DELIVERABLES

TECHNICAL REPORT – ACTION E.5

Proceedings of the LIFE FALKON Closing Conference (Limnos Island, GR, 12-14 October 2023)

December 2023

LIFE FALKON - LIFE17 NAT/IT/000586

www.lifefalkon.eu

Partner responsible for the action:

CNR-IRSA; Consiglio Nazionale delle Ricerche – Istituto di Ricerca sulle Acque

Partnership:

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About the project :

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Acknowledgments:

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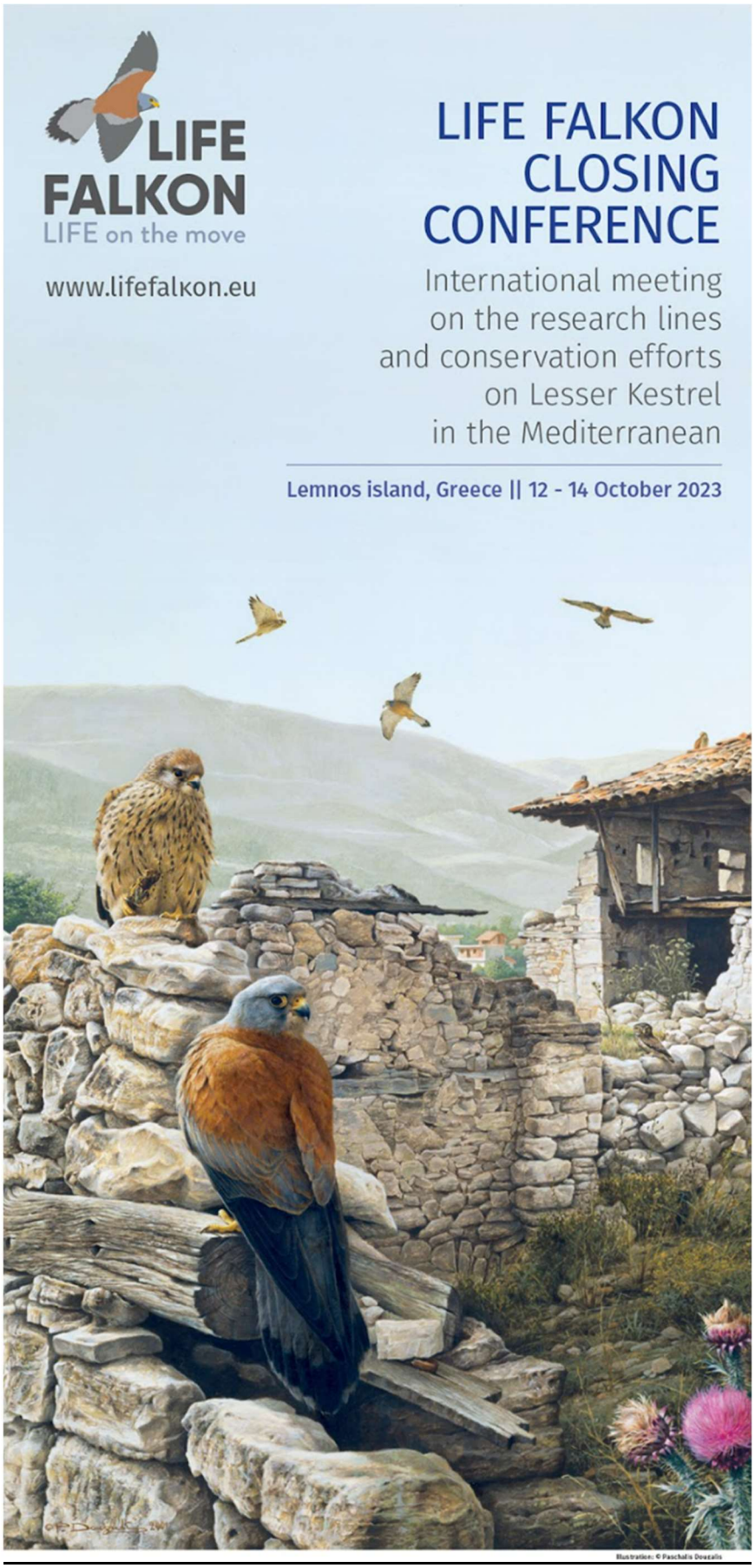
LIFE
FALKON
LIFE on the move
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LIFE FALKON
CLOSING
CONFERENCE
International meeting
on the research lines
and conservation efforts
on Lesser Kestrel
in the Mediterranean
Lemnos island, Greece || 12 - 14 October 2023

1. Introduction: the conference in numbers

The LIFE FALKON Closing Conference was held in Limnos during 11-13 October, 2023. It included two days of scientific presentations, one day of excursions and a social dinner. The scientific program featured two plenary sessions, 19 oral presentations, and four poster presentations.

In total, there were 37 participants at the conference. Attendees primarily hailed from Greece and Italy, with additional representation from Portugal and Spain in Western Europe, and from Bosnia-Herzegovina, Albania, and Bulgaria in Eastern Europe. Thus, a total of seven different countries were represented. Colleagues from Croatia were initially scheduled to participate but had to cancel. However, they remain engaged in the communication network of the experts' networking team. Other organizations that were connected but, unfortunately, could not attend include MES (North Macedonia), DOGA (Turkey), and PPNEA (Albania).

