

Article

Breeding Habitat Suitability Modeling to Inform Management Practices for the European Turtle Dove (*Streptopelia turtur*) in NE Greece

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Abstract: The European Turtle Dove (*Streptopelia turtur*) has experienced significant population declines across its European breeding range, primarily due to habitat loss. Our study aimed to provide a new reference for the conservation of Turtle Doves in Evros province, a biodiversity hotspot. We used Maximum Entropy (MaxEnt) modeling to assess Turtle Dove breeding habitat suitability and account for the area of suitable habitats that is not protected or have been affected by a recent mega-fire. The best performing model identified tree cover density, the percent cover of permanently irrigated land and heterogeneous agricultural areas, proximity to non-irrigated agricultural land, and forest edge length as the most important predictors of habitat suitability, signifying the importance of an interplay between open and forested land. Our results indicate that 39% of the study area provides a suitable breeding habitat, with the majority located in central and southeastern regions. Conversely, irrigated agricultural areas in the northeast are unsuitable. We found that more than 60% of suitable habitats fall within the Natura 2000 network, underscoring the importance of protected areas for conservation. However, wildfires pose a major threat, with almost 25% of suitable habitats being affected by a recent mega-fire, highlighting the need for recovery in these areas. Our study provides a foundation for targeted habitat management and restoration efforts in NE Greece and contributes to the broader understanding of the species' habitat requirements across its breeding range.

Keywords: MaxEnt; columbids; farmland birds; habitat restoration; wildfires; Evros



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1. Introduction

Biodiversity declines have been documented for many taxa around the world [1], thus emphasizing the urgent need to understand species' requirements from a conservation perspective [2,3]. These declines have been attributed to several factors, including, but not limited to, habitat loss and fragmentation [4–6], invasive species [7–9], and climate change [10,11]. In the Mediterranean basin—Europe's most significant biodiversity hotspot [12]—many species have suffered losses, mainly due to human-related activities [13,14], with birds being among the most drastically affected species [3]. Among bird species, migrants are more susceptible to threats in relation to resident species [15] because of their dependence on multiple sites throughout their annual cycle [16]. At the breeding grounds, the main sources for migratory bird population declines are believed to be the degradation of breeding habitats [17], which is particularly prominent in the Mediterranean region [18].

A summer visitor to Europe, the European Turtle Dove (*Streptopelia turtur*) is the second fastest declining long-distance migrant bird [17]. With a 16% drop in its European population within a decade [19], the species is now classified as vulnerable on the European Red List of Birds [20] and the IUCN Red List of Threatened Species [21]. Even so, and due to its life cycle [17] and dietary and ground-feeding habits [22–24], the causes and their relative contribution to these declines remain somewhat unclear [25]. Recent studies have highlighted the role of agricultural intensification, diseases, over-exploitation, and illegal bagging as the main sources of Turtle Dove population declines [25–30].

While there is sufficient evidence on the impact of the aforementioned threats on Turtle Dove populations migrating through the western and central European flyways, such information is lacking for the eastern flyway, which includes Greece [31]. This lack of information has also been highlighted in the International Single Species Action Plan (ISSAP), which was authorized by the European Union (EU) [27] in 2018. While there is some evidence that illegal hunting may contribute to the decline of individuals migrating through Greece [32], the hunting itself has been reported to be sustainable [33]. Conversely, there is a general consensus that habitat loss due to agricultural intensification is the main culprit, leading to declines not only in Turtle Dove European populations but in farmland birds in general [25–27,34–36]. It is believed that approximately one billion hectares of natural habitats will be lost due to agricultural intensification by 2050 [37], and while the establishment and expansion of protected areas aims at halting such losses [38], this is not always the case. For example, wildfires burn about 80,000 hectares of protected land within the Natura 2000 Network per year [39], with fire events becoming increasingly more frequent, especially in Greece. More specifically, on August 2023, a single fire event affected almost one third of the Natura 2000 sites found within the Evros province.

With that in mind, one of the main objectives of the ISSAP was to improve or preserve Turtle Dove-suitable nesting and foraging habitats at their breeding grounds in an effort to stop any further population declines [27]. However, due to their vast breeding range [40], Turtle Doves are naturally linked to a variety of habitats and landscapes, which may vary depending on the geographical region or the scale of the analysis. For example, in Greece and Portugal, the species favors coniferous forests for nesting [41,42], whereas in Spain forests are associated with lower levels of Turtle Dove abundance [43]. Additionally, abiotic factors are the main components associated with Turtle Dove presence at the continental scale [44]. At the national scale, both abiotic factors and habitat features may be crucial in determining the species' presence [43,45,46]. Finally, at a lower scale, habitat features seem to be the main drivers of Turtle Dove presence [42,47,48].

Based on the above information, our study aimed at investigating and predicting suitable habitats for European Turtle Dove breeding in NE Greece, determining the area of suitable habitats that fall outside the Natura 2000 network, and estimating the area of suitable habitats that have been affected by the recent mega-fire that took place within the study area. Our findings could help strengthen conservation planning, habitat management, and protective strategies for the declining Turtle Dove, as well as filling in the knowledge gap regarding the eastern flyway.

