their effects on steppe birds remains limited. The LIFE Ricotí project implemented actions to restore steppe habitat by removing 50 ha of pine (Pinus spp.) afforestation and thinning holm oak (Quercus ilex) trees across 250 ha to improve habitat quality for the endangered Dupont's lark (Chersophilus duponti), a specialized insectivorous bird that has faced severe population declines and habitat reduction in the last decades. Restoration was assessed through a four-year BACI (Before-After-Control-Impact) study, monitoring arthropod biomass–a proxy for habitat quality–and Dupont's lark abundance in both restored and control areas. Arthropod biomass showed minimal variation between treatments, although pine removal led to a significant increase in epigeous arthropods, especially Coleoptera. Holm oak thinning showed little effect on arthropod biomass. Dupont's lark territories increased significantly in restored areas (from 15 to 27 territories) while declined in control areas (from 145 to 91 territories). The findings indicate that restoration positively affected the Dupont's lark by enhancing habitat suitability while maintaining or slightly increasing arthropod biomass. This study underscores the potential for targeted active restoration actions to improve steppe habitat conditions for species conservation.

RELATED TOPICS (UP TO THREE)

- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future

ORAL ABSTRACTS

821/67. RESULTS OF TWO YEARS OF TRANSLOCATIONS OF A STEPPE PASSERINE IN CONTINENTAL EUROPE: THE ENDANGERED DUPONT'S LARK.

AUTHORS:

Navalpotro Buscail, H., Sáez-, P, Barrero Diego, A., Santos, A., Reverter, M., Traba Díaz, J., Zurdo, J., Giralt Jonama, D., Bota Cabau, G.[3]

AFFILIATIONS:

(1) Tecnico UAM. Madrid, (2) Senior researcher. UAM. Madrid, (3) Senior researcher. CTFC. Solsona

ABSTRACT

The Dupont's lark (Chersophilus duponti) is an endangered passerine found exclusively in Spain within Europe and in North-Africa. With only around 2300 males remaining in Spain, this species is experiencing a rapid decline and faces a high risk of extinction, primarily due to habitat fragmentation and deteriorating habitat quality, which is even more pronounced in peripheral populations. Among other management measure, the LIFE Connect Ricotí project aims to test the effectiveness and viability of translocating individuals to reinforce/rescue some subpopulations between 2023-2026. To 2024, 18 males and 4 females have been captured from three source populations and translocated to two recipient sites, at distances of 50km to 134km from sources areas. A comparable number of individuals were captured and released within the source areas as controls. All birds were equipped with coded tags (1g; 2-year lifespan) for monitoring through automated receivers. Surprisingly, despite previous expectations of limited movements in the species, 32% of translocated birds returned to their original areas, while 18% remained in the recipient areas for at least 6 months. Additionally, 18% of both translocated and control birds experienced mortality during the first 3 months, while the remaining birds were no longer detected . Preliminary survival analysis suggests an inverse relationship between fat reserves and mortality risk, though mortality was not higher right after the translocation s. So far, translocated individuals have stayed in recipient sites for periods ranging from 2 to 290 days, with some staying throughout the breeding season. Reproduction events were observed in both translocation areas, marking a crucial success for the translocation program, with up to nine territories identified two years after translocations began, where few or none individuals had previously been observed.

RELATED TOPICS (UP TO THREE)

- conservation, translocations

ORAL ABSTRACTS

821/80. CONSERVATION ACTIONS AND ASSESSMENT OF HUNTING (UN)SUSTAINABILITY TO RECOVER THE COMMON QUAIL (COTURNIX COTURNIX).

AUTHORS:

Rubio Alonso, B., Cruz-flores, M.[1], Musil, P.[2], Fraser-turner, J.[3], Weston, J.[4], Musilová, Z.[2], Stroud, D.[5], Carboneras, C.[6], Arroyo, B.[6]

AFFILIATIONS:

(1) Postdoctoral researcher. Instituto de Investigación en Recursos Cinegéticos. Ciudad Real., (2) Researcher. Czech University of Life Sciences. Prague, (3) Species Recovery Officer. Royal Society for the Protection of Birds. UK, (4) Senior Species Recovery Officer. Royal Society for the Protection of Birds. UK, (5) Independent Consultant. UK, (6) Researcher. Instituto de Investigación en Recursos Cinegéticos. Ciudad Real.

ABSTRACT

The conservation status of Common Quail (Coturnix coturnix), a migratory ground-nesting bird species of open grasslands, is considered non-secure in the EU due to habitat loss, agricultural intensification, climate change and possible overhunting. With a unique breeding strategy involving multiple broods annually, the species experiences significant population fluctuations influenced by environmental conditions. However, widespread long-term declines highlight the urgent need for conservation action.

Under service contract No 09.0201/2022/886665/SER/D.3 with the European Commission, we assessed primary threats and pressures (P/T) faced by this species, based on discussions from a 2-day expert workshop; we identified actions to address them, and analysed whether current harvest levels were sustainable.

Key habitat-related P/T involved agricultural practices (e.g. fertiliser use, land use changes, grassland mowing) and climate-related factors (e.g. droughts, reduced precipitation). Non-habitat-related P/T included hybridization and illegal killing. We then identified three habitat and three non-habitat conservation measures, based on their feasibility and potential to mitigate threats. Proposed habitat-related actions included maintaining field margins, preserving natural habitats within farmlands and reducing chemical use. Non-habitat-related actions included eliminating illegal killing, banning release of farm-reared quails for hunting and increasing species-specific knowledge. These recommendations are proposed to EU Member States for implementation.

Next, we evaluated the (un)sustainability of quail harvest levels across Europe using the Potential Take Level method, implemented with the Popharvest package in R, to assess whether current harvest levels support population recovery objectives. Results indicate that hunting along western and central flyways is very likely to be unsustainable. This supports the need for developing a population model and Adaptive Harvest Management Mechanism, alongside revising current management practices.

This work highlights the importance of improving habitat conditions, addressing threats, alongside implementing sustainable hunting practices. This research not only contributes to the conservation of Quail but also benefits other steppe birds facing similar pressures across Europe.

RELATED TOPICS (UP TO THREE)

- Action Plans, AHM, Conservation

ORAL ABSTRACTS

821/98. CAN HABITAT MANAGEMENT AND HUMAN-INDUCED MORTALITY MITIGATION REVERSE THE DECLINE OF THE LITTLE BUSTARD IN EXTREMADURA?.

AUTHORS:

Crispim-Mendes, T., Marques, T.[1], Valerio, F.[1], Godinho, S.[2], Pita, R.[3], Paulo da Silva, J.[1]

AFFILIATIONS:

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ABSTRACT

Keywords: Anthropogenic mortality; cost-effective; management; movement ecology; Tetrax tetrax

The little bustard (Tetrax tetrax), an emblematic and threatened steppe bird species, has experienced significant population declines across Europe, with sharp reductions noted in the Iberian Peninsula over the last decades. In Extremadura, Spain, these declines are largely attributed to habitat degradation and high anthropogenic mortality, notably from power line collisions. This underscores the urgent need for well-planned and cost-effective conservation strategies to protect the species and its critical habitats. To address this challenge, we developed a spatially explicit Individual-Based Model (IBM) that integrates high-resolution habitat suitability data with demographic parameters to simulate individual behaviors and interactions with the environment, forecasting habitat use and population dynamics under different management strategies.

Model calibration supported the hypothesis that the survival rates of nests, chicks, and adult birds are positively correlated with habitat suitability, highlighting the model's robustness. Our simulations assessed the long-term effects of various management scenarios up to 50-years (2022–2072), focusing on habitat improvement and the mitigation of anthropogenic mortality. The results demonstrated that habitat enhancements alone should be insufficient to reverse population declines without complementary measures to reduce anthropogenic mortality. This finding emphasizes the need to adopt an integrated, long-term conservation strategy that balances habitat management with proactive efforts to mitigate human-induced mortality for the sustainable recovery of the little bustard population.

Our IBM is a high-resolution, spatially explicit decision-support tool, that provides insights into prioritizing and implementing cost-effective strategies to facilitate the recovery of the little bustard. This approach provides a valuable framework for other steppe bird species facing comparable ecological and conservation challenges.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

POSTER ABSTRACTS

821/6. LIFE POWERLINES4BIRDS: CUTTING-EDGE STRATEGIES TO PROTECT STEPPE BIRDS FROM POWER LINE THREATS.

AUTHORS:

Villarroya Cifuentes, A., Barros, A.[1], Alcazar, R.[2], Gomes, E.[3], Reynolds, R.[4], Costa, J.[5], Infante, S.[6], Pereira, I.[6], Cabezas, S.[7], Batista, V.[8], Silva, I.[8], Capela, F.[8]

AFFILIATIONS:

(1) LIFE PowerLines4Birds coordinator. Liga para a Protecção da Natureza. Lisbon., (2) Castro Verde Headquarters coordinator. Liga para a Protecção da Natureza. Lisbon., (3) Conservation officer. Liga para a Protecção da Natureza. Lisbon., (4) Communication officer. Liga para a Protecção da Natureza. Lisbon., (5) Conservation officer. Sociedade Portuguesa para o Estudo das Aves. Lisbon., (6) Conservation officer. Quercus, A.N.P.C. Lisbon., (7) Conservation Officer. SEO/Birdlife, (8) Risk & Sustainability E-REDES - Distribuição de Eletricidade, S.A. Lisbon

ABSTRACT

The LIFE Powerlines4Birds project is led by League for the Protection of Nature in collaboration with E-Redes, the Portuguese Society for the Study of Birds, the organization Quercus, and the Spanish Society of Ornithology. The project aims to significantly enhance the protection of priority bird species against power lines managed by E-Redes in 14 Special Protection Areas (SPAs) in Portugal and 9 in Spain. The target species are key for conservation in the European Union, including steppe bird species, such as the Montagu's harrier (Circus pygargus), the Great bustard (Otis tarda), or the Little bustard (Tetrax tetrax). The primary objectives of the project are to reduce the mortality of these species caused by power lines by 90%. The project will enable large-scale implementation of established mitigation measures, including anti-electrocution and anti-collision strategies, as well as testing new approaches such as the innovative "eco cross-bar" power support design. Overall, the project aims to apply bird mortality minimisation measures to 358 km of power lines in Portugal and 20 km in Spain. Additional key actions include harmonising the most commonly used mortality monitoring methods between Portugal and Spain, developing and promoting mobile applications for recording and identifying bird mortality on power lines, aimed at both the general public and professionals. Moreover, it highlights the socio-economic benefits of making power lines safer, both locally and nationally. Through these efforts, the LIFE Powerlines4Birds project aspires to create a safer environment for priority bird species by significantly reducing their risk of collision and electrocution. By adopting a combination of proven and innovative measures, the project seeks to address the urgent conservation needs of these species while fostering cross-border collaboration and knowledge-sharing between Portugal and Spain.