Overall, representatives from each country belong to 12 institutions, now connected to the LIFE FALKON Network and CoI (Community of Interest):

GREECE (HOS, HSPN, MedInA, PFPO, NECCA, Aristotle University of Thessaloniki)

ITALY (CNR/IRSA, University of Milan, ISPRA, University of Padua, University of Turin, Insubria University, Palermo University, ALDA)

ALBANIA (Albanian Ornithological Society)

BOSNIA-HERZEGOVINA (Ornithological Society “Our Birds”)

SPAIN (CSIC/Estación Biológica de Doñana, DEMA)

PORTUGAL:(CIBIO, BIOPOLIS-CIBIO)

BULGARIA (Green Balkans, University "Prof. Asen Zlatarov")

Also, many people followed the conference updates in real-time on X, on the page of the project @lifefalkon. We published 33 tweets on X and 14 on Fb, sharing photos and many scientific news from the presentations and congress activities.

The conference in numbers:

- 3 full days of activities
- 2 Lectio Magistralis: Inês Catry, CIBIO, Portugal and Javiér Bustamante, EBD/CSIC, Spain
- 22 oral presentations
- 4 poster presentations (also presented with a short talk)
- 1 closing round table
- 38 participants
- 7 different countries, from West to East Europe
- 33 tweets on twitter/X
- 2 News
- 14 Facebook posts

2. Programme of the Conference

Day 1- 12 October – Conservation of Lesser Kestrel and its environment

9:00-10:30 Arrival of late participants and registration
10:30 Opening of the conference
11:00 Introductory talk on Lemnos Island environmental context (MedINA ngo)
12:00 Lectio Magistralis by Prof. Inês Catry
13:30 Lunch
14:30 to 18:00 Talks by participants (20-30 minutes each including discussion)
20:30 SOCIAL DINNER OFFERED BY FALKON at Grand Hotel Patelli

Day 2- 13 October – Research updates on Lesser Kestrel

9:30 Lectio Magistralis by Prof. Javier Bustamante
10:30 to 13:30 Talks by participants
13:30 Lunch break
14:30 – 17:30 Talks by participants
17:30 General roundtable aimed to reinforce a trans-Mediterranean Lesser Kestrel network.
21:00 Free time. For those who want : dinner in Myrina downtown

Day 3- 14 October – Field Trip

9:00 to 13:00
FIELD EXCURSION: visit to LIFE FALKON intervention sites in eastern Lemnos, birdwatching, visit and lunch to a local farm
14:00 Back at the Hotel

3. Lists of the Abstract

1. Welcome speech- Lemnos: an agricultural landscape of high cultural and ecological value

George Dimitropoulos, *Med.In.A, Greece*

Lemnos presents very important semi-natural landscapes, especially in the eastern part of the island and owes its high ecological value to the great variety of the habitats present there. Lemnos has a complete absence of forests - apart of a relict valonian-oak forest - a fact that is attributed to the continuous habitation of the island since pre-historic times. The human activity is also the reason that Lemnos has a greatly agricultural character, with arable farming being the dominant type of cultivation, thus creating a favorable habitat for the lesser kestrel. In the decades of 1950-60 Lemnos faced a sharp population decline due to emigration of the local inhabitants, which led to abandonment of remote communites and resulted to the concentration of the remaining population in the capital (Myrina) and some of the bigger villages. Today, more than 30% of the economically active individuals are farmers, a figure that is well over the national average (ca 10%), thus highlighting the importance of primary sector for the local economy. Mandra, is the traditional farm complex and mixed crop-livestock system. This system is linked with specific agro-pastoral practices and has been proven to support local biodiversity. Some of these practices are the maintenance of semi-natural habitats (uncultivated field boundaries), maintenance of traditional stone constructions and artificial ponds for irrigation and use by livestock.

2. The LIFE FALKON background and objectives

Michelangelo Morganti, *CNR-IRSA, Italy, LIFE FALKON Team*

LIFE FALKON is an international conservation project for the lesser kestrel, a small bird of prey that is threatened by climate change. The project aims to improve the conservation status of the species by installing nest boxes and towers to provide safe nesting sites, conducting research, and raising awareness. The lesser kestrel is a migratory species that feeds on insects and small mammals. It has undergone a drastic decline in Europe in the 20th century due to the intensification of agriculture, which has led to a loss of prey and nesting sites. The LIFE FALKON project is focusing on the most northern populations of lesser kestrels in Italy and Greece, which are considered to be of crucial importance for the species facing to climate change. The project has installed about 400 nest boxes and towers in these areas, and it is also conducting research to understand the species' ecology and threats. These concrete conservation (Actions C) actions are having a positive impact on lesser kestrel populations in Italy and Greece. Furthermore, we conducted research on the ecology of the lesser kestrel (Actions A). These researches are helping to improve understanding of the species' needs and how it is being affected by climate change. We also realized several dissemination and formation activities (Actions E), and we evaluated the effectiveness of our actions (Actions D). The project will formally close with 2023, but several actions will continue in the After LIFE period, that is up to December 2028.