2. Materials and Methods

2.1. Study Area

The study was conducted in the Evros province, which is situated in the northeastern part of Greece (Figure 1). The Evros province covers an area of approximately 4.065 km² and borders Bulgaria in the north and Turkey in the east. The area is characterized by a sub-Mediterranean climate and, despite its relatively small size, there is prominent spatial variation in environmental conditions and land cover types. Mean monthly temperatures

range from 4 °C in January to 25 °C in July, mean annual precipitation is 664 mm, and there is a wide range of altitudes (sea level to 984 m). According to the Copernicus Corine Land Cover (CLC) data [49], agricultural areas cover 52.65% of the study area, comprising arable land (40.68%), heterogeneous agricultural areas (10.48%), pastures (0.98%), and permanent crops (0.51%). Forests and open, semi-natural areas can be found in the center part of the province and extending to the east, covering 25.58% and 15.61% of the study area, respectively. Artificial surfaces, wetlands, and inland and marine waters each cover less than 3% of the study area. Within the area, two National Parks (NPs) are contained; the Dadia-Lefkimi-Soufli NP and the Evros Delta NP. Both of these NPs are of national and international significance and are considered biodiversity hotspots [42]. In addition, seven Special Protection Areas (SPA) and four Sites of Community Importance (SCI) of the Natura 2000 Network are located within the study area. Combined, they cover 55.3% of the study area, and mostly include forest habitats (41.65%), followed by agricultural (26.99%) and open semi-natural areas (23.34%). However, despite the extensive network of protected areas characterizing the region, a single fire event that took place in August 2023 burned more than 790 km², of which 680 km² included Natura 2000 sites.

2.2. Turtle Dove Presence Data

Data describing the presence of Turtle Doves within the study area were obtained from field surveys conducted in 2015 and 2016. More specifically, the study area was divided into 4065 equal 1 km × 1 km grid squares. From those, 750 were selected in a stratified manner, with respect to the whole spectrum of habitats proportional to the area [50]. Within each selected square, three point counts were established, each as a vertex of a triangle and at a distance of 250 m from each other [51]. At each point count, observers recorded the species' presence (or absence) for a total of 10 min and within a 30 m radius. Observations relied on visual encounters or species vocalizations [42] and were conducted within the first four hours after sunrise [52]. Due to logistic constraints, surveys were divided into two years, with each point count being visited once during May of each year. Records before or after this period were excluded, as individuals tend to move between breeding sites [53,54] and thus may not represent breeding pairs. Turtle Dove presence was assigned to those grid squares in which at least one individual was recorded in at least one of the three point counts. Hence, a total of 175 presence locations were included in the breeding habitat suitability analysis that followed.

2.3. Environmental Variables

A total of 34 environmental variables were initially created, describing land-cover ($n = 21$) [49,55,56], topography ($n = 1$) [57], climate ($n = 6$) [58], and soil information ($n = 6$) [59] (Table S1). These variables were chosen due to their possible effect on Turtle Dove nesting and foraging habitat, land productivity, distribution, structure and composition of plant species [41,45,46,53,54,60–62]. All variables were cropped to match the extent of the study area and were resampled to a 1 km resolution using ArcGIS 10.2. Prior to any analyses, we assessed the linear correlation among all variables and discarded those with a correlation coefficient greater than 0.7 [63]. Hence, a total of 15 variables were retained and are described in Table 1.

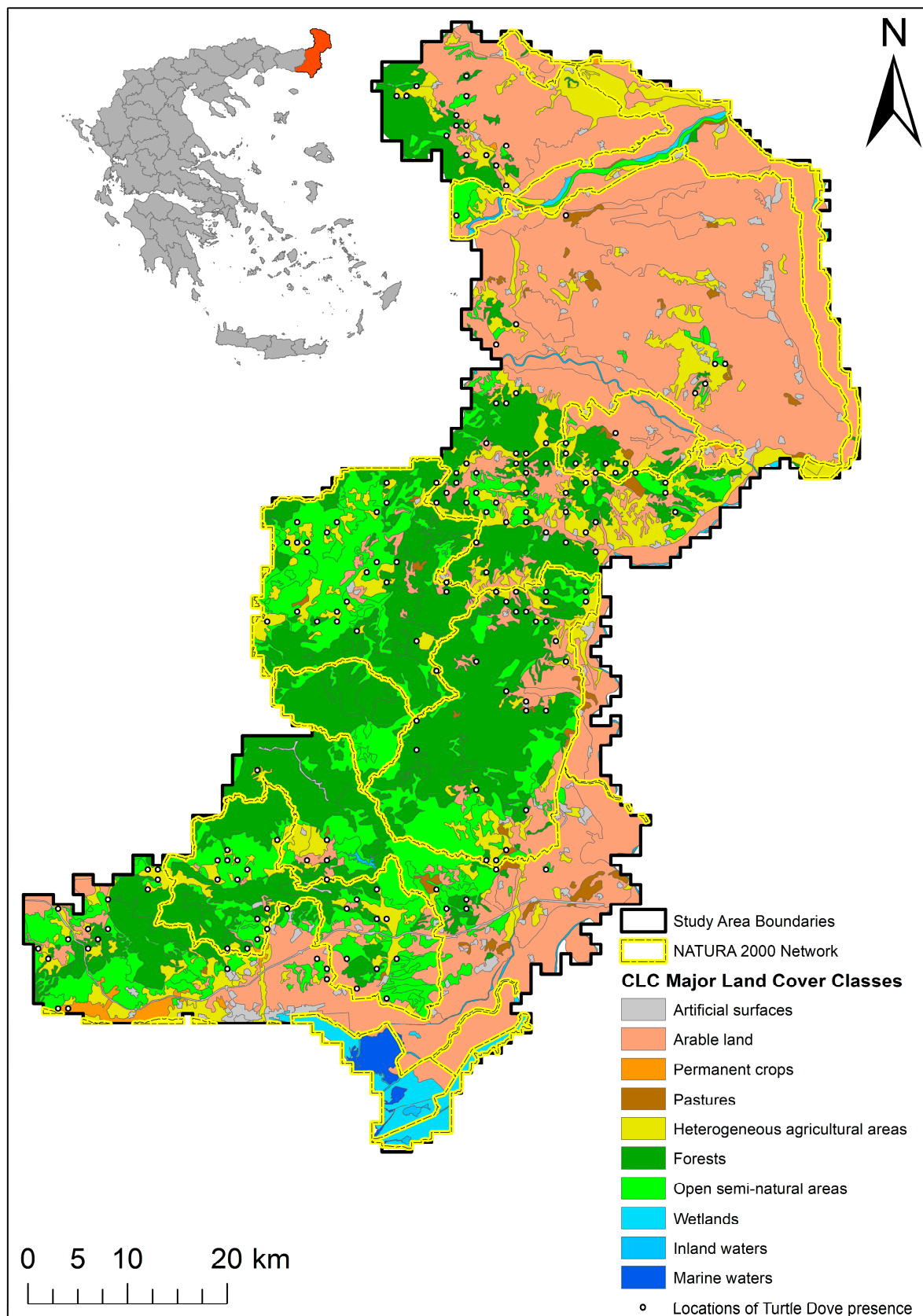


Figure 1. Location of the study area in the Evros province of NE Greece and European Turtle Dove (*Streptopelia turtur*) presence locations (n = 175). Major land cover classes are depicted with different colors in the background.