Keywords: Great bustard; Little bustard; Montagu's harrier; power-lines threats; priority species.

RELATED TOPICS (UP TO THREE)

- Impact of human infrastructures

POSTER ABSTRACTS

821/12. AGROECOLOGICAL RESTORATION FOR STEPPE BIRD CONSERVATION IN A MEDITERRANEAN LANDSCAPE.

AUTHORS:

Guzmán Piña, J., Guzmán Piña, J.[1], Rey Benayas, J.[2]

AFFILIATIONS:

(1) Project Coordinator. VALDEPEÑAS. CIUDAD REAL, (2) Full Professor, University of Alcalá . alcalá de Henares. Madrid

ABSTRACT

Steppe bird populations in central Spain are rapidly declining, mainly due to agricultural intensification. FIRE, in collaboration with IRIAF of Castilla-La Mancha Regional Government, has established an Agroecological and Forest Restoration living lab at "La Nava del Conejo" state (Valdepeñas, Ciudad Real) running since 2021. The creation of a sanctuary for birdlife is a major objective of this living lab. To achieve this, a traditional rainfed farming system has been implemented, based on the principles of conservation and organic agriculture. The agricultural area (200 ha) has been divided into 18 plots where six different simultaneous crops along with fallow land rotate annually. Other measures include keyline plough, tilling and harvesting respecting birds' life cycles, maintaining ca. 10 km of uncultivated strips with spontaneous herbaceous vegetation, planting over 6 km of 4 m-wide hedgerows, creating three ponds, and installing perches and nest boxes, among other actions. A total of 125 bird species have been recorded at the estate, 37 of which are characteristic of open agricultural habitat. Monitoring results show an increase in the abundance of various species compared to other nearby control areas, including the Little Bustard (Tetrax tetrax), Pin-tailed Sandgrouse (Pterocles alchata), Black-bellied Sandgrouse (Pterocles orientalis), Red-legged Partridge (Alectoris rufa), European Turtle Dove (Streptopelia turtur), and Southern Grey Shrike (Lanius meridionalis). We have also established a hacking program for the Montagu's Harrier (Circus pygargus), involving the release of 19 rescued chicks from harvesting activities in other locations. A self-guided tour that explains the implemented actions has been designed (https://rutanavalab.org/). We hope this demonstration project of sustainable use and biodiversity conservation will inspire other farmers and landowners in central Spain.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends; Conservation strategies and policy mechanisms: Present and future.

POSTER ABSTRACTS

821/17. CONSERVATION TRANSLOCATION OF THE DUPONT'S LARK: A USER GUIDE.

AUTHORS:

Sáez Gómez, P., Barrero Diego, A.[1], Canessa, S.[2], Navalpotro Buscail, H.[3], Santos, A.[1], Bota Cabau, G.[4], Giralt Jonama, D.[5], Reverter, M.[1], García-vegas, R.[1], Traba Díaz, J.[6]

AFFILIATIONS:

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ABSTRACT

The Dupont's lark (Chersophilus duponti) is one of Europe's rarest passerine birds, with one of the most restricted ranges. It is a small and elusive member of the Alaudidae family, with a distribution limited to fragmented areas in Spain and northern Africa. The species inhabits flat shrub-steppes (<10–15% slope), avoiding dry pastures and cereal fields. Habitat fragmentation and land-use changes, common issues in steppe ecosystems, have been documented as the main threats to the species. Spanish populations, listed as 'Endangered' on Spain's List of Threatened Species, have declined to 600–1200 breeding pairs and are increasingly threatened by human-induced landscape changes. Habitat restoration has been proposed as a strategy to enhance connectivity in steppe areas occupied by the Dupont's lark. However, this approach may be too slow to halt the species' current trend towards extinction. Conservation translocation, which involves the deliberate movement of organisms to areas where the species is suffering severe declines or even local extinction, may offer a faster and complementary solution to reduce the extinction risk for small populations. On this basis, we present a protocol currently in use for a pioneering translocation pilot programme, the first for a continental European passerine, aimed at evaluating the effectiveness of this conservation action in improving the functional connectivity of the Iberian metapopulation of the Dupont's lark. The protocol includes an up-to-date assessment of the population's status, a population viability analysis to model various translocation scenarios, risk assessments related to disease and animal welfare, automated post-release monitoring of both translocated and control individuals, and detailed guidelines for addressing challenges during capture, transport, and release. Closely aligned with the IUCN Reintroduction Guidelines, this protocol serves as a model for similar translocation projects involving small bird species.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends, Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

821/22. SEX-SPECIFIC ROLES AND SOCIAL STRUCTURE IN THE MADAGASCAR BUTTONQUAIL: COMPARATIVE INSIGHTS FOR STEPPE BIRD ECOLOGY.

AUTHORS:

Garcia Miranda, O., Mahavilahy, C.[1], Zefania, S.[2], Székely, T.[3]

AFFILIATIONS:

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ABSTRACT

The Madagascar Buttonquail (Turnix nigricollis) provides critical insights into how unique ecological adaptations arise in avian species with role-reversed breeding systems, serving as an important model for understanding the breeding biology of the closely related and highly threatened Andalusian Buttonquail (Turnix sylvaticus sylvaticus), which inhabits the Spanish steppes. Such comparative insights are invaluable, as extreme environmental pressures in steppes drive distinctive life-history strategies crucial to conservation. This study aimed to explore the social structure, sex-specific adaptations, and ecological flexibility of buttonquail populations, producing findings that challenge existing assumptions and enrich our understanding of avian behavioral ecology. We observed that foraging groups comprise both adult males and females, which contrasts with prior reports of sex-segregated foraging and suggests a cooperative approach to resource sharing. Using a novel capture method combining traditional traps with modern modifications, we successfully captured and observed these elusive birds, allowing for detailed morphological analyses. Allometric regressions revealed sex-specific growth patterns in different body parts, likely reflective of niche specialization linked to each sex's role in reproduction. Additionally, we noted location-dependent variations in sex ratios within foraging groups, with some towns showing a female bias and others a male bias, suggesting that local environmental factors may influence social structure. These findings contribute to a broader perspective on adaptive strategies and ecological dynamics, which are not only essential for understanding the evolutionary processes shaping avian species but are also relevant for conservation strategies targeting steppe birds facing similar pressures. By studying the adaptive behaviors of the Madagascar Buttonquail, we gain insights that may be directly applicable to conservation efforts for the Andalusian Buttonquail, underscoring the importance of cross-ecosystem research in tackling complex challenges in steppe ecosystems.

RELATED TOPICS (UP TO THREE)

- Life-history strategies
- Movement strategies and migration patterns

POSTER ABSTRACTS

821/29. LINKING PESTICIDE USE AND OTHER AGRICULTURAL PRACTICES WITH INVERTEBRATE AVAILABILITY FOR STEPPE BIRDS.

AUTHORS:

Bolívar Muñoz, P., Santamaria Cervantes, C.[1], Jiménez Peñuela, J.[2], Herrero Villar, M.[2], Camarero Abella, P.[3], Ortiz Santaliestra, M.[4], Mateo Soria, R.[5]

AFFILIATIONS:

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ABSTRACT

Agricultural intensification practices are closely associated with the decline of invertebrate populations in cultivated areas. The reduction of invertebrates directly impacts the availability of food for bird species dependent on agroecosystems. Over the past 30 years, populations of these birds have decreased by 55%. Since arthropods are a essential food source during the breeding seasons, it is relevant to understand which agricultural management practices and landscape structures most influence their presence. In this study, we monitored various cultivated areas in Castilla-La Mancha and Castilla y León. The plots were visited four times a year (autumn, winter, spring, and summer) over two cereal crop cycles in Castilla-La Mancha and one cycle in Castilla y León. During these visits, bird censuses were conducted, invertebrates were collected using pitfall traps, and the agricultural management practices of each plot were recorded. Additionally, invertebrate sampling was intensified during spring and summer through sweep netting, and soil and crop samples were collected in autumn and spring to analyze pesticide use. The landscape structure was characterized by calculating land-use and vegetation areas around the study sites. Using these data, we derived several variables related to habitat simplification, pesticide use, and crop management, which were subsequently used to predict the abundance of different invertebrate groups. In this communication, we present preliminary results on the agricultural and landscape factors most likely to influence the presence or absence of various arthropod groups in cereal crops.

RELATED TOPICS (UP TO THREE)

- Artrophod abundance, Crop management, Pesticide use

POSTER ABSTRACTS

821/33. EVOLUTION AND STATUS OF THE MONTAGU'S HARRIER POPULATION AND ITS HABITAT IN THE PROVINCE OF ALBACETE.

AUTHORS:

Picazo López, J., AlarcÓn Utrilla, J.[1], Picazo Oliver, J.[1]

AFFILIATIONS:

(1) Field technician. Albacete. Spain.

ABSTRACT

After 22 years of fieldwork to monitor the Montagu's Harrier population in the province of Albacete, and nest rescue campaigns, valuable information is now available that allows us to put its evolution, problems and future conservation into perspective.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

821/34. HABITAT USE AND THE SUCCESS STORY OF THE WEST PANNONIAN GREAT BUSTARD POPULATION.

AUTHORS:

Raab, R.

ABSTRACT

Austria and Hungary have been very active in Great Bustard conservation for more than 20 years. Based on the positive effects of the measures taken within the former LIFE projects, one of the objectives of LIFE Great Bustard is to reduce the threat of collision with power lines – for many years the number one mortality factor for immature and adult Great Bustards.

Not only the world bustard population, but also the population in Europe has declined by more than 30% in 11 years. However, thanks to the conservation efforts and the cooperation with farmers and hunters, the West Pannonian population of Great Bustards (including parts of Austria, Hungary and Slovakia) increased from 286 individuals in 2005 to 681 in 2024.