3. Population genomics and migratory connectivity of lesser kestrel population

Diego Rubolini, *Univ. of Milan, Italy, LIFE FALKON Team*

In this contribution, I will summarize the studies that UMIL, together with the other partners, has performed in the framework of Action A3, more specifically sub-Actions A3.1 (Assessing genetic similarity of source and target populations) and A3.2 (Analysis of migratory behaviour). These actions were preliminary to the realization of hacking activities of nestlings performed with Action C2, and were performed in compliance with IUCN Guidelines on animal translocations to ensure that individuals to be translocated were genetically and behaviourally similar to those of the target population. Based on extensive ddRAD sequencing of individuals from the target population (Po Plain), from two potential source populations (southern Italy and Sicily) and from other control populations, we could confirm that southern Italian populations were highly similar to Po Plain individuals from the genetic viewpoint. These findings were corroborated with the analysis of GPS tracking data from Po Plain individuals and from other source populations, which highlighted a broad overlap in migration and non-breeding behaviour between Po Plain individuals and southern Italian ones and confirmed the previously documented strong migratory connectivity of this species. I thus safely concluded that southern Italian populations (Matera in particular) were perfectly eligible for translocation and hacking to foster the colonization of nesting towers in the Po Plain within the framework of Action C2. In the talk, I will further highlight the potential of the collected data for follow up scientific studies to unravel population genetic structure and large-scale migratory patterns in European populations of lesser kestrels.

4. The conservation actions of LIFE FALKON

Jacopo Cecere, ISPRA, Italy and Nikos Tsiopelas, HOS, Greece. ***LIFE FALKON Team.***

In the framework of LIFE17/NAT/IT000586 LIFE FALKON a set of concrete conservation Actions took place in the Project areas, 3 of which are situated in Greece (Ioannina, Komotini area and Lemnos) and 1 in Italy (Po plain). One of the main threats of the species is the ongoing reduction of nesting sites' availability. The main conservation action was the provision of artificial nests. In total, 127 artificial nests (nest boxes or nest-complexes) have been established in the Greek project areas and 209 in the Italian project area. The nests were installed on buildings and electricity poles, within or in proximity to natural colonies. Moreover, in Italy 5 nesting towers were constructed. Apart from nesting sites the towers were used in parallel as hacking facilities for 30 lesser kestrel chicks tht were translocated from Matera (Italy) in order to renforce the populaiton in Po plain and attract potential breeding pairs in the towers. Artificial nest occupancy varied along the Project areas, but was found to have an increasing trend throughout the years, surpassing 20% in some of the Project areas.

5. LIFE FALKON among students, citizens and stakeholders

Roula Trigou, ***HOS, Greece, LIFE FALKON Team***

The Lesser Kestrel, as a species that nests in villages and is familiar to the local communities, is ideal for the implementation of educational activities. In the framework of the LIFE FALKON Project, educational activities have been implemented in Greece and Italy with the participation of more than 3,500 school pupils and educators. The project educational activities included the production of educational materials (floor game & comic book in Greek and Italian), school visits at more than 25 schools of primary and secondary education, educational events and seminars for educators. Under the project, it is estimated that more than 10,000 members of the educational community in Greece & Italy have been reached and have been involved at the project educational activities dedicated to the Lesser Kestrel and the rural nature.

6. Communication Activities of LIFE FALKON

Alessia Marzotto, ***ALDA, France/Italy, LIFE FALKON Team***

The LIFE FALKON project has effectively implemented its Action E activities, which center on communication, dissemination, networking, and transferability. To accomplish this, the project has produced informative brochures and videos, distributed newsletters, and installed live cameras to heighten awareness about the project's goals and objectives. We have also created a market-based product (the lesser kestrel beer!). Additionally, it has organized meetings with experts, schools, and architects to share best practices, educate the public, and promote collaboration. Moreover, the project has developed a handbook for transferability and replicability, which documents the project's successful strategies and makes them accessible to other conservation organizations. These were the groups of E actions: Action E1: Internal and External Communication Plan and strategies; Action E2: Dissemination of best practices among technical stakeholders; Action E3: Environmental education and awareness raising campaign for local communities; Action E4: Networking with other lesser kestrel LIFE projects and lesser kestrel conservation experts; Action E5: Transferability and replicability. All actions were successfully implemented, despite of the high difficulties experienced during the pandemic period, in some cases also reaching goals beyond the initial expectations.

7. INVITED SPEAKER- Long-term persistence of the Lesser kestrel: challenges and opportunities for conservation

Inês Catry *CiBIO, Portugal*

The observed declines in the lesser kestrel European population since the fifties has been leading to increasing conservation efforts. To maximise conservation success, it is crucial to evaluate when interventions are likely to be effective. Yet, conservation actions are often poorly evaluated and based in short-term evidence. In my talk, I will show how the implementation of conservation measures can present some unexpected challenges for the conservation of the lesser kestrel, highlighting the value of long-term monitoring to establish and adapt conservation efforts. Finally, I will discuss how conservation measures can promote the unsustainable need to perpetuate the implementation of conservation measures and the challenges we face to secure funds to sustain the long-term viability of conservation-reliant species.