Table 1. Description of 15 environmental variables available for modeling breeding habitat suitability of the Turtle Dove in NE Greece.

Acronym	Description	Units	Source
bio2	Mean diurnal range (Mean of monthly (max temp-min temp))	°C	[58]
bio11	Mean temperature of coldest quarter	°C	
forl	Forest edge length (includes CLC classes 311, 312 and 313)	m	[49]
hetagrip	Percent cover of heterogenous agricultural areas (includes CLC classes 242 and 243)	%	
ibudis	Distance to impervious build up areas	m	[55]
noniridis	Distance to non-irrigated land (includes CLC class 211)	m	
noniril	Non-irrigated land edge length	m	[49]
pasdis	Distance to pastures (includes CLC class 231)	m	
pasp	Percent cover of pastures	%	
peririp	Percent cover of permanently irrigated agricultural land (includes CLC class 212)	%	
shrubl	Shrub edge length (includes CLC classes 321, 322, 323 and 324)	m	[56]
tcd	Tree cover density	%	
mcec	Mean cation exchange capacity (at pH7)	mmol(c)/kg	[59]
mocd	Mean organic carbon density	Dg/kg	
mph	Mean pH water	pH*10	

2.4. Habitat Suitability Modeling

Turtle Dove breeding habitat suitability was modeled using the Maximum Entropy (MaxEnt) algorithm [64], implemented via the SDMTune package [65] in R [66]. MaxEnt was selected over other available algorithms as it usually performs better [64], as well as due to its widespread use in wildlife-related studies [67]. Additionally, presence-only models have been reported to produce more reliable predictions of Turtle Dove habitat suitability in relation to presence–absence models [46]. A total of 60 MaxEnt models were run, using 3.890 background points and different parameter combinations. The latter included regularization multiplier (RM) values ranging from 0.5 to 5 (at increments of 0.5), as well as the following feature classes: linear (L), quadratic (Q), hinge (H), product (P), and threshold (T), with the following combinations: L, H, LQ, LQH, LQHP, and LQHPT. Following the recommendations of Radosavljevic and Anderson [68], and in order to avoid non-independence between the training and testing data, we partitioned both presence and background points in four non-overlapping bins based on their longitude and latitude by employing the “block” method implemented within the ENMeval package [69]. Finally, model performance was evaluated using the scores from the area under the curve (AUC) from the receiver operating characteristic plot (ROC), as well as those from the True Skill Statistic (TSS). As a general rule, AUC values > 0.8 and TSS values > 0.5 indicate good model performance [70,71].

The output of the final MaxEnt model predictions was imported into ArcGIS 10.2 and two habitat suitability maps were created. Firstly, and in order to establish which locations are considered suitable or unsuitable for the species, a binary suitability map was created using a cut-off threshold based on maximum sensitivity and specificity. Based on our findings, this threshold was equal to 0.184. Secondly, we divided Turtle Dove

breeding habitat suitability into four classes, namely unsuitable (0–0.184), low suitability (0.184–0.388), moderate suitability (0.388–0.592), and high suitability (0.592–0.852). The same software was used to compute the area (km²) covered by suitable or unsuitable habitats, and the area (km²) covered by each suitability class.

Subsequently, and in order to calculate the exact area (km²) of suitable habitats that fall outside the current protected areas, both suitability maps (binary and classified) were converted to polygon format and overlayed with the NATURA 2000 Network spatial layer. Similarly, both maps were overlayed with the area affected by the mega-fire that took place within the study area in August 2023 in order to estimate the area (km²) of suitable breeding habitats that have been affected.

3. Results

According to SDMtune, the best Maxent model parameters utilized a regularization multiplier of 4.5 and an LQHPT feature class combination. The model was highly reliable in predicting potential suitable breeding habitats of Turtle Doves and had an AUC score of 0.85 and a TSS value of 0.64.

The most important environmental variables associated with the presence of the Turtle Dove were tree cover density (tcd, 42.45%), percent cover (%) of permanently irrigated land (peririp, 16.55%), percent cover (%) of heterogeneous agricultural areas (hetagrip, 15.5%), distance (m) to non-irrigated agricultural land (noniridis, 8.98%), and forest edge length (m) (forl, 8.28%) (Figure 2).