Between 2005 and 2023 a total of 293 km medium voltage power lines were removed, and 162 km high voltage power lines were marked in Austria and Hungary. But with increasing intensification and the development of renewable energy sources, the pressure on existing habitats still persists. Therefore, it is important to understand the critical habitats for bustard survival along with identifying the most important stepping stones by mapping potential movement corridors between suitable habitats. The results of this study can provide new insights into the habitat use of the bustard, which is essential information for the implementation of conservation measures to mitigate the risk of extinction of this large agricultural bird.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Impact of human infrastructures
- Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

821/36. AUTOMATED NEST LOCATION FOR THREATENED GROUND-NESTING BIRDS USING A DRONE.

AUTHORS:

Navarro Sarro, D., Martínez Pomet, J.[1], Cardalliaguet Guerra, M.[2], Santangeli, A.[3], Paulo da Silva, J.[4], Safonova, A.[5], Campanera, A.[6], Bota Cabau, G.[6]

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ABSTRACT

The LIFE Iberian Agroestepas project LIFE20 NAT/ES/001477 is an initiative coordinated by SEO/BirdLife focused on the conservation of the agro-steppe habitat and its associated species. There is an action in this project, with multidisciplinary teams, to develop models that enable the automated nest location identification for threatened ground-nesting birds (specially Tetrax Tetrax and Otis Tarda) using a drone with thermal camera. With this tool, we could check large areas to carry out rescue work on the nests of these cryptic species when agricultural practices suppose a risk to the correct breeding of these birds (early mowing of cereal crops or grassland, ploughing to make fallow land in the middle of the nesting season...). To have an initial good performance and overcome the difficulties to find the nest on the field of these species, during 2023 and 2024, we have done more than 70 flights testing the operativity of the drone in different situations and conditions. We flew over tagged males from other projects which are expected to provide a similar thermal signature and take pictures of artificial nests, collecting more than 5000 thermal images for deep learning modelling. Some of these thermal images contain 3568 little bustards and 600 great bustards. With all this information, we expected to create a cloud-based web-based interface in the next months where licensed conservation professionals can upload their image data to run the model that will be used to obtain nest coordinates, following a standardized protocol for image data collection. Keywords: bustard, deep learning, drone, nest

RELATED TOPICS (UP TO THREE)

- The study is related to the proposed topics: Life-history strategies, Conservation strategies and policy mechanisms: Present and future
- However, if there are other similar studies about these fields of deep learning, drones... we suggest a new topic.

POSTER ABSTRACTS

821/38. WERE THE EXTINCT QUAIL ON ATLANTIC ARCHIPELAGOS COMMON QUAILS?.

AUTHORS:

Çeltik, E., Sanchez-donoso, I.[1], Cornellas, A.[2], Rodríguez-teijeiro, J.[3], Rando, J.[4], Leonard, J.[5], Vilà, C.[6]

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(1) PostDoc Researcher, Estación Biológica de Doñana (EBD-CSIC), Sevilla, (2) Lab technician, Estación Biológica de Doñana (EBD-CSIC), Sevilla, (3) Emeritus Professor, IrBio and Universitat de Barcelona, Barcelona, (4) Professor, Universidad de La Laguna (ULL), Santa Cruz de Tenerife, (5) Researcher, Estación Biológica de Doñana (EBD-CSIC), Sevilla, (6) Research Professor, Estación Biológica de Doñana (EBD-CSIC), Sevilla

ABSTRACT

Several flightless or near-flightless species of Coturnix quails have been identified in the fossil record in the Macaronesian archipelagos: Coturnix lignorum and C. alabrevis on Madeira, C. centensis on Cape Verde, C. gomerae in the Canary Islands, and other undescribed species on Madeira and on Azores. All of these lineages went extinct upon the arrival of humans to the islands. The presence of so many species in such small areas is surprising in comparison to the vast distribution of the highly mobile common quail (C. coturnix), which migrates and extends from Portugal to Mongolia and from Sweden to South Africa and India. Could the extinct species be local variants of the common quail? Here we analyze ancient DNA from bone samples of C. lignorum, C. alabrevis and C. centensis. Complete mitochondrial genomes were generated for each taxon and compared to sequences from modern common quail and other Coturnix species available in GenBank. The phylogenetic tree yielded two separate, monophyletic clades for ancient and modern quails. Extinct quails form a clade including the Japanese quail (C. japonica), which diverged from the common quail lineage more than a million years ago. Interestingly, the mitochondrial phylogeny groups the extinct species together and does not show differentiation between them. This supports the hypothesis that a separate lineage inhabited the islands. Thus, although two or more species of quails lived in each of the Atlantic archipelagos, most of them went extinct and only common quails survive today.

Keywords: ancient DNA, common quail, extinction, Macaronesia, migration

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Movement strategies and migration patterns

POSTER ABSTRACTS

821/39. CONFLICT BETWEEN FAVOURABLE AREAS FOR THREATENED STEPPE BIRDS AND FOR SOLAR PHOTOVOLTAIC FACILITIES IN ANDALUSIA.

AUTHORS:

Real Giménez, R., Camacho Romero, M.[1], Cobos Mayo, M.[1], de las Heras, M., López Ramírez, S.[2], Olivero Anarte, J.[3], Márquez Moya, A.[3], Romero Pacheco, D.[4], Muñoz Gallego, A.[3], Ramírez Román, J.[5], Farfán Aguilar, M.[3]

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ABSTRACT

We analysed the censuses during the 21st century of six steppe bird species in Andalusia: Great Bustard (Otis tarda), Montagu's Harrier (Circus pygargus), Dupont's Lark (Chersophilus duponti), Iberian Sandgrouse (Pterocles alchata), Black-bellied Sandgrouse (Pterocles orientalis) and Little Bustard (Tetrax tetrax). These species are threatened by the loss and fragmentation of their habitat due to the expansion of human infrastructures, including solar photovoltaic facilities. In the last two decades, the energy transition towards non-fossil sources, particularly solar and wind, has intensified in Spain to reduce greenhouse gas emissions. Andalusia, due to its climatic conditions, is presented as a strategic area for the expansion of solar plants, with a remarkable projected increase in the area allocated to this industry in Andalusia as stipulated in the "Andalusia Energy Strategy 2030". We analysed census data from the last two decades, including both the breeding and wintering seasons. The main objective was to determine whether the favourable areas for these species are affected and to assess the possible impact of the installation of solar panels on their distribution. Resulting favourability maps were useful to understand the environmental factors affecting these birds, and highlight the need to apply strategic planning in the expansion of solar photovoltaic facilities to reconcile biodiversity conservation with energy transition in areas of high ecological sensitivity.

Keywords

Biogeography, Endangered species, Land-use change, Photovoltaic energy

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Impact of human infrastructures

POSTER ABSTRACTS

821/45. STEPPE BIRDS AND POWERLINES: WHO'S BOTHERED AND WHO ISN'T?.

AUTHORS:

Marques, T., Paulo da Silva, J.[1], Ferraira Moreira, F.[1]

AFFILIATIONS:

(1) BIOPOLIS | CIBIO. University of Porto. Portugal.

ABSTRACT

Displacement effects caused by transmission powerlines on bird species has been documented, particularly in open habitats, but this topic remains underexplored in the scientific literature. This study aims to evaluate the impact of transmission powerlines on bird species typical of open farmlands in the Mediterranean region. The research was conducted across five Special Protection Areas (SPAs) designated to protect farmland birds, in Southern Portugal.

Using an impact-gradient design, we assessed how bird distributions respond to the proximity of transmission powerline (150kV and 400kV). A total of 151 sampling points were placed in open farmland at varying distances from the powerlines, extending up to 2 km. Bird data was collected data during the peak of the breading season, in 2021 and 2022.

Our analysis, using generalized additive models, revealed that overall Species Richness and Grassland Species Richness were not significantly affected by the distance to powerlines. However, we detected species-specific negative effects for two key farmland species: the little bustard (Tetrax tetrax) and the calandra lark (Melanocorypha calandra), both showing displacement up to 1 km from the powerlines.

These findings indicate no evidence of community-level effects on species richness and no attraction to powerlines in Iberian farmlands. However, displacement effect appears to be species-specific, with some species negatively impacted by the presence of the transmission powerlines. The little bustard, a species of high conservation concern and vulnerable to collision with powerlines, is also displaced by the structures, underscoring the need for targeted conservation strategies in areas intersected by powerlines.

RELATED TOPICS (UP TO THREE)

- Impact of human infrastructures

POSTER ABSTRACTS

821/47. SEASONAL TIMING AND ENVIRONMENTAL DRIVERS OF INCUBATION DURATION IN NORTHERN LAPWING.

AUTHORS:

Cecchin, A., Székely, T.[1], Liker, A.[2]

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ABSTRACT

Grassland-breeding shorebird species face unique reproductive challenges in our rapidly changing world, and understanding the environmental drivers of seasonal reproductive timing in shorebirds is essential for their conservation. The Northern Lapwing (Vanellus vanellus), classified as 'Vulnerable' in Europe in the IUCN Red List, is an ideal target species to study the breeding biology and population trends in grassland-breeding shorebirds, being a suitable indicator of both the decline in wetland habitats and the ongoing changes in agricultural and grassland landscapes. This study aimed to explore seasonal variations in incubation duration in the Northern Lapwing, and to investigate if incubation time shortens due to temperature increase or to lower reproductive investment (i.e. through smaller egg sizes) later in the season. We monitored 465 Northern Lapwing nests in alkaline steppe of Kiskunsági National Park (Hungary), where the population, once in significant decline, has only recently been showing signs of recovery thanks to ongoing habitat restoration. We recorded incubation timings, egg size, and temperatures over three breeding seasons (1992–1994). Using regression models, we evaluated the roles of temporal variation and environmental influence on incubation duration. Our results show that, while incubation duration decreases with later laying dates – a known phenological trend – temperature emerges as a key factor, significantly correlating with shorter incubation periods. Contrary to expectations, larger egg sizes did not correlate with extended incubation time. These findings suggest that seasonal processes influence Northern Lapwing incubation timing, suggesting potential vulnerability to altered climatic patterns. This study provides valuable baseline data for the current monitoring of breeding and incubation phenology of the same population 30 years after the earlier study and evaluate the responses to the increasing temperatures in Palearctic steppe habitats.

RELATED TOPICS (UP TO THREE)

- Life-history strategies; Evolutionary and behavioral ecology of steppe birds; Population monitoring and trends.

POSTER ABSTRACTS

821/48. CHANGES IN FORAGING HABITAT FAVOURABILITY FOR THE COMMON CRANE (GRUS GRUS) ON A KEY WINTERING AREA (SW SPAIN).