8. Traditional buildings vs. Modern buildings / Keys to reversing factors that negatively affect the species

Pepe Antolín, *DEMA, Spain*

We present the longstanding project of DEMA, since the early '90s, devoted to improving the artificial nesting structures in favour of lesser kestrels. In recent years, we realized that traditional nesting structures (known as 'primillares') may be inadequate in the face of climate change and predator threats. DEMA's initiatives involve a significant evolution in the design of new building models, and comprehensive actions to ensure the safety and success of the newly installed colonies. The presentation outlines the transition from cubic-shaped to rectangular prism primillares models, highlighting improvements in concealment zones, completely preventing the nestling's falls, the first cause of death in this stage of life. The incorporation of anti-predation systems, both aerial and terrestrial, is emphasized to protect against both small and large predators. The innovative structuring of the single nest-boxes, built in durable, ecological and weather-resistant materials, further contributes to the project's success. Results from the first and second colonies recently created in Zaragoza (NE Spain) demonstrate the positive impact of these interventions, with new breeding pairs rapidly installed and positive trends observed over one or two years. The emphasis on physical and acoustic insulation in the new colonies aims to create a secure environment, also reducing the human disturbance. Overall, the project showcases a holistic approach to conservation, combining architectural innovation with ecological considerations for the benefit of the Lesser Kestrel population that can be applied elsewhere over the breeding range of lesser kestrel.

9. Conservation Actions of the LIFE for Lesser kestrel (LIFE19 NAT/BG/001017)

Miltos Gletsos[1] & Kostas Vlachopoulos[2]
1: HSPN, Greece; 2: University of Thessaly, Greece

We present activities for strengthening scattered colonies of Lesser Kestrel in the Kilkis and Evros Prefectures in North Greece, as part of the "LIFE for Lesser Kestrel", LIFE19 NAT/BG/001017 project, implemented by HSPN, Green Balkans and University of Thessaly. The LK colonies are interacting with connected subpopulations of Central Greece, Northeast Greece and Bulgaria. Initial data gathering, and modelling of habitat and nesting suitability, led to the design of conservation activities in selected colonies. These included the placement of nest boxes and monitoring of their use, the release of chicks, and the involvement of local stakeholders with emphasis given on local schools. The latter have so far enthusiastically embraced the efforts, while land-owners have more complex responses, depending on local conditions.

10. POSTER - Occupation Rates of artificial nest boxes by Lesser kestrel in SPA 'Sakar' (BG0002021), Bulgaria

Stliyana Yaneva. ***Green Balkans, Bulgaria***

Lesser Kestrel often nests in urban areas, where it is provided with nesting sites and the level of threat of predation is low. Demolition of older buildings where the birds nested is a common problem throughout its breeding range. Due to the drastic reduction of natural habitats, the placement of artificial nest boxes provides reliable nesting sites with a low risk of predation. Over 70 artificial nest boxes were installed on the territory of SPA Sakar part of NATURA 2000 where the Lesser Kestrel has been successfully recovered as a breeder. The installed artificial nest boxes are of different types providing more breeding opportunities. In this survey our goal is to process which factors affect the occupation rate of provided artificial nest boxes. The results showed that artificial nest boxes performances (type of the nest boxes, height above ground, etc.) significantly influenced the occupancy. We conclude that artificial nest boxes are of great importance in providing safe nesting sites.

11. POSTER - A combined structure for ex-situ Breeding, adaptation and release of Lesser kestrels in the wildlife rehabilitation and breeding centre of Green Balkans

Yordanka Vasileva, *Green Balkans, Bulgaria*

In the framework of project “Life for Lesser Kestrel” LIFE19 NAT/BG/001017, a modern cage for breeding and rearing lesser kestrels ex situ was built in the Wildlife Rehabilitation and Breeding Centre of Green Balkans NGO. The construction and materials followed the "Colony Environment" method, considering the specifics of the terrain, material sustainability and methods for simple installation, short construction times and for facilitated maintenance and cleaning. A metal structure was mounted on a concrete base, and insulated wall panels were used for the walls and for part of the roof. The central part of the cage was covered with a metal mesh net simulating spacious outdoor conditions. The cage has a hexagon shape with an area of 32 m2, a height of 3 m, intended for 40-50 birds and 34 nests. Part of the structure is a module for adaptation and release in the wild, which consists of a foster parent cage and two boxes for accommodation of 20-day-old chicks. This combined facility is equipped with a handling room, incubation room, sanitary facilities and internal corridors for servicing the premises, cages, nest boxes and the birds. Keywords: Falcon, Natura 2000, Reinforcement, Restocking. Acknowledgements: These results were achieved through Lesser Kestrel Recovery, LIFE11 NAT/BG/360 and LIFE for Lesser Kestrel, LIFE19 NAT/BG/001017 projects, supported by the LIFE programme of the European Union.

12. INVITED SPEAKER- How do Lesser kestrels move?

Javier Bustamante, *Doñana Biological Station/CSIC, Spain*

During the breeding season, birds tend to be central place foragers, staying close to their nests. In contrast, during the non-breeding season, they have the freedom to move in search of prey. The Lesser Kestrels in southwestern Europe (Andalusia, Spain) have two migratory strategies: long-distance migration to the Sahel for wintering or remaining near their breeding grounds. This study compares the foraging areas between non-migratory and long-distance migratory Lesser Kestrels from the same population. It explores the trade-off between the costs of long-distance migration and the benefits of moving to more productive areas during the non-breeding period. The researchers tagged the birds with NanoFix-GEO+ RF loggers and used Generalized Linear Mixed Models (GLMM) to analyze the data, also accounting for sex differences.