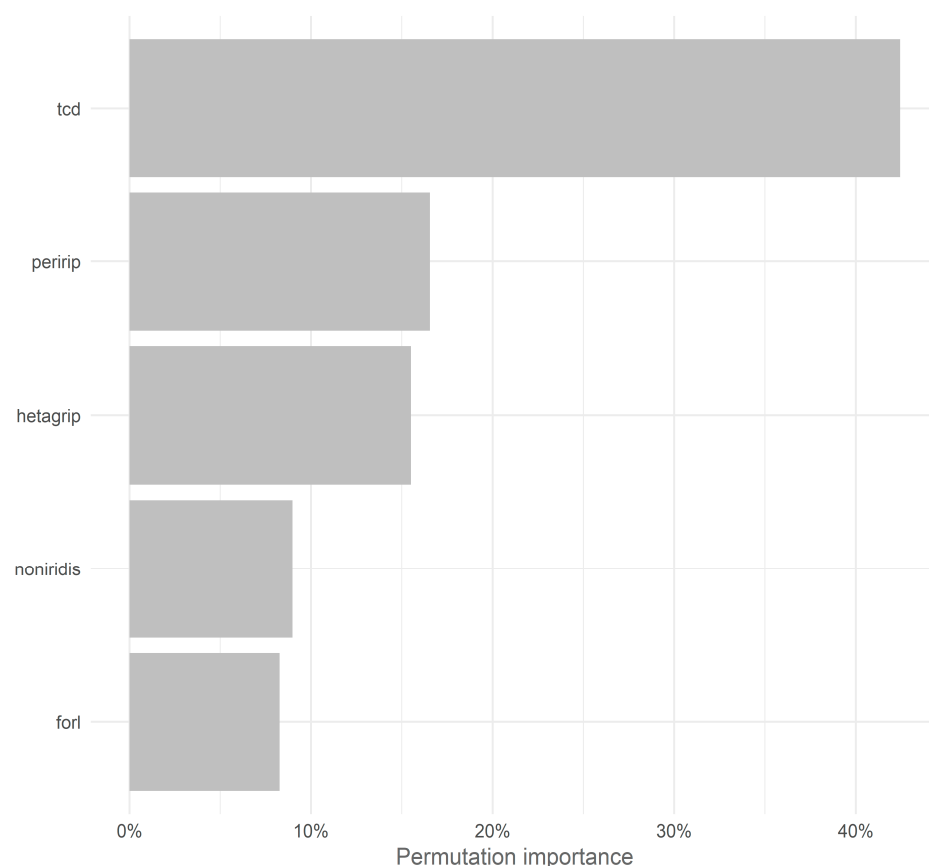


Figure 2. Relative importance of environmental variables in predicting suitable breeding habitats of the Turtle Dove based on permutation importance. Only variables with a permutation importance higher than 5% percent are shown.

Further examination of the response curves of the aforementioned variables (Figure 3) revealed that the range of suitable tree cover density for breeding Turtle Doves is 15–60%, whereas values below or above that range are associated with lower suitability. Additionally, habitat suitability illustrated a negative relationship with the percent cover (%) of permanently irrigated land, as well as the distance (m) to non-irrigated agricultural land. Finally, breeding habitat suitability reached its highest score when the percent cover (%) of heterogeneous agricultural areas reached a value of approximately 60% and when forest edge length reached a value of approximately 2500 m per km². Any values below or beyond that point were characterized by lower suitability for both variables.

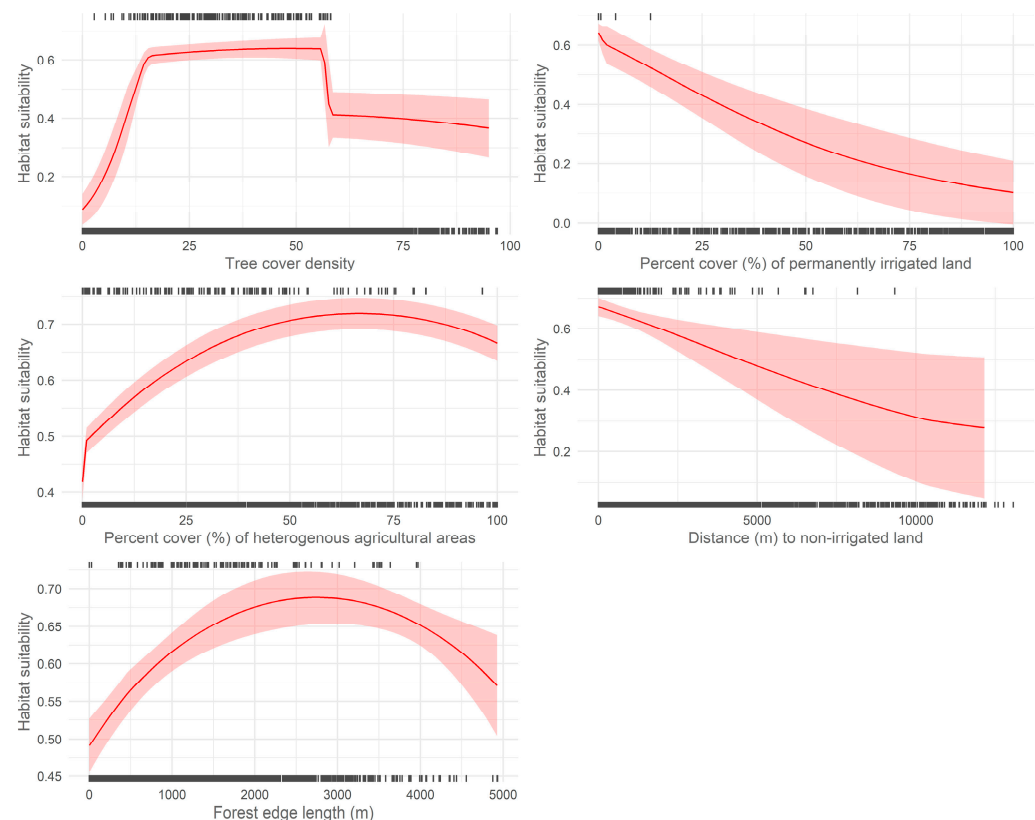


Figure 3. Response curves of breeding habitat suitability of the most important environmental variables (permutation importance > 5%) based on MaxEnt modeling. Shaded areas represent variation in each response over cross-validation estimates. Rug plots for the presence and background locations are shown at the top and bottom of each plot. Response curves are shown in order of importance.