AUTHORS:

Cristo Da Silva Gamero, E., Guzmán Bolaños, J., Parejo Nieto, M.[1], Sánchez Guzmán, J.[2], Díaz Ruiz, F.[1], Cadahía Lorenzo, L.[1]

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ABSTRACT

Agriculture is one of the main activities impacting biodiversity, as indicated in the latest international reports on the state of the environment. Extremadura (SW Spain) is an eminently agricultural region where the different phases of agriculture intensification can be observed. Examining the effects of such agricultural transformation and intensification on different species remains a central focus in conservation biology. Furthermore, in these agricultural habitats, ornithic communities of great interest are present, which in the case of Extremadura are particularly relevant. In this study, we use the common crane (Grus grus) as a model species to analyze changes in the favourability of the agricultural landscapes used as foraging habitats for the species over the last two decades. Using species distribution models and fuzzy logic techniques, the foraging habitat favourability of the species was modelled for two periods (2000-2001 and 2018-2019), at a spatial resolution of 5 km grid squares. Presence data for the period 2000-2001 were obtained from published distribution data, and through citizen science for the period 2018-2019. Land use and topography were used as explanatory variables. The results show that the favourability of the foraging areas of the species has changed, decreasing in some historical wintering areas in the south and west of the region (e.g., Azuaga and Brozas, respectively). Although the common crane is not a threatened species at present, changes in agricultural systems in its wintering areas, which tend to intensify, coupled with the loss of wetlands in its breeding areas, may have a negative effect on their populations, as on other sympatric species where agriculture has an important impact on their ecology.

RELATED TOPICS (UP TO THREE)

- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems, Population monitoring and trends

POSTER ABSTRACTS

821/50. TRACKING THE MIGRATION AND WINTERING PATTERNS OF THE PIED AVOCET (RECURVIROSTRA AVOSETTA) FROM ALBANIA.

AUTHORS:

Selgjekaj, L.[1], Topi, M., Bego, F.[2]

AFFILIATIONS:

(1) PhD student at University of Debrecen, Hungary, (2) Lector, University of Tirana, Faculty of Natural Sciences, Tirana, Albania

ABSTRACT

We conducted a telemetry study on an individual of the Pied Avocet (Recurvirostra avosetta) captured on June 21st 2023, on its breeding grounds in Narta Lagoon in Albania, to investigate its migratory routes, stopover sites, and wintering locations. The study provides a comprehensive overview of the bird's movements across multiple countries and seasons, along 505 days of tracking. After completing its breeding season in Albania, the Avocet migrated to southern Italy, where it stayed for 79 days. Following this period, it departed towards Tunisia in Africa, arriving the next day and remaining there for 160 days. The Avocet returned to its breeding site in Albania on April 24th, 2024, staying for 45 days. It then migrated again to Italy for another exactly 79-day period before traveling again towards Tunisia, and moved towards Doñana National Park in Spain, arriving two days after departing from Tunisia, and remained there for 51 days. After Doñana National Park, the bird started the migration south with short stopovers in Morocco, Mauritania, and Senegal, before reaching the Gambia River shores on October 26, where it is lastly located on the day 505 of tracking. These first findings of the tracking highlight some stopover and wintering sites across the Mediterranean, West Africa, and the Iberian Peninsula, providing insights into the migratory patterns of the Avocet.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

POSTER ABSTRACTS

821/51. SHORT-EARED OWL (ASIO FLAMMEUS) INVASIONS AND MOVEMENTS IN RELATION TO VOLE OUTBREAKS IN NORTHWEST SPAIN.

AUTHORS:

Mougeot, F., Jubete, F.[1], Caminero, C.[2], Luque Larena, J.[3]

AFFILIATIONS:

(1) Independent researcher, (2) ITACYL, (3) Universidad de Valladolid

ABSTRACT

Short-eared owls (SEOs) are highly specialised predators of small mammals: when and where voles are abundant, large numbers concentrate and breed. Recent studies showed that owls can breed sequentially in areas thousands of kms apart. In NW Spain common voles invaded 5 million ha of agricultural pseudo-steppes and intensive farmland during the 1990s where vole outbreaks periodically occur since, causing crop damages and public health impacts. Using regional and national records of SEOs in Spain during the last 3 decades, we show that SEOs records have increased 20-fold in this region, with larger invasions occurring during vole outbreaks. Local data on owl breeding and vole abundance during 2008-2021 confirmed a strong numerical response of SEOs to voles. In 2019-2024, we fitted 40 owls with GPS trackers. Using regional maps of local vole abundance, we show that SEOs used areas with more voles. Using local assessments of vole abundance, we show that SEOs select fields with higher vole abundance for foraging. In autumn, SEOs performed increasingly distant prospection loops before migrating to Eastern or Northern Europe (Rumania, Ukraine, Russia, Finland) or to northern Africa (Egypt, Chad or Niger). Our data highlight the challenges of monitoring populations of highly mobile, nomadic, species like short-eared owls, and the usefulness of tracking them to monitor vole outbreaks at local, regional and also continental scale.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

POSTER ABSTRACTS

821/54. BREEDING HABITAT SELECTION AND REPRODUCTIVE SUCCESS OF THE CALANDRA LARK, MELANOCORYPHA CALANDRA, IN THE CRAU PLAIN.

AUTHORS:

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AFFILIATIONS:

(1) Scientific project manager, Conservatoire d'espaces naturels PACA, Saint-Martin-de-Crau, France

ABSTRACT

The decline in grassland bird populations, notably the Calandra lark Melanocorypha calandra, raises concerns regarding habitat management. In France, this once-common species now only nests in the Crau plain (Bouches-du-Rhône, France). This habitat, a relict of the dry sub-steppe grasslands of Western Europe, has been shaped by pastoralism since the Neolithic. Despite their importance for the conservation of the species, knowledge of its nesting habitat within the plain remains limited. This study analyses the breeding habitat preferences of the Calandra lark, focusing on different grazing areas and vegetation structure. Weekly counts and vegetation surveys (coverage and heights) were conducted in grazing areas subjected to varying pressures. Additionally, a search for nests was carried out to characterise the structure of the herbaceous layer chosen by the lark for nesting. The results show that the species avoids pasture areas with significant pressure and prefers habitats where the vegetation, in particular the Brachypodium retusum, is dense and tall. The located nests were mostly found in the least grazed areas and predominantly in clumps of Brachypodium retusum, highlighting the importance of this species for nesting in the Crau plain. The Calandra lark is thus highly sensitive to the fragmentation of its habitat, requiring large open grasslands with continuous, dense and sufficiently tall herbaceous vegetation to protect the nests. Appropriate grazing management is crucial to maintain these conditions. Diversifying land management practices to promote varied herbaceous structures is essential not only for the conservation of the Calandra lark but also for promoting a diversity of bird species dependent on these habitats.

RELATED TOPICS (UP TO THREE)

- Key words : conservation, habitat selection, Melanocorypha calandra, pastoralism, reproductive success

POSTER ABSTRACTS

821/57. THE CRITICAL CONSERVATION STATUS OF CANARIAN HOUBARAS.

AUTHORS:

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ABSTRACT

The Canarian houbara bustard (Chlamydotis undulata fuertaventurae) is categorised as vulnerable at global and European scales, and as endangered in Spain. The most recent censuses on the three islands of the Canary archipelago inhabited by the species, and the density estimates repeated over the last 25 years on Lanzarote and Fuerteventura confirm the delicate situation of the houbara, with only 440-452 individuals on Lanzarote, 12-16 on La Graciosa and 85-109 on Fuerteventura. Its conservation status is particularly critical on Fuerteventura, where the species is on the brink of extinction. Comparison of population estimates obtained in 2004-2005 with more recent ones suggests a decline of about 50 % of the population in the last two decades. There has also been a significant loss of suitable habitat for the species, at least on Fuerteventura. Finally, anthropogenic mortality in the Canary Islands has been estimated at 6.2% annually (33-35 individuals per year). With these values, and the low reproductive success recorded in recent years, largely due to the decrease in autumn-winter rainfall, population viability models predict the extinction of the Canarian houbara within 50 years, if conservation measures are not urgently implemented.

Keywords: anthropogenic mortality, Canarian houbara bustard, endangered, population viability

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Impact of human infrastructures
- Climate change

POSTER ABSTRACTS

821/59. MITIGATING NEGATIVE EFFECTS OF AGRICULTURAL OPERATIONS ON FARMLAND BIRDS: A NESTING ECOLOGY PERSPECTIVE.

AUTHORS:

Handschuh, M., Anthes, N.[1], Schlindwein, X.[2], Staggenborg, J.[3]

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ABSTRACT

Halting the continuous decline of farmland bird populations remains a challenge even in areas with targeted conservation measures. This may be due to lacking or incomplete information on the degree to which farming practices compromise nest survival and thus local productivity. Taking a nesting ecology perspective for two conservation target species, Corn Bunting (Emberiza calandra) and Skylark (Alauda arvensis), we illustrate how data on local breeding performance can inform conservation efforts. For the Corn Bunting, we characterize variation in nesting ecology between habitats, years and agricultural landscapes in relicts of its critically endangered SW German population and link nesting phenology to site-specific agricultural schedules. We suggest adapted management of fallow fields, meadows, pasture, and clover-grass leys to improve local reproductive output and stabilize populations. For the Skylark, we focus on alfalfa and clover-grass leys, a central element of crop rotation in organic farming that serves weed control, nitrogen fixation, bioenergy and fodder production. This crop provides highly attractive nesting sites for several ground nesting birds, but is an ecological trap due to short harvest intervals. We report first insights on how unmown strips and elevated bar mowing may benefit Skylark nesting success.

RELATED TOPICS (UP TO THREE)

- Farmland birds, farming practices, grassland and arable management

POSTER ABSTRACTS

821/61. HUSBANDRY GUIDE FOR THE EX-SITU RECOVERY OF WILD BORN EUROPEAN ROLLER CORACIAS GARRULUS NESTLINGS.