13. Continental trend of an iconic raptor driven by Sahelian drought and farmland change over the last century

Gaia Bazzi, *ISPRA, Italy*, LIFE FALKON Team

Once considered one of the commonest raptors of Europe, from the 1960s the lesser kestrel (Falco naumanni) experienced a steep population decline and range contraction, whose magnitude and causes are not fully understood. Here, we investigated the species' European historical population trend and range shifts, and the ecological drivers of these changes. The population declined by >90% in only 20 years, then slightly recovered up to 15%; at the same time, the species disappeared from most of its former range. The trend was primarily driven by Sahelian rainfall, scarce precipitations being associated with population decline. Conversely, fertilizers input in Europe had a less marked, negative effect. The Sahelian Great Drought took a heavy toll on the species. Although rainfall has now returned to average levels, other problems are looming, among which agricultural intensification. Addressing these issues at a broad continental scale will be a challenge for the next conservation programs.

14. Long-term persistence of Lesser kestrel in Sicily

Maurizio Sarà; *University of Palermo, Italy*

We surveyed lesser kestrel colonies in Sicily for 24 years (2000-2023), recording occupancy (presence/absence) and abundance (number of pairs) with a standardized protocol. In Sicily the lesser kestrel breeds in cliffs in the north-western part of the island and in abandoned rural buildings in the south-east. Analysis of population and occupancy models, by PRESENCE and TRIM software, resulted in a fluctuating trend with an increasing stage up to 2011-12, followed by a decline stage and a second increase since 2020. The total population trend in the long-term is a moderate increase, with a TRIM model estimate of 1190 pairs in 2023. The best occupancy model revealed an important annual effect on colonization with also the effect of covariate 'building' with respect to 'cliff' for colonization. The best model has also a timeconstant extinction rate and shows the effect of the covariate 'Gela plain' with respect to 'other areas'. Insight of the differential weight of covariates in dealing with occupancy may help a better conservation planning of the species.

15. Ten years of recovering the Lesser kestrel as a breeder in Bulgaria

Gradimir Gradev, *Green Balkans, Bulgaria*

Once a numerous species, by early 21st century Lesser Kestrel (Falco naumanni) has vanished as breeder in Bulgaria. Feasibility studies indicated that natural recolonization of the species in the country was unlikely and Green Balkans launched species' recovery program. In 2013, in partnership with DEMA and EuroNatur, implementation of direct actions began for species' recovery as breeder, by releasing juveniles in nature. For this approach, Lesser Kestrel Release and Adaptation Module has been established combining following the

methodology “Colony environment”. Ten years later, in Bulgaria there are three nesting territories with confirmed breeding and at least one with probable breeding. Estimate of national population is more than 40 pairs. For the first time in the country, communal roosts during species’ pre-migratory period are reported. All sites are located in Southern Bulgaria (n=11), with different numbers, varying from 10 to 40 individuals. Birds use high-voltage electric pylons for roosting.

16. Intercontinental-scale assessment of collision risk with onshore wind power plants for a migratory raptor through its annual life cycle

Giacomo Assandri, *University of Turin, Italy*, LIFE FALKON Team

Wind power expansion poses a significant challenge to biodiversity conservation. We conducted an intercontinental-scale assessment of onshore wind power's potential threats to the lesser kestrel. We compiled data on 1837 European colonies and GPS-tracked 354 individuals from the Iberian, Italian, and Balkan populations. Approximately 30% of European breeding colonies are located within <10 km of a wind turbine. Exposure to wind power varies among populations, with the Italian population being the most exposed, followed by the Iberian and Balkan populations. In the Balkans, distance from the nearest turbine positively correlated with Natura 2000 area within kestrel foraging zones, but the opposite occurred for the Italian and Iberian. GPS tracking revealed varying exposure across populations and life cycle phases, with spring migration having the highest exposure and breeding the lowest (except for the Italian population). Both analyses identified regions with potentially higher wind plant impact, emphasizing the need for targeted conservation efforts.

17. Effects of increasing temperatures on reproduction in the Lesser kestrel and their conservation implications

Alejandro Corregidor-Castro; *University of Padua/CNR-IRSA, Italy* LIFE FALKON Team

Future climatic scenarios forecast increments in both frequency and magnitude of heatwaves. Lesser Kestrel dependency on old buildings for nesting has led to a loss of natural nesting sites, mitigated by the provisioning of artificial nests sites. We performed a temperature manipulation experiment to investigate the effect of nestbox temperature on nestling survival and development. At hatching, we randomly assigned one of two nestboxes to one of two treatments: shaded, to reduce direct sunlight, and control. Maximum temperatures inside the nestboxes were warmer than ambient temperature, but more so in the control ones (shaded: +3.9°C; control: +8.1°C). During a heatwave, when maximum ambient temperature exceeded 37°C, we observed a strong reduction in nestling survival in control nestboxes (shaded 85%, control 20%). This demonstrates that nest microclimate has a strong impact on nestling fitness, suggesting that future temperature increases may pose a significant threat to the persistence of Lesser Kestrel populations.