The predicted binary breeding habitat suitability map (Figure 4) revealed that approximately 39% (or 1585 km²) of the entire study area can be considered suitable breeding habitat for the Turtle Dove. Most suitable habitats are situated at the center part of the study area and extend to the southeast and southwest. Conversely, suitable habitats are a lot scarcer in the northern part of the study area. In addition, the Natura 2000 network, which covers approximately 55% of the entire study area, encompasses 61.6% of the predicted suitable breeding habitats. However, 24.65% (391 km²) of the predicted suitable breeding habitats have been affected as a result of a mega-fire that took place in the study area in August 2023 alone.

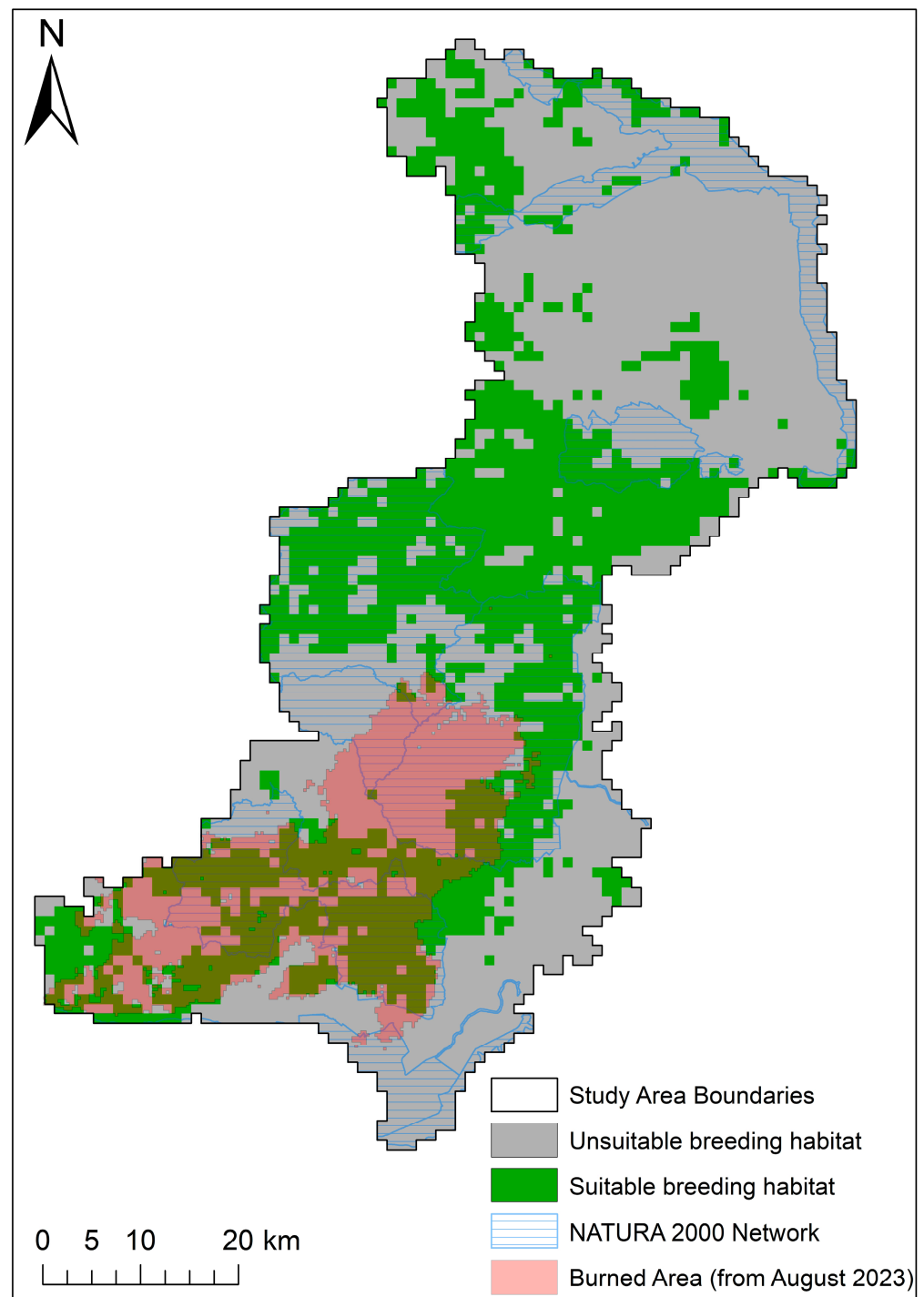


Figure 4. Binary breeding habitat suitability map (based on maximum sensitivity and specificity threshold) for the Turtle Dove, predicted using the MaxEnt algorithm.

Similarly, according to the classified suitability map, only 10.9% (443 km²) of the entire study area is classified as highly suitable (Figure 5). The majority (55.69%) of highly suitable habitats falls within the Natura 2000 Network. However, 20.9% of this habitat suitability class has been affected by the recent mega-fire. The largest unfragmented patches of highly suitable habitat can be found in the center part of the study area (70 km², 26 km², and 24 km²). Areas of moderate habitat suitability cover 11.54% (469 km²) of the study area. From those, 62.63% fall within protected areas, while 23.6% have been affected by the mega-fire. Moderately suitable habitats are highly fragmented, with 99% of them creating continuous patches of less than 20 km². Finally, areas of low habitat suitability cover 16.55%

of the study area (673 km²), of which 64.9% are protected by the Natura 2000 Network and 27.7% were burned during the last mega-fire. The largest uniform patch of low habitat suitability covers an area of 41 km², however, it is situated within the area affected by the mega-fire of August 2023.