AUTHORS:

Valera Hernández, F., Cortés De Arévalo, M.[1], Bolonio, L.[2], Martínez, A.[3], Castaño, F.[4], Sanchez, J.[3], Rodríguez-linde, J.[5]

AFFILIATIONS:

(1) Veterinary and Head of Conservation Department, (2) Conservation Biology Technician, (3) Veterinary Technical Department, (4) Postdoctoral Research Fellow, (5) Director and Technical Director

ABSTRACT

The European roller Coracias garrulus is a migratory, secondary cavity nesting steppe bird species that suffered marked population declines in Europe during the second half of the XX century accompanied by local extinctions and overall range contraction. It is included into the Birds Directive (2009/147/CE) Annex I. It is therefore considered a priority at EU level. According to the latest Red Book of the Birds of Spain, the Spanish population should be considered as "Endangered". Thus, various procedures, including ex-situ conservation, should be tested and developed in order to contribute to the recovery of the populations of this species. Taking advantage of the marked hatching asynchrony of the European roller (which results in the death of the smallest nestlings under unfavourable conditions), and of the poor conditions of the 2024 breeding season (low food availability due to a severe drought) in our study area (Tabernas, Almería, south east Spain) we removed emaciated nestlings from nest boxes and took them to Mini-Hollywood Oasys Zoological Reserve, where they were examined, reared and released. Here we report on: i) the health condition of the rescued nestlings by means of close observation and necropsies of deceased individuals, ii) the husbandry procedures to heal and raise emaciated nestlings until they got fully fledged, iii) the release procedure and post-release support to fledglings. As a whole, we got 23 nestlings from 18 nests, of which 17 survived until release. Our results suggest that this procedure can be a successful conservation strategy for this endangered steppe bird species at least until the release stage. Further research is necessary to estimate the survival probabilities of these individuals after release and their fitness.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Population monitoring and trends
- Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

821/62. LONG-TERM VARIATIONS IN HABITAT SUITABILITY FOR A STEPPE BIRD UNDER DYNAMIC ENVIRONMENTAL AND ANTHROPOGENIC CONDITIONS.

AUTHORS:

Merino Luna, C., Mougeot, F.[1], Gutiérrez Expósito, C.[2], Ibáñez Fernández De Angulo, F.[3], Benítez, A.[4]

AFFILIATIONS:

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ABSTRACT

Understanding spatio-temporal variations in habitat suitability of animals living in dynamic, heterogeneous environments under increasing human pressure and with different levels of protection is crucial for effective conservation plans. This is particularly critical for steppe birds, which are linked to semi-arid environments and have suffered steady declines in the last decades due to land use intensification. Here we assessed spatial and temporal variations in suitable areas for the pin-tailed sandgrouse Pterocles alchata in Doñana National Park (NP) marshlands in Spain and its surrounding areas. We evaluated the role of the NP as a refuge for the species under the current global change. We leveraged 40 years of 1174 occurrence points and historical time series of flooding, primary productivity (NDVI) land cover data and topography, and fitted multitemporal habitat suitability models using Random Forests. We used the models to reconstruct past changes in habitat suitability during the study period (1984-2021). During the last four decades the percentage of suitable area for sandgrouse fluctuated markedly with seasons, reaching maximum values during summer and minimums during the winters (mean ± SD:16% ± 2% and 12% ±4%, respectively), following the marshlands flooding regimes. Habitat suitability index was consistently higher inside NP than outside (mean HSI ± SD: 0.43 ± 0.15 and 0.13 ± 0.03, respectively). In the long term, suitable habitat tended to increase by 5% inside the NP particularly during the winters, but decreased beyond its boundaries by 3%. These trends were mainly determined by increases in the cover percentage of both irrigated crops and rice fields outside the NP boundaries. Our results highlight how climate and land use changes can interact to shape long-term changes in habitat suitability and stress out the importance of protected areas as a buffer against anthropogenic land use degradation.

RELATED TOPICS (UP TO THREE)

- Dynamics and drivers of habitat change.

POSTER ABSTRACTS

821/64. HABITAT SELECTION ANALYSIS OF EURASIAN STONE CURLEWS IN AGRICULTURAL AREAS THROUGH GPS DATA.

AUTHORS:

Revilla-Martín, N., Sarda Palomera, F.[1], Navalpotro Buscail, H.[2], Santisteban, C.[3], Bota Cabau, G.[4], Giralt Jonama, D.[1]

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ABSTRACT

The southern part of the province of Lleida is a plain dominated by agricultural use, alternating between irrigated areas (fruit trees, corn, cereals) and dryland crops (cereals, fallow land, almond trees, olive trees), which have been designated as Special Protection Areas (SPAs) since 2009. Since 2021, we have tracked 22 European Stone Curlews (Burhinus oedicnemus) with GPS devices, a species with declining populations both in Spain and across Europe. This study analyzes the habitat selection of the stone curlews before, during, and after the breeding season, differentiating between daytime and nighttime data. During the pre-breeding and breeding periods, stone curlews positively selected almond orchards (both irrigated and dryland), olive groves, and vineyards. Irrigated fruit orchards were negatively selected, likely due to the closer spacing between tree rows. In the post-breeding period, more differences were observed between day and night. During the day, stone curlews preferred almond orchards and vineyards, while at night they favored almond orchards, fallow fields and cereals. This distinctive use of fallow fields may indicate that stone curlews use them for nesting or feeding at night but not for daytime resting. Regarding proximity to infrastructure and urban areas, stone curlews selected areas farther from these during the breeding period. In the post-breeding period, they rested in areas close to urban zones during the day, while at night, they moved to more distant areas to feed. A detailed understanding of how this species uses the agricultural landscape can help implement more effective management measures at different points in its life cycle.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns
- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems

POSTER ABSTRACTS

821/65. FALLOWS IN THE FRAMEWORK OF STEPPE BIRD CONSERVATION: DEFINITION, CLASSIFICATION AND TARGETING.

AUTHORS:

Morales Prieto, M., Bota Cabau, G.[1]

AFFILIATIONS:

(1) Researcher at Forest Science and Technology Centre of Catalonia (CTFC), Solsona (Spain)

ABSTRACT

Fallow land is a characteristic feature of cereal steppes and a key habitat for wildlife. In the case of birds, many species associate with or depend on fallows, where they find food, refuge from predators and nesting sites, usually much scarcer in other habitats of arable landscapes. Here we (i) clarify the terminology associated with fallows in a conservation framework, by reviewing different definitions of the term 'fallow', (ii) review how agricultural rotation and degree of farmland intensification changes fallow traits, cover and spatial and temporal distribution in the landscape, and (iii) discuss the use of the fallow concept in conservation research. We conclude that fallows ought to be ecologically functional to have any potential as conservation tool. However, to be efficient, their structure and duration should be adapted to conservation targets (species conservation, community diversity, ecological function) in the light of sound ecological knowledge. Moreover, their spatial location in the landscape should consider the influence of human infrastructures and other features that may reduce habitat quality for birds. The adequate response of birds and other wildlife to fallow management should be regularly evaluated in relation to final objectives using suitable indicators.

RELATED TOPICS (UP TO THREE)

- Dynamics and Drivers of Habitat Change in Steppe and Pseudo-steppe ecosystems
- Conservation strategies and policy mechanisms: Present and future

POSTER ABSTRACTS

821/68. SUMMER DIET PREFERENCES OF A DECLINING STEPPE BIRD AS REVEALED BY DNA METABARCODING.

AUTHORS:

González del Portillo, D., Cabodevilla Bravo, X.[1], Arroyo, B.[2], Morales Prieto, M.

AFFILIATIONS:

(1) Forest Science and Technology Centre of Catalonia (CTFC), Solsona, Spain, (2) Instituto de Investigación en Recursos Cinegéticos (IREC, CSIC-UCLM-JCCM), Ciudad Real, Spain

ABSTRACT

Agricultural intensification is one of the main threats to steppe bird populations, leading to habitat degradation and the reduction of food resources. The little bustard (Tetrax tetrax), a highly endangered bird species in Europe, is particularly vulnerable to the loss of seminatural habitats containing such resources. Understanding its diet composition is crucial for the development of effective conservation strategies. Here, we describe little bustard diet composition and preferences during summer, which includes the chick rearing period, using DNA metabarcoding of faeces. Diet quality at this stage is critical for the adults to face reproduction costs (e.g. male display or parental investment by females) and for juveniles to ensure their survival and recruitment. Additionally, we identified arthropod taxa selected or avoided by little bustards by comparing the sequencing results with the estimated availability of these taxa in the study area (obtained from pitfall traps and sweep netting). Our findings suggest that arthropods are more relevant than plants in little bustard diet in this period and inform about the relevance of wild vs cultivated species in little bustard diet. Among arthropods, the most commonly detected orders were Orthoptera, Coleoptera, and Lepidoptera, while the most consumed plant families were Asteraceae, Fabaceae and Brassicaceae. The analyses of arthropod preferences showed that little bustards select Orthoptera, Lepidoptera, Hemiptera, and Dermaptera among insects and avoid Hymenoptera and Aranea. Our results reinforce the importance of natural vegetation patches as feeding habitats, but also of cultivated habitats like rain-fed alfalfa, if managed to resemble natural grasslands, where little bustards can find the arthropods needed.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds

POSTER ABSTRACTS

821/70. THE BLACK-BELLIED SANDGROUSE (PTEROCLES ORIENTALIS) LIVES OUTSIDE PROTECTED AREAS IN GUADALAJARA PROVINCE (SPAIN).

AUTHORS:

Martín, C., Mougeot, F.[1], Refoyo, P.[2], Palacín Moya, C.[3]

AFFILIATIONS:

(1) Senior Scientist. IREC (CSIC-UCLM-JCCM). Cuidad Real, (2) University professor. UCM. Madrid, (3) Researcher. MNCN-CSIC. Madrid

ABSTRACT

The Black-bellied Sandgrouse is a medium-sized steppe bird typical of steppe areas and extensive non-irrigated agriculture. National censuses in Spain indicate large population declines between 2005 and 2019 (-43% in the peninsular territory). The species is distributed in the five provinces of the community of Castilla-La Mancha, with an estimated total of one thousand birds. In the province of Guadalajara, population size is estimated at a hundred individuals, but how abundance and distribution vary along the seasons has not been well studied. Using a mixed methodology of censuses and tracking of individuals tagged with GPS-GSM transmitters, we studied the distribution of the species throughout the year and individual movements over 2021-2023. We found that the Black-bellied Sandgrouse is distributed in four areas of the province of Guadalajara, with a minimum of 110 birds in winter and 90 in spring. The maximum movements of the 12 tagged birds averaged 20.3 km (minimum 7.2 km - maximum 37.6 km), although it must be noted that individuals were not followed for the same periods of time. Both the census data and the home ranges obtained by tracking tagged birds indicate that the areas occupied by the species in the province of Guadalajara are not included in the Natura 2000 network of protected areas. These results show that, despite being classified as a Vulnerable species according to the Spanish Catalogue of Threatened Species (RD 139/2011), the species is not adequately safeguarded within the current network of protected areas in the province of Guadalajara.