18. Roaming the Sahel: ecological gradients affect non-breeding movement patterns of the Lesser kestrel

Samuele Ramellini, LIFE FALKON Team, *University of Milan, Italy*

Afro-Palearctic migratory birds overwintering in the Sahelian belt experience a progressive deterioration of resources throughout the dry season. We assessed how lesser kestrels dealt with this ecological pattern by analysing non-breeding movements and pre-breeding migration of 87 GPS-tracked individuals (across 117 non-breeding periods). Eastern populations were more itinerant with individuals moving across several non-breeding residence areas during winter. Sahel vegetation conditions were highly variable with individuals experiencing better conditions, but also a steeper seasonal decline in NDVI, in western than eastern Sahel. Lower NDVI was associated with broader home-ranges in all populations and males in eastern Sahel progressively moved south-westward to buffer deteriorating ecological conditions. Finally, birds exposed to higher NDVI departed earlier for pre-breeding migration and arrived earlier to breeding sites. Such among individual heterogeneity in ecological conditions thus promoted sex-specific movement patterns, and entailed carry-over effects on scheduling of pre-breeding migration and arrival to breeding sites.

19. Albania, an important roosting site for the Lesser Kestrel (*Falco naumanni*)

Klea Duro, *AOS, Albania*

Every year, thousands of Lesser Kestrels (Falco naumanni) use the valleys and plains of Albania as roosting sites during their pre-migration movements. These large pre-migratory flocks, numbering aproximately 5,600 to 11,500 individuals, are believed to originate from breeding populations in North Macedonia, Greece, Italy, etc. However, no dedicated study has been conducted in Albania to investigate the origins of the Lesser Kestrel flocks that roost in the country from July to September each year.

20. INVITED SPEAKER - Species interactions in recently established mixed-colonies

João Gameiro, *CiBIO, Portugal*

Artificial nests-site supplementation is an effective conservation tool to restore the populations of endangered fauna, particularly for secondary cavity nesters like the Lesser kestrel. However, providing artificial nests may create secondary, unpredicted effects. In this presentation, João Gameiro will show how nest-site supplementation in Portugal attracted non-target species and created multispecific bird assemblages that modify interspecific interactions. The presentation will focus on antagonistic behaviours, ectoparasite transmission, competition for food, and colony defence, that created costs, but also benefits, for lesser kestrels.

21. A multi-scale analysis of intra-guild coexistence among new-established sympatric breeding falcons

Alessandro Berlusconi, *University of Insubria/CNR-IRSA, Italy*, LIFE FALKON Team

Anthropogenic global changes are currently reshaping animal communities, with some species expanding their ranges and colonising new areas (i.e. "newcomers"), leading to new ecological interactions among pre-existing species or with other newcomers. Both lesser kestrel (*Falco naumanni*) and red-footed falcon (*Falco vespertinus*) have been recently expanding their breeding range in Northern Italy, interacting with each other, as well as with an increasing population of common kestrel (*Falco tinnunculus*). Since the Po Plain is the only known area in Europe where these species breed sympatrically, this system provided an excellent opportunity to investigate intra-guild niche overlap and partitioning during an initial stage of sympatry. At a broad scale, our analysis delved into spatial niche overlap, revealing a strict relation among the lesser kestrel and red-footed falcon on the eco-climatic variables affecting their current distribution. This affinity turned into a statistically significant spatial correlation in their potential distributions. At a finer scale, we found that these two species exhibited overlapping foraging habitat choices. This convergence also extended to their diets, reinforcing the possibility of exploitative competition. This hypothesis gained ground through observations of systematic kleptoparasitism by red-footed falcons on lesser kestrels, a specific foraging strategy, first described in the present work. In contrast, the common kestrel displayed as a habitat generalist on the broad scale, being ubiquitarian throughout the study area. At a finer scale, its foraging habitat resulted to be slightly, yet significantly, different from that of lesser kestrel and red-footed falcon. Coherently, its wide trophic niche was including those of the two other falcons. Noteworthily, no evidence of kleptoparasitic behaviour involving the common kestrel was ever collected in the study area, neither as an aggressor nor as a victim species. This comprehensive investigation of spatial niche overlap, foraging habitat, trophic dynamics and aggressive behaviour shade light on the complex interspecific relationships in a guild of "newcomer" species. Our results thus provide an original in-depth assessment of how global changes are affecting predator communities via potential indirect competition and behavioural interference at the intra-guild level.

22. Feeding ecology and conservation of the lesser kestrel (Falco naumanni) in the intensive agricultural landscapes of the Po Plain

Claudia De Battisti, Univ. of Padua, Italy, LIFE FALKON Team

The conservation actions carried out by the LIFE FALKON Project in the central-eastern Po Plain (N Italy) were aimed at supporting the demographic consolidation and expansion of the local lesser kestrel colonies, located at the northernmost edge of the species European distribution range. Specifically, in this area were placed over 200 nestboxes and 5 nesting towers to increase the availability of safe nesting sites. In our field study, we wanted to assess the trend of the nestboxes occupation rate by lesser kestrels over the years, as well as identify and characterize the nest site features potentially influencing the probability of their occupation. Specific types of nestbox were preferentially selected by lesser kestrels and as expected, the probability for a nestbox to be occupied was inversely related to its distance from the nearest preexisting

colony. Moreover, the ongoing monitoring of known active lesser kestrel nests, both in natural cavities and nestboxes, offered the opportunity of carrying out an observational study on the foraging rate of nestling-rearing lesser kestrel pairs, by means of field observation and camera trap recording. We observed no disparities in the total amount of provisioning events and mean daily provisioning rate between the sexes, whereas the parents differently distributed their provisioning activity during the day.