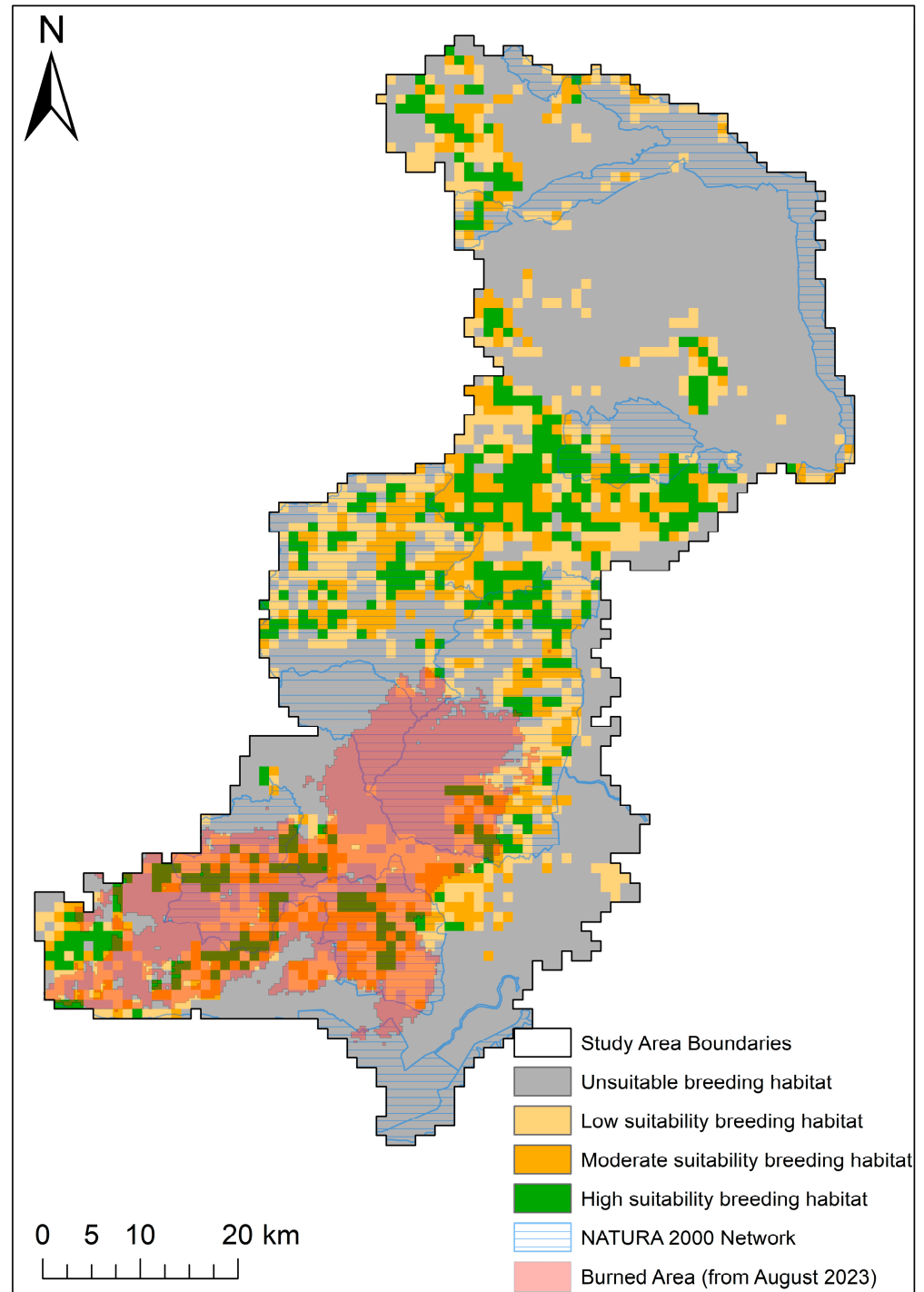


Figure 5. Classified breeding habitat suitability map for the Turtle Dove, predicted using the MaxEnt algorithm. Habitats are partitioned into four classes, namely unsuitable (0–0.184), low suitability (0.184–0.388), moderate suitability (0.388–0.592), and high suitability habitats (0.592–0.852).

4. Discussion

Our results on the environmental factors determining the suitability of Turtle Dove breeding habitats are in agreement with similar studies. The species requires a mixture

of land cover types both for nesting and foraging, while avoiding areas of intensive agricultural practices. Previous studies have shown that Turtle Doves may occupy several types of forest habitats [42,46,48,72–74], as well as orchards [75], but prefer to nest in areas characterized by a less enclosed canopy; enough to provide adequate concealment and protection from weather conditions, as well as to facilitate easier access for both adult and juvenile doves [72,76]. In addition, forest cover has been found to be positively associated with nest site selection [48]. Accordingly, we found that areas in which tree cover density ranged from 15–60% were considered more suitable for the species. In fact, this variable was deemed the most significant in predicting habitat suitability. Although we did not discriminate tree cover density between different land cover types, Turtle Dove presence in the Mediterranean region is closely associated with this parameter [41,42,61], and it has been reported to have a positive effect on the hatching success of columbid species [77].

Similar to other studies, we found a negative relationship between Turtle Dove habitat suitability and the percent cover of permanently irrigated agricultural land. Agricultural intensification, which characterizes this type of land cover, has been labelled as one of the primary causes of Turtle Dove declines [78]. Intensive agricultural practices, which lead to landscape modification through the removal of natural habitat features or involve the widespread application of fertilizers and pesticides, have been documented to have a negative impact on both nesting habitat availability and food resources for Turtle Doves [25–27,45,53,60,79]. Our study showed that most unsuitable habitats are located in the northern part of the Evros province, as well as along the lower southeast borders. Both areas are characterized by irrigated, extensive monocultures that lack natural features such as shrubs, hedgerows, or trees. Irrigation, along with other agriculture intensification practices, have a detrimental effect not just on Turtle Doves, but also on other farmland birds [25–27,34–36], local biodiversity [80,81], and ecosystems in general [82,83].