Keywords: seasonal movements, home ranges, Kernel, Natura 2000

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends
- Movement strategies and migration patterns

POSTER ABSTRACTS

821/71. GENOMIC CONSEQUENCES OF 20TH CENTURY POPULATION DECLINES ON THE GREAT BUSTARD IN GERMANY.

AUTHORS:

Steinbach, E., Langgemach, T.[1], Watzke, H.[2], Albrecht, F.[3], Hundsdörfer, A.[3], Kehlmaier, C.[3], Nowak, C.[4], Byerly, P.[4]

AFFILIATIONS:

(1) Staatliche Vogelschutzwarte Brandenburg, Germany, (2) Förderverein Großtrappenschutz e. V., Nennhausen, Germany, (3) Senckenberg Naturhistorische Sammlungen Dresden, Germany, (4) Conservation Genetics Group, Senckenberg Research Institute, Frankfurt, Germany

ABSTRACT

The Great Bustard (Otis tarda), a once widely distributed species across Europe and Asia, has experienced drastic population declines over the past century. These declines can be primarily attributed to the emergence of mechanised agriculture, hunting and mammalian predation. Furthermore, extensive habitat fragmentation has resulted in highly isolated populations across their range, making them more susceptible to the loss of genetic diversity as well as high levels of inbreeding, which may threaten the future viability of this species. In Germany, the Great Bustard population underwent a massive decline during the course of the 20th century, dropping from approximately 4,000 to only 57 individuals by 1997. However, due to a population reinforcement program and large-scale habitat management, the German Great Bustard population has been able to recover to approximately 302 individuals by 2024, largely in contrast to continuously declining trajectories of other European populations. Nevertheless, reproductive success of the German population remains low in the wild, which raises the concern that inbreeding depression may have reduced population viability since the large decline during the 20th century. Within this pioneer study, we conducted population genomic analyses of Great Bustards in Germany between 1893 to 2024 to assess temporal changes in genetic diversity and inbreeding. We conducted low-coverage whole genome sequencing of 30 Great Bustard museum samples, stemming from three different collections, as well as 43 spatially overlapping modern samples. We will present preliminary results on the genetic diversity of the Great Bustard in Germany, and to what extent genetic factors may play a role in the recovery of this species. We are confident that our findings will be useful to support Great Bustard conservation strategies within Germany and abroad.

RELATED TOPICS (UP TO THREE)

- Evolutionary and behavioral ecology of steppe birds
- Population monitoring and trends

POSTER ABSTRACTS

821/84. USING HIGH-RESOLUTION GPS DATA TO CHARACTERISE THE FLIGHT BEHAVIOUR OF A COLLISION-PRONE STEPPE BIRD, THE GREAT BUSTARD OTIS TARDA.

AUTHORS:

Fernández-Tizón, M., Jubete, F.[1], Martín, B.[2], Crispim-Mendes, T.[3], Paulo da Silva, J.[3], Mougeot, F.[4]

AFFILIATIONS:

(1) ANPA (Asociación de Naturalistas Palentinos), (2) Randbee Consultants, (3) CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, InBIO Laboratório Associado, (4) IREC (CSIC-UCLM_JCCM)

ABSTRACT

Powerlines and renewable energy infrastructures pose significant collision risks for birds, contributing to substantial mortality rates. Assessing and mitigating these risks is vital for collision-prone species, particularly those with pressing conservation concerns, such as the Eurasian Great Bustard (Otis tarda).

In this study, we aimed to characterise the flight behaviour of the Great Bustard to enhance collision risk assessments and inform targeted mitigation strategies. Between 2022 and 2024, we tracked six Great Bustards across Palencia, Castilla y León (one adult male and three juvenile males), and Badajoz, Extremadura (a juvenile male and a juvenile female), Spain, using high-resolution GPS transmitters equipped with accelerometers (Ornitela devices). These devices recorded positional data at intervals of 10 minutes or less for 1-2 years, yielding approximately 50,000 data points per bird per year.

We developed and compared two analytical frameworks to identify and classify flights from GPS data, resulting in the documentation of over 1,500 individual flight events. Key flight parameters were quantified, including daily flight frequency (1 to 4 flights per day), daily travel distances (0.1 to 9 km), mean flight altitude (1 to 95 m), speed (5 to 90 km/h), and flight direction. Flight activity peaked during the morning and evening hours and varied seasonally, with a notable increase during the rutting season.

These findings provide essential insights into the time spent by birds at altitudes associated with collision risks, providing crucial information for the development of detailed collision risk maps. The study delivers a robust foundation for implementing risk prevention and mitigation strategies in regions with expanding renewable energy infrastructure.

RELATED TOPICS (UP TO THREE)

- Impact of human infrastructures
- Movement strategies and migration patterns

POSTER ABSTRACTS

821/89. USE AND SELECTION OF PONDS IN SEMI-ARID SYMPATRIC SANDGROUSE IN IBERIA.

AUTHORS:

Barryte, M., Marques Vila Ferraz, G.[1], Valerio, F.[2], Mougeot, F.[3], Silva, J.[4], Marques, T.[2]

AFFILIATIONS:

(1) CIBIO-InBIO/BIOPOLIS, University of Porto, Portugal.Departamento de Biologia, Faculdade de Ciências,, (2) CIBIO-InBIO/BIOPOLIS, University of Porto, Portugal, (3) IREC (CSIC-UCLM-JCCM), España, (4) CIBIO-In-BIO/BIOPOLIS, University of Porto, Portugal

ABSTRACT

Pterocles orientalis (BBS) and Pterocles alchata (PTS), two steppe bird species adapted to arid and semi-arid ecosystems, rely on water availability, particularly during the serotinal summers coinciding with the breeding season in Iberia. The access to water is vital for their survival and reproduction during a season when ponds shrink as temperatures soar. In this study, we aimed to examine differences in pond visitation for drinking purposes by season, species and sex, and to identify environmental factors within and around the ponds that influence pond selection by each species.

Utilization of ponds was determined using GPS location data from individuals (n= 79) tracked in three special protection areas (SPA) of Iberia, from 2021-2024. First, we assessed, for each species and sex, the frequency of visits to ponds and how it fluctuates throughout the day during breeding (May - September) and non-breeding seasons (October - May). Then, we used General Linear Models to contrast the characteristics of ponds visited versus those not visited by the tracked birds (pseudo- absences), how visitation frequency fluctuates throughout the day, and the influence of various environmental predictors of pond choice were assessed.

Preliminary results revealed that ponds are visited more often during breeding season than during non-breeding season regardless of species or sex. Models of pond selection showed that both sandgrouse preferred ponds with larger water surfaces in areas with gentler slopes. Increased vegetation greenness (NDVI) of a pond decreased the probability of BBS selecting ponds but was not indicated as an influential factor for PTS. Instead, levels of chlorophyll-a were more influential and decreased the probability of selection by PTS. These results provide more nuanced understanding of sandgrouse water needs and pond preferences, information useful in developing effective management prescriptions.

RELATED TOPICS (UP TO THREE)

- Habitat Use. Ponds. Special Protection Areas

POSTER ABSTRACTS

821/93. THE DECLINE OF STEPPE BIRD POPULATIONS IN THE REGIONS OF LOS MONTES DE CIUDAD REAL AND CAMPO DE CALATRAVA (CIUDAD REAL). PROPOSALS AND MEASURES FOR THEIR CONSERVATION BASED ON RAISING PUBLIC AWARENESS.

AUTHORS:

Navas Berbel, A., Díaz-sanz, M.[1]

AFFILIATIONS:

(1) UNIVERSIDAD AUTÓNOMA DE MADRID

ABSTRACT

In recent years, the steppe bird population has decreased significantly, especially in the regions of Los Montes and Campo de Calatrava (Ciudad Real). The decline in the populations of great bustards (Otis tarda), little bustards (Tetrax tetrax), canasteras (Glareola pratincola), sandpipers (Pterocles alchata), ortegas (Pterocles orientalis), as well as waterfowl has been caused by multiple causes. In the following communication we intend to make a work proposal with the aim of raising awareness among the younger population of the importance of the conservation of steppe birds. Together with this, we will draw up a plan to evaluate some of the risks suffered by the populations in these natural areas, as well as proposals for improvement with the aim of mitigating these effects and trying to ensure that, in the medium term, the density of individuals in different areas increases, as well as promoting added value for agriculture, making it compatible with the conservation of species and areas.

RELATED TOPICS (UP TO THREE)

- Los Montes de Ciudad Real,Campo de Calatrava, steppe birds, conservation, education

POSTER ABSTRACTS

821/100. COULD LIGHT POLLUTION ALTER MOVEMENT PATTERNS AND HABITAT SELECTION IN A NOCTURNAL STEPPE BIRD?.

AUTHORS:

Amorós Box, C., Fernández Gómez, L.[1], Sanchez Zapata, J.[2], Botella Robles, F.[2], Perez Garcia, J.[2]

AFFILIATIONS:

(1) PhD at University Miguel Hernández, (2) Professor at University Miguel Hernández

ABSTRACT

The loss of natural habitats represents a significant contributing factor to biodiversity loss.One of the most significant alterations to natural environments is the transition to urban or residential areas. This transformation has several direct and indirect consequences, such as increased light pollution. Modifications to visibility can yield both beneficial and detrimental outcomes for species, particularly those that are nocturnal. This is evident in the context of predator-prey interactions, courtship behaviours, and interactions with human infrastructures. The effect of light pollution has been investigated in several different taxa, from reptiles, mammals and some birds such as shearwaters or passerines, but so far no research has been carried out on steppe birds, one of the groups most threatened by habitat transformation. Over the past decade, there has been a notable increase in the occupation of urban and suburban areas in south-eastern Spain by the Eurasian thick-knee (Burhinus oedicnemus), which is one of the few steppe birds with nocturnal habits. The objective of this study is to analyse the effect of light pollution on the movement patterns and habitat selection of the Eurasian thick-knee in south-eastern Spain. To this end, between 2021 and 2024, 12 adult birds were tracked by GPS-GPRS transmitters. Birds were captured within a light intensification gradient to assess behavioural differences. For each bird, the distance travelled was calculated on an hourly basis and the foraging and roosting areas were identified. Subsequently, remote sensing data on light pollution was used to assess the use of feeding and roosting areas. The preliminary results indicate that some of the tracked thick-knee used areas with high light intensity, such as airports or sports fields, as main feeding areas. These results will allow us to assess the indirect effect of urbanisation on this nocturnal steppe bird

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns.
- Impact of human infrastructures

POSTER ABSTRACTS

821/102. HOW LARGE-SCALE LANDSCAPE TRANSFORMATIONS ARE IMPACTING THE BIRD COMMUNITIES FROM AGRICULTURAL LANDSCAPES IN SOUTHERN SPAIN.