23. Habitat selection of Italian Lesser kestrels in the pre-breeding period

Anna Kyriakopolous, Aristotle University of Thessaloniki, Greece /Univ. of Milan, Italy

Aiming at understanding the basic ecological background and the different needs of lesser kestrel in every part of its life cycle, the present study will explore habitat selection in the pre-breeding period of the Italian lesser kestrels, something that hasn't been separately studied before. Specifically, the GPS data from 23 individuals, collected during the period 2016-2022 and coming from all the five regions that the species occurs in the country, will be used to analyze the habitat selection trends and ratios from March to May. Using maps of the available habitat types of each region combined with the GPS points, organized in groups of 15-days, the aim is to record the progression of the habitat selection for the different habitat categories during this three-month period. The outcome of this study, currently ongoing, could be proven useful for the species conservation in a local -but not only- level, as it could help in providing stakeholders with crop management guidelines, favorable to the lesser kestrel's demands in this important part of its lifecycle.

24. POSTER - The journey of Ema, the female Lesser kestrel

Svetla Dalakchieva, *Green Balkans, Bulgaria*

In 2014, a colony of Lesser Kestrels was discovered near the city of Burgas. In this period, the only confirmed nesting of the species in Bulgaria was in Sakar region - a result of the project implemented by Green Balkans "Lesser Kestrel Recovery, LIFE11 NAT/BG/360". In 2018, an adult female bird called Ema was tagged with a satellite transmitter. We present the aggregated data collected over 5 years (2018-2022). After the end of the 2018 breeding season, Ema started its pre-migratory wanderings reaching as far as Hungary. It spends the winters in Africa, in the Sahel region at the range of three countries - Niger, Nigeria and Chad, traveling over 4000 km. In 2021, she did not breed, but was wandering around Europe and Bulgaria, visiting colonies of the species in Greece, reaching as far as Italy. During the years Ema visited at least 18 countries, including Bosnia and Herzegovina.

25. POSTER - First evidence of breeding Lesser kestrel in Bosnia-Herzegovina

Biljana Rankovic & Goran Topić; *Ornithological Society 'Our Birds', Bosnia*

Lesser Kestrel (*Falco naumanni*) is stated as a breeder of Bosnia and Herzegovina in several publications including a BirdLife International species' factsheet but the breeding itself haven't been proved so far. One adult individual of Lesser Kestrel was observed on the roosting site in the village of Rilić, Kupreško polje on April 5, 2023 which is the first documented spring observation of the species in karst poljes of western Bosnia and Herzegovina. A male was recorded crawling under the roof of nearby abandoned building with food in his beak on Jun 17, after which the voices of the chicks were heard. The total of two to six breeding pairs were registred in the same building during the Jun and July, 2023. The first monitoring of the prey composition of the firstly recorded breeding pair was carried out during the three visits to the colony. Grillus sp. was dominant pray in Jun, and Tettigonoidea in July.

26. 'Bonus track' – Field campaign report: the 2023 expedition to the lesser kestrel roost of Kousmar Island, Senegal

Michelangelo Morganti, CNR-IRSA, Italy & Javier Bustamante, CSIC/EBD, SPain

In November 2023, the larget world's known winter roost of lesser kestrels was the object of an expedition leaded by Javier Bustamante and financed by the MERCURIO project, to which LIFE FALKON also participated with one member. In the talk, we present the location of Kousmar Island on the Saloum river in central Senegal, where the roost is hosted and discovered only a few years ago by a French expedition. Here, we spent 10 days setting up a capture system, thanks to which we finally could capture and deploy with GPS/GSM 10 lesser kestrels, which was later followed up to their breeding sites in Europe and Morocco. Along with lesser kestrels, the roosts hosts several thousand scissor-tailed kites (*Chelictinia riocourii*) also wintering there. The expedition was a success and for November 2024 is foreseen a further field campaign there.

4. Photobook of the conference

The welcome table at the conference, presenting some of the material produced by LIFE FALKON during the project years, as well as promotional material dedicated to the Closing Conference (see the T-shirt and the poster)