In contrast, non-irrigated agricultural lands offer vital habitats for various bird species, especially within human-modified landscapes [80,84–87]. Such land cover types encompass various types of natural and semi-natural habitats, creating a mosaic of heterogeneous landscapes [86]. Consequently, they provide a variety of food resources throughout the breeding season, as well as an abundance of suitable nesting habitats [5,24–26,45,54,74,81,88,89]. Our analyses showed a positive association between the percent (%) cover of heterogeneous agricultural areas and the proximity to non-irrigated agricultural land. Both these predictors had a combined permutation importance of 24.48%, highlighting the significance of these land cover types in predicting suitable habitats for the species. In the Mediterranean region, rain-fed agricultural areas play a key role in sustaining farmland biodiversity [80,86,87,90] and should be properly managed [80,87], since they comprise the main foraging and nesting habitat for the Turtle Dove [5,78].

Finally, habitat suitability illustrated a threshold effect in relation to forest edge length. A similar pattern has been reported in France, with the relationship between forest edge length and Turtle Dove abundance illustrating a bell-shaped effect [26]. However, different patterns—both positive [5,78] and negative [54,91]—may be observed depending on the scale to which these associations are investigated [26]. To the contrary, most studies concur that forest edges can provide suitable nesting habitat for Turtle Doves, especially when combined with areas of open ground [5,26,45,60,78]. However, habitats may become unsuitable in less heterogeneous areas where large forest stands are more dominant [26].

Although more than 60% of suitable habitats within our study area fall within the Natura 2000 network, several actions should be taken in an effort to safeguard the species' breeding habitat, especially as agriculture intensification spreads to the surrounding landscape and wildfires become more frequent and more catastrophic. For example, within the Natura 2000 network, agro-environmental practices should be promoted. Agricultural

areas should be combined with patches of natural and semi-natural habitats, so as to help create a varied landscape that could support a wide range of species [80,81,92]. Within this context, avoiding monocultures, diversifying crop types, and retaining rain-fed fields would assist in that direction [26,45,60,80,93]. In addition, agricultural practices should limit the extensive use of pesticides and herbicides due to the species' sensitivity to such chemicals [27].

On the other hand, caution should be taken in protecting suitable breeding habitats from wildfire events. Almost one quarter of the predicted suitable habitats within our study area were burned during a single mega-fire that took place in August of 2023. This mega-fire occurred despite the implementation of a nation-wide fire prevention program called AntiNERO. The program, which emphasized forest fuel management, included actions such as undergrowth clearing and the thinning of trees on both sides of roads or firebreaks. Even so, these measures proved to be ineffective, at least in the case of the Evros province. Conversely, similar fire prevention measures implemented in Spain have been found to have a positive effect on Turtle Dove abundance [94] and have also been proposed by others [60]. In Greece, the effects of such management actions for both Turtle Doves and other wildlife species remain unknown. In the case of the Evros province, undergrowth clearings could have negatively affected the presence and abundance of many wildlife species [95,96], some of which could be considered prey for the varieties of raptors and birds of prey that are found in the area [42]. With that in mind, maintaining livestock grazing—a practice which has been carried out for generations in the region but is now largely abandoned—or reintroducing large ungulates in woodland areas could benefit both the Turtle Dove and the birds of prey that reside in the area [60,97], serving at the same time as a fire prevention measure.

In the absence of management funding, attention should be concentrated on conserving highly suitable habitats, especially those in the center part of the Evros province that form continuous patches. Transitional areas could be prioritized in terms of management, with those characterized by moderate habitat suitability requiring less intensive management interventions in relation to low suitability or unsuitable areas. In addition, management practices should focus on areas in which higher connectivity between patches could be achieved, with isolated patches being characterized as lower priority areas.

5. Conclusions

In summary, our study showed that even though a great portion (39%) of the Evros province in Greece can be considered suitable breeding habitat for the Turtle Dove, almost 25% of that habitat was destroyed in a single mega-fire. Suitable habitats include areas of increased tree cover density and non-irrigated agricultural areas combined with areas of natural vegetation and forest edges. In addition, our study highlighted the negative impact of the area of permanently irrigated agricultural lands on Turtle Dove breeding habitat suitability. Management interventions should target on preserving or enhancing habitat heterogeneity, especially within agricultural landscapes. In addition, fire prevention actions should include measures that would benefit both Turtle Doves and birds of prey residing in the area. Future studies should focus on investigating Turtle Dove habitat associations in other parts of Greece, since our results may not be representative of the entire mainland, and hence different management practices may be needed. Finally, long term data are needed in order to track changes in occupancy and population size, both in Greece and elsewhere within the species' breeding range.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ecologies6020025/s1>, Table S1: Description of the 34 environmental variables that were initially considered in modeling breeding habitat suitability of Turtle Dove in NE Greece using the MaxEnt algorithm.