AUTHORS:

López Lozano, E., Sanabria Bernaras, A.[1], Barral Muñoz, M.[2], Prenda Marín, J.[2]

AFFILIATIONS:

(1) Project researcher. Universidad de Huelva. Huelva, (2) Phd professor. Universidad de Huelva. Huelva

ABSTRACT

Significant transformations in Andalusian agricultural pseudosteppe landscapes–such as the shift from herbaceous rainfed crops to irrigated woody crops, intensification of agricultural practices that replace traditional, less invasive methods, landscape homogenization, and expansion of human infrastructure–are increasingly affecting steppe bird populations in the region. These changes are reducing the availability of suitable habitats for many species, placing them at risk. How do these modified agricultural landscapes impact bird communities in Southern Spain? In this study, we analyzed the extent to which these communities are being influenced by the consequences of large-scale habitat transformations. To accomplish this, we surveyed 149 sites evenly distributed across 10 areas of high conservation value for steppe birds in Andalusia, designated by the regional government with the acronym ZAPRAE. At each site, we collected quantitative data on bird populations through acoustic-visual point counts and land-use data within 750-meter-radius circles using drones. We constructed four matrices encompassing: 1) bird community data, 2) land use, 3) landscape geometry using Fragstats (area and edge, shape, aggregation, and diversity), and 4) physiography, climate, and human impacts, via GIS. We have calculated bird community diversity across three spatial scales and using model analyses we have assessed how landscape transformations affect diversity and community composition. Our results quantify the impact of agricultural homogenization and the replacement of rainfed herbaceous crops with intensive irrigated olive groves on steppe birds, revealing how these changes favour more generalist species (e.g. finches) over specialized ones (e.g. larks). Finally, we evaluated biological integrity as a measure of the current ecological and conservation value of both the landscape and bird communities across the 10 ZAPRAEs studied. Results quantify the severely degraded status of these areas, once highly rich in steppe fauna.

RELATED TOPICS (UP TO THREE)

- Impact of infrastructures
- Conservation strategies and policy mechanisms: Present and future
- State of steppe bird habitat

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Supporters: CÁTEDRA STEPPE FORWARD

POSTER ABSTRACTS

821/104. IDENTIFYING DIFFERENT MIGRATORY STRATEGIES OF EURASIAN STONE-CURLEW (BURHINUS OEDICNEMUS) ACROSS SPANISH POPULATIONS.

AUTHORS:

Moreno Zárate, L., Navalpotro Buscail, H.[1], Amorós Box, C.[2], Fernández-Tizón, M.[3], Giralt Jonama, D.[1], González del Portillo, D.[4], Manzano Rubio, R.[1], Morales Prieto, M.[5], Mougeot, F.[3], Pérez-garcía, J.[2], Santisteban, C.[1], Sarda Palomera, F.[1], Bota Cabau, G.[1]

AFFILIATIONS:

(1) Conservation Biology Group, Forest Science and Technology Center of Catalonia (CTFC), Solsona, Spain, (2) Ecology Area. Dept. of Applied Biology. University Miguel Hernández. Elche, Spain, (3) Instituto de Investigación en Recursos Cinegéticos (IREC, CSIC-UCLM-JCCM), Ciudad Real, (4) Autónoma University of Madrid, Madrid,, (5) Autónoma University of Madrid, Madrid

ABSTRACT

The Eurasian stone-curlew (Burhinus oedicnemus) is a steppe bird whose populations in Spain are currently in an unfavourable conservation status, because of significant population declines and distribution range contractions. Both land-use changes and climate changes seem to be important drivers of these trends. Consequently, understanding the spatial ecology and movement patterns of this species throughout its annual cycle, including breeding, wintering and stopover areas, is crucial for better assessing its ecological requirements and potential threats. However, such data is scarce or lacking for the species in Spain, a main stronghold of European population.

Between 2021 and 2024, we attached GPS-GSM tracking devices on 57 European stone-curlews across seven regions of Spain (Aragón, Balearic Islands, Canary Islands, Castilla-La Mancha, Catalunya, Comunitat Valenciana, and Madrid) covering a wide range of the species' distribution and habitats. Spatial movement data from Spain revealed clearly differentiated migratory strategies with marked intra- and inter-population variations. Some individuals undertook long distance travels to wintering grounds in North Africa (Morocco and Algeria), while others travel shorter distances to southern Spain, closer to their breeding sites. Other birds were resident or engage in altitudinal movements. This heterogeneity in annual movement strategies, already described for other Mediterranean populations, is now reported for Spanish populations and appears to be a potential important factor to consider in the design of future conservation strategies for the species.

RELATED TOPICS (UP TO THREE)

- Movement strategies and migration patterns

POSTER ABSTRACTS

821/107. CHANGES IN THE ABUNDANCES OF STEPPE PASSERINES IN EXTREMADURA: AN ASSESSMENT AFTER 20 YEARS.

AUTHORS:

Cendrero Ramos, J., Ríos Guisado, R.[1], Ormazabal, U.[1], Guzmán Bolaños, J.[1], Sánchez Guzmán, J.[2], Díaz Ruiz, F.[1]

AFFILIATIONS:

(1) Scientific and research personal. University of Extremadura. Badajoz., (2) Professor. University of Extremadura. Badajoz.

ABSTRACT

Agricultural systems include steppe habitats of high ecological value, as they support species that depend on these environments, such as birds. Extremadura is one of the most important regions in the Iberian Peninsula for the conservation of birds. While emblematic species such as the bustards are regularly monitored in the region, the population trends of steppe passerines are less well understood. This study evaluates changes in the relative abundances of steppe passerine species present in Extremadura 20 years into the 21st century. During the spring of 2002 and winter of 2003, a total of 460 transects were established across the 20 main steppe bird areas (SBA), encompassing the gradient of agricultural intensification within the region. These same transects were repeated in the winter of 2022 and the spring of 2023. Each transect was approximately 500 m in length and were mainly conducted in fields of annual crops and pasturelands. For each transect, the Kilometric Abundance Index was calculated, and relative abundances at SBA level were compared using the Mann-Whitney U test. In winter, a general decline in relative abundance was observed in over 65% of hotspots for species such as the eurasian skylark (Alauda arvensis), the zitting cisticola (Cisticola juncidis), and the corn bunting (Emberiza calandra). Declines were statistically significant in 95% and 50% of SBA for the Eurasian skylark and Corn bunting, respectively. Conversely, a general increase in abundance was observed for the larks (Galerida sp) and the calandra lark (Melanocorypha calandra) in both winter (80% of hotspots) and spring (67% and 61% of hotspots, respectively). These preliminary results show changes in the abundances within the steppe passerine community, showing the relevance of this group as indicator of the different alterations that are occurring in agricultural environments within the current context of global change.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends

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POSTER ABSTRACTS

821/108. HABITAT FAVORABILITY FOR GREAT BUSTARD (OTIS TARDA) IN EXTREMADURA (SW SPAIN) AS A FUNCTION OF PHENOLOGY.

AUTHORS:

Guzmán Bolaños, J., Cristo, E.[1], Uceda Tolosa, Ó.[1], Cendrero Ramos, J.[1], Ormazabal, U.[1], Cano Montes, E.[2], Cortázar Hurtado, G.[2], Corbacho Amado, C.[3], Sánchez Guzmán, J.[4], Díaz Ruiz, F.[5]

AFFILIATIONS:

(1) Personal Científico Investigador (PCI). Universidad de Extremadura. Badajoz, (2) Técnico Medioambiental. Junta de Extremadura. Badajoz, (3) Profesor Titular. Universidad de Extremadura. Badajoz, (4) Catedrático. Universidad de Extremadura. Badajoz, (5) Investigador. Universidad de Extremadura. Badajoz

ABSTRACT

Extremadura has an important Great Bustard (Otis tarda) population worldwide. However, in the last twenty years this population has been reduced by 70%, mainly due to habitat fragmentation and the intensification of agricultural and livestock farming activities. In the present work, the potential of the Extremadura territory to host the species has been evaluated. In this way, we have identified the source and sink areas for the species, both in winter and in spring (breeding period). High resolution species distribution models (250x250 m grid) based on the Favorability Function and fuzzy logic tools have been used for this purpose. As well as a set of explanatory variables (land use, topography, climate, etc.) for the study period 2017-2021. The results indicate great similarities between the different phenologies of study, where the roughness of the terrain or land uses have been presented as the most decisive variables to explain the presence of the species in the region. Approximately 70% of Extremadura has very low favorability values for the species and only 8% are areas of high favorability; the rest correspond to areas of intermediate favorability. Around 70% of the species population is found in source areas (high favorability) and 2% in sink areas (very low favorability). These results contribute to the identification of key areas for the species in which to direct conservation strategies, as well as to join efforts in the restoration and recovery of sink areas, as the latter may represent important population centers for an increasingly fragmented species.

RELATED TOPICS (UP TO THREE)

- Distribution models
- Changes in land use
- Conservation problems for the Great bustard

POSTER ABSTRACTS

821/111. THE STANDARDIZATION OF DATA AS A TOOL FOR CONSERVATION: THE CASE OF STEPPE BIRDS IN CASTILLA-LA MANCHA.

AUTHORS:

García de la Morena, E., Magaña Pascual, Ó.[1], Fernández-mellado, R.[2]

AFFILIATIONS:

(1) Consultant, Biodiversity Node, Madrid, (2) Codirector, Biodiversity Node, Madrid

ABSTRACT

The collection and analysis of data on the distribution and abundance of steppe birds are critical for effective conservation strategies, particularly in diverse regions like Castilla-La Mancha. This study emphasizes integrating public databases, citizen science, and environmental impact studies to enhance data quality and standardization, facilitating data integration processes.