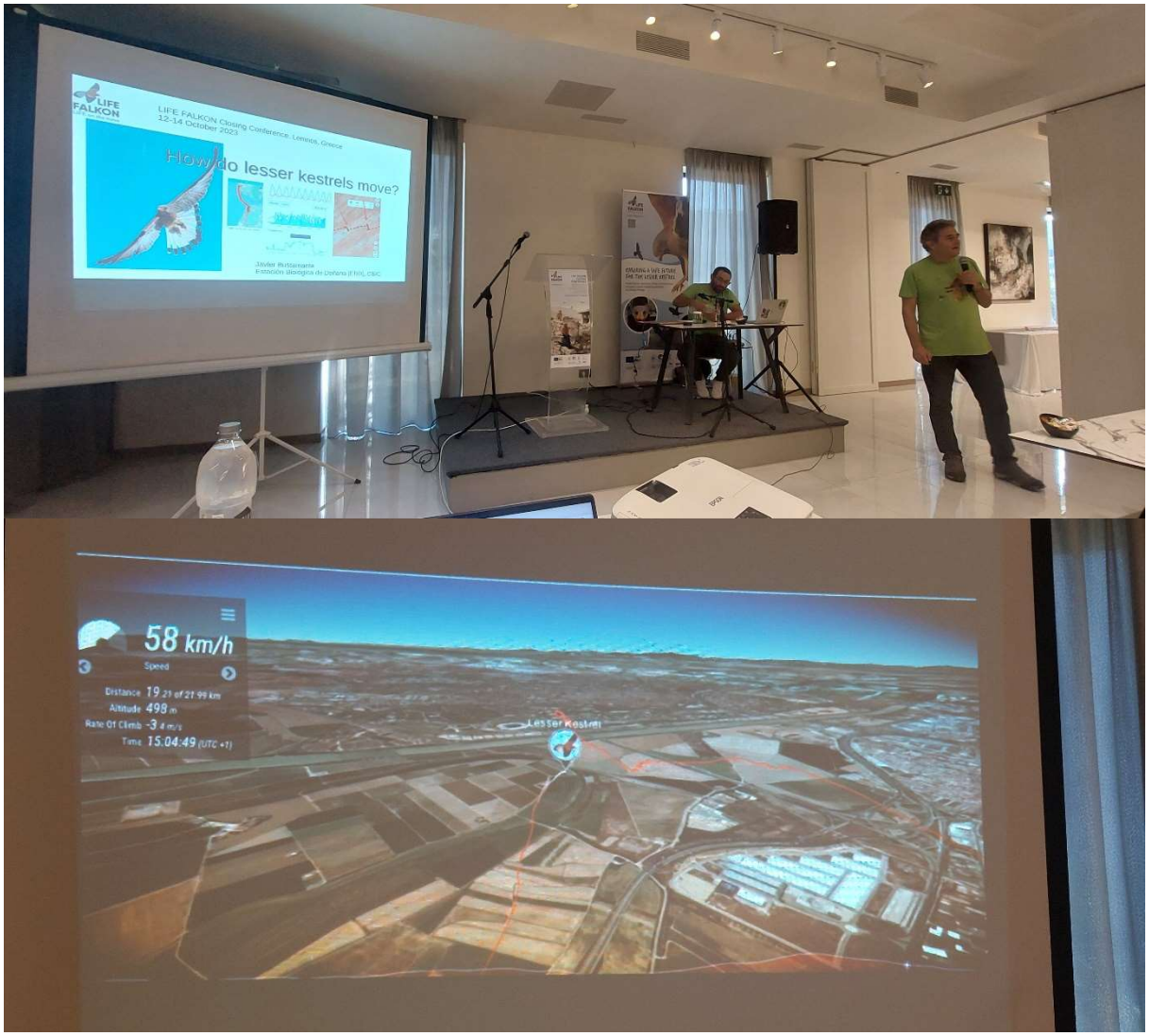
The conference venue at Grand Hotel Patelli, Lemnos

Gradimir Gradev, the leader of Green Balkans NGO (Bulgaria) showing their lesser kestrel decoy and nestbox (next two photos)

Inês Catry from Portugal giving her Plenary Talk about 20yrs of research and conservation on lesser kestrels

The social dinner, during which we have seen together the LIFE FALKON documentary

The plenary talk of Javier Bustamante, CSIC/EBD, Spain



Claudia De Battisti, a student working on lesser kestrel, one of the youngest speaker of the conference; and Nikos Tsiopelas, the chairman of the conference.

The night landscape of Myrina (Lemnos Island main city)

Nikos Tsiopelas (above) and Roula Trigou (below) illustratring some details and installations in he villages where LIFE FALKON has worked in Lemnos Island (field visit day 14 th October)

Social lunch closing the field visit

4. Conclusions and future perspectives

In the final part of the conference, the attendees had the opportunity to take part in the round table organised by the LIFE FALKON team. The discussion took place as the very final moment of the conference, in the premises of Grand Patelli hotel.

The round table's primary purpose was to assemble an international team of experts on the species. This is expected to facilitate common research and conservation activities in the future and trigger international collaboration on large-scale projects, such as potential new LIFE projects. Apart from the networking activities, some of the other topics that were discussed in the round table were the prioritisation of threats and the evaluation of the species current trend. It was commonly agreed that the threats expected to affect the species in the future are mostly connected to climate change and more specifically, extreme heat incidents. All participants agreed on the fact that new, innovative ways of artificial-nest designs must be considered, in order to mitigate the threat of heat waves and extreme temperatures in the years to come. Furthermore, a re-evaluation of the species' population status was found to be of high importance, as it seems that the population in several areas has started again to decline after reaching a plateau for many years. For the same reason a future update of the species international action plan was agreed to be needed. Lastly, the possibility of submitting a new international project proposal for funding, was discussed. The work of this multi-national team of experts was decided to remain active in the future, mainly by means of web-based communication.

A moment of the round table closing the Confernece