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References

1. Butchart, S.H.M.; Walpole, M.; Collen, B.; Van Strien, A.; Scharlemann, J.P.W.; Almond, R.E.A.; Baillie, J.E.M.; Bomhard, B.; Brown, C.; Bruno, J. Global Biodiversity: Indicators of Recent Declines. *Science* **2010**, *328*, 1164–1168.
2. Bakaloudis, D.E.; Thoma, C.T.; Makridou, K.N.; Kotsonas, E.G.; Arsenos, G.; Theodoridis, A.; Kontsiotis, V. Home Range and Habitat Selection of Feral Horses (*Equus Ferus f. Caballus*) in a Mountainous Environment: A Case Study from Northern Greece. *Land* **2024**, *13*, 1165. [\[CrossRef\]](#)
3. Harms, T.M.; Murphy, K.T.; Lyu, X.; Patterson, S.S.; Kinkad, K.E.; Dinsmore, S.J.; Frese, P.W. Using Landscape Habitat Associations to Prioritize Areas of Conservation Action for Terrestrial Birds. *PLoS ONE* **2017**, *12*, e0173041.
4. Walker, J.S. Geographical Patterns of Threat among Pigeons and Doves (*Columbidae*). *Oryx* **2007**, *41*, 289–299.
5. Browne, S.J.; Aebischer, N.J.; Yfantis, G.; Marchant, J.H. Habitat Availability and Use by Turtle Doves *Streptopelia Turtur* between 1965 and 1995: An Analysis of Common Birds Census Data. *Bird Study* **2004**, *51*, 1–11.
6. Brooks, T.M.; Mittermeier, R.A.; Mittermeier, C.G.; Da Fonseca, G.A.B.; Rylands, A.B.; Konstant, W.R.; Flick, P.; Pilgrim, J.; Oldfield, S.; Magin, G. Habitat Loss and Extinction in the Hotspots of Biodiversity. *Conserv. Biol.* **2002**, *16*, 909–923.
7. Clavero, M.; Brotons, L.; Pons, P.; Sol, D. Prominent Role of Invasive Species in Avian Biodiversity Loss. *Biol. Conserv.* **2009**, *142*, 2043–2049.
8. Gurevitch, J.; Padilla, D.K. Are Invasive Species a Major Cause of Extinctions? *Trends Ecol. Evol.* **2004**, *19*, 470–474.
9. Bakaloudis, D.E.; Thoma, C.T.; Makridou, K.N.; Kotsonas, E.G. Occupancy Dynamics of Free Ranging American Mink (*Neogale Vison*) in Greece. *Sci. Rep.* **2024**, *14*, 9973.
10. Thaxter, C.B.; Joys, A.C.; Gregory, R.D.; Baillie, S.R.; Noble, D.G. Hypotheses to Explain Patterns of Population Change among Breeding Bird Species in England. *Biol. Conserv.* **2010**, *143*, 2006–2019.
11. Mantyka-pringle, C.S.; Martin, T.G.; Rhodes, J.R. Interactions between Climate and Habitat Loss Effects on Biodiversity: A Systematic Review and Meta-analysis. *Glob. Change Biol.* **2012**, *18*, 1239–1252. [\[CrossRef\]](#)
12. Myers, N.; Mittermeier, R.A.; Mittermeier, C.G.; Da Fonseca, G.A.B.; Kent, J. Biodiversity Hotspots for Conservation Priorities. *Nature* **2000**, *403*, 853–858. [\[CrossRef\]](#) [\[PubMed\]](#)
13. Regos, A.; Aquilué, N.; Retana, J.; De Cáceres, M.; Brotons, L. Using Unplanned Fires to Help Suppressing Future Large Fires in Mediterranean Forests. *PLoS ONE* **2014**, *9*, e94906. [\[CrossRef\]](#)
14. Sirami, C.; Brotons, L.; Burfield, I.; Fonderflick, J.; Martin, J.-L. Is Land Abandonment Having an Impact on Biodiversity? A Meta-Analytical Approach to Bird Distribution Changes in the North-Western Mediterranean. *Biol. Conserv.* **2008**, *141*, 450–459. [\[CrossRef\]](#)
15. Newton, I. Population Limitation in Migrants. *Ibis* **2004**, *146*, 197–226. [\[CrossRef\]](#)
16. Runge, C.A.; Martin, T.G.; Possingham, H.P.; Willis, S.G.; Fuller, R.A. Conserving Mobile Species. *Front. Ecol. Environ.* **2014**, *12*, 395–402. [\[CrossRef\]](#)

17. Vickery, J.A.; Ewing, S.R.; Smith, K.W.; Pain, D.J.; Bairlein, F.; Škorpirová, J.; Gregory, R.D. The Decline of Afro-Palaearctic Migrants and an Assessment of Potential Causes. *Ibis* **2014**, *156*, 1–22. [CrossRef]
18. Suárez-Seoane, S.; Osborne, P.E.; Baudry, J. Responses of Birds of Different Biogeographic Origins and Habitat Requirements to Agricultural Land Abandonment in Northern Spain. *Biol. Conserv.* **2002**, *105*, 333–344. [CrossRef]
19. Pan-European Common Bird Monitoring Scheme (PECBMS). Available online: <https://pecbms.info/trends-and-indicators/species-trends/> (accessed on 14 March 2025).
20. BirdLife International. *European Red List of Birds*; Office for Official Publications of the European Communities: Luxembourg, 2021.
21. BirdLife International. *Streptopelia turtur*. In *The IUCN Red List of Threatened Species 2019*; Office for Official Publications of the European Communities: Luxembourg, 2019; E.T22690419A154373407.
22. Thoma, C.T.; Makridou, K.N.; Bakaloudis, D.E.; Vlachos, C.G. Age-Specific Differences in Wing Pointedness and Wing Length of European Turtle Doves *Streptopelia turtur* Migrating through the Eastern Flyway. *Ring. Migr.* **2020**, *35*, 94–100. [CrossRef]
23. Cabodevilla, X.; Moreno-Zarate, L.; Arroyo, B. Differences in Wing Morphology between Juvenile and Adult European Turtle Doves *Streptopelia turtur*: Implications for Migration and Predator Escape. *Ibis* **2018**, *160*, 458–463. [CrossRef]
24. Dunn, J.C.; Stockdale, J.E.; Moorhouse-Gann, R.J.; McCubbin, A.; Hipperson, H.; Morris, A.J.; Grice, P.V.; Symondson, W.O.C. The Decline of the Turtle Dove: Dietary Associations with Body Condition and Competition with Other Columbids Analysed Using High-throughput Sequencing. *Mol. Ecol.* **2018**, *27*, 3386–3407. [CrossRef] [PubMed]
25. De Vries, E.H.J.; Foppen, R.P.B.; Van Der Jeugd, H.; Jongejans, E. Searching for the Causes of Decline in the Dutch Population of European Turtle Doves (*Streptopelia turtur*). *Ibis* **2022**, *164*, 552–573.
26. Sauser, C.; Commagnac, L.; Eraud, C.; Guillemain, M.; Morin, S.; Powolny, T.; Villers, A.