Using the Darwin Core data standard, 170,689 records covering 34 species were processed. Eight priority species, due to their conservation status, were included. Standardization enabled detailed spatial resolution at the 1x1 km UTM grid level, surpassing the usual 10 km scale. This precision allowed for the evaluation of distribution changes and population trends, highlighting declines in endangered species that require urgent measures.

Data coverage in areas like La Sagra (Toledo) improved notably due to renewable energy projects, whose studies generated high-resolution data crucial for impact assessments, planning, and species preservation. This demonstrates how well-planned renewable infrastructures can support biodiversity conservation.

Challenges persist, including inconsistent methodologies, variable data quality, and reluctance to share data, limiting comprehensive population analyses. A lack of standardized data from environmental studies further hinders effective management.

To address these issues, mandatory standards for georeferenced data submission in environmental projects are recommended. Enhanced collaboration between administrations, developers, and conservation entities is essential. Standardized, editable data integration into regional and national databases is critical for adaptive biodiversity management in vulnerable ecosystems. This study underscores the importance of standardization in improving conservation outcomes.

RELATED TOPICS (UP TO THREE)

- Conservation strategies and policy mechanisms: Present and future
- Population monitoring and trends

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POSTER ABSTRACTS

821/114. STEPPE BIRD POPULATION TRENDS IN CASTRO VERDE: COMBINED EFFECTS OF AGRICULTURAL PRACTICES AND CLIMATE.

AUTHORS:

Neiva, S., Faira, J., Flores Ribeiro, P.

ABSTRACT

Steppe birds are adapted to open and semi-arid environments, breeding mainly on cereal plains and pastures. Despite their significant ecological importance in the Iberian Peninsula, priority species such as the Tetrax tetrax are increasingly threatened. Other common farmland birds may follow the same pattern of decline. In southern Portugal, the Special Protection Area of Castro Verde is a key area for the conservation of steppe birds, but land use changes driven by agricultural policy shifts has led to habitat loss and degradation, which is likely to be exacerbated by climate change. Considering bird data collected over the last 18 years, this study aims to analyze abundance and diversity variation of the steppe bird community in Castro Verde, particularly priority species of conservation concern.

Bird surveys were carried out in the springs of 2006, 2011, 2017 and 2024, using 5-minute counts at 391, 370, 391 and 341 points respectively. Preliminar results showed that bird species richness differed significantly between surveys, being the highest in 2011, largely due to cereal-related species, such as Cisticola juncidis, Coturnix coturnix and Circus pygargus which had lower occurrences in 2006 (extreme drought), increased in 2011 but has been subsequently declining since. Among the fallow-related species Tetrax tetrax had declined significantly after 2011. Land use remained stable, with pastures and cereal fields dominating between 2006-2017, but 2024 data has yet to be analyzed. The management of pastures have likely intensified over time. Climatic changes recorded included severe droughts in 2005, 2017, and 2024 and normal rainfall in 2011. Bird population shifts will be analyzed in the context of these land-use changes and climatic variations, aiming to understand their combined impact on species richness and abundance over time.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends;

POSTER ABSTRACTS

821/117. A REVIEW OF THE STATUS OF STEPPE BIRDS AND THEIR HABITATS: CONSERVATION STATUS AND THREATS.

AUTHORS:

Gómez Catasús, J., Pérez Granados, C., Benítez, A., Díaz Esteban, M., González del Portillo, D., Bravo Párraga, C.

ABSTRACT

European steppes are unique ecosystems composed of landscape mosaics of grasslands, low scrublands and agricultural habitats shaped by centuries of low intensity human use. These semi-natural habitats host diverse and unique animal and plant communities, notably the last remnant populations of steppe birds in Europe. However, European steppes are facing unprecedented challenges due to ongoing changes in land use and abandonment of traditional farming practices, resulting in habitat loss and degradation and causing significant population declines of most steppe birds. This article aims to review and synthesize the available knowledge on European steppe birds to establish a solid foundation for designing conservation strategies. Using an expert-based participatory approach, we first created a comprehensive and consensual list of steppe bird species. This expert panel subsequently reviewed the available knowledge on the ecology, species traits, population trends and primary threats for European steppe birds. This review underscores the alarming conservation status of steppe birds, revealing that 56.8% of species are exhibiting declining trends (-10.4 ± 7.5 [range: -24.6 to -1.6]). However, despite their declining status just a reduced number of them (18.9%) are catalogued as Threatened or Vulnerable according to the IUCN Red List. This study also describes the functional space occupied by steppe birds and shows a differentiation between threatened (i.e., long lifespans and large body sizes) and non-threatened species, highlighting the potential loss of functional diversity that will occur if the most vulnerable ones become extinct. Land use change and human-induced mortality have been identified as major threats to steppe birds and their habitats. Pollution and climate change also emerge as major concerns, although the knowledge available is quite limited. The findings from this study help to pinpoint research priorities and enhance understanding of the threats faced by European steppe birds, offering guidance for designing effective conservation interventions.

RELATED TOPICS (UP TO THREE)

- Population monitoring and trends, Dynamics and Drivers of Habitat
- Change in Steppe and Pseudo-steppe ecosystems, Conservation strategies and
- policy mechanisms: Present and future

POSTER ABSTRACTS

821/118. ASSESSING CLIMATE CHANGE EFFECTS ON STEPPE BIRD REPRODUCTION: INTEGRATING MOVEMENT WITH MICROCLIMATE AND BIOPHYSICAL MODELLING.

AUTHORS:

Saldanha, B., Rubalccaba, J., Marques, T., Paulo da Silva, J.

ABSTRACT

Steppe birds are facing significant population declines, mostly attributed to habitat loss and fragmentation, now aggravated by climate change. Adapted to arid environments, these birds exert a combination of physiological and behavioural responses to buffer the impacts of elevated temperature. However, behavioural thermoregulation has its limits, as extreme temperatures can restrict activity windows for essential behaviors like breeding and foraging. Recent studies have documented the use of microrefugia by steppe birds, yet our understanding of how microclimates buffer the impacts of climate change on thermoregulation and breeding success are still limited. This gap is partly due to the challenges in collecting data on breeding biology and phenological patterns, as these birds are elusive and highly sensitive to manipulation.

Our project will combine high-resolution GPS tracking, 3D accelerometers and field monitoring data from 5 threatened ground-nesting steppe birds in Iberia: Little Bustard (Tetrax tetrax), Black-bellied and Pintail sandgrouses (Pterocles orientalis and Pterocles alchata), Stone Curlew (Burhinus oedicnemus) and the Montagu's Harrier (Circus pygargus) with microclimate and biophysical models. We will be determining the behaviour and physiological responses to elevated temperatures during the breeding season, assessing effects on overall breeding success and sex ratio. Specifically, we will 1) develop biophysical and microclimate models to assess the availability of microclimates in the study area and predict how these buffer bird's energy requirements for thermoregulation; 2) explore the causes of the observed sex ratio differential by investigating differences in energy expenditure between sexes during the breeding period; 3) examine the influence of ambient temperature, incubation and nest temperature on hatching success and the potential of adults to buffer these impacts; and finally 4) outline a multi-species conservation guideline on habitat management aiming for improved breeding success. Thus, inferring, in a non-invasive manner, the mechanisms underlying climate warming impacts on breeding success of steppe birds.

RELATED TOPICS (UP TO THREE)

- Climate Change

IN MEMORIAM

The International Conference on Palearctic Steppe Birds (ICPSB 2025) and its organizing committee wish to dedicate this meeting to our friend, colleague, and pioneer in the study of steppe birds, Francisco "Quico" Suárez, who passed away in 2010–now fifteen years ago.

Quico Suárez was an extraordinary ecologist and a renowned environmental sciences professional, a professor in the Department of Ecology at the Universidad Autónoma de Madrid, and a mentor to numerous researchers who continue his scientific legacy to this day. After earning his degree in Biology at the Universidad Complutense de Madrid, he embarked on a brief yet intense and fruitful career as an environmental impact assessment professional–a field in which, as in many other aspects of his career, he was a pioneer in Europe. In parallel, he nurtured an early passion for the steppes and their birds–a flame kindled during his university studies–which first culminated in his doctoral thesis on the Western Black-eared Wheatear (Oenanthe hispanica). Moreover, he remained actively engaged in the study of his favourite species, the Dupont's Lark (Chersophilus duponti), becoming the foremost expert and advocate.

Upon joining the Department of Ecology at UAM, Quico expanded his commitments to include academic duties, the supervision of doctoral theses, and the leadership of numerous research projects–many focused on the ecology and conservation of open ecosystems such as grasslands, herbaceous steppes (including cereal) and shrublands, and their associated fauna. His pioneering work on the Iberian steppes and their birds not only broke new ground but continues to be cited in the most recent scientific literature. Among his contributions are not only dozens of publications in scientific journals but also several seminal books and book chapters that are fundamental references for understanding the dynamics of steppe habitats and birds in Spain. Notable examples include Las estepas ibéricas (1992), Las alondras de España peninsular (2009), and La alondra ricotí (2010), which still are reference texts. But the reach of Quico's work on steppes was also international. The chapter he led for the volume Farming and Birds in Europe: The common Agricultural Policy and its Implications for Bird Conservation, entitled Farming in the drylands of Spain: birds of the pseudosteppes stands as a benchmark for understanding the historical changes in the management of Iberian cereal steppes, the effects of the Common Agricultural Policy, and the ensuing consequences for our steppe birds. Equally indispensable as international reference is the chapter that, alongside Tomás Santos, he wrote for the volume Ecology and Conservation of Steppe-Land Birds about the Biogeography and population trends of Iberian steppe birds, a comprehensive review still referred-to in international literature.

Quico Suárez effortlessly combined his passions–steppes and their birds, mushrooms, friendships, cuisine, and science, both fundamental and that contributing to environmental management, land planning and species conservation. His zest for life was contagious, and he imparted this enthusiasm to all who were fortunate enough to know him. The profound impact he left on students, colleagues, scientists from around the world, professionals–in short, on his friends–remains alive as we continue to remember his commanding personality, generosity, infectious joy, and boundless imagination.

Quico was one of the driving forces of the last conference on steppe birds held in 2004 in Lleida, and we know that more than twenty years later he would be here in Ciudad Real, celebrating ICPSB 2025–lamenting the tragic fate of many of the species he cherished, yet sustaining an enduring optimism for their future. We will do everything possible to follow the path he paved.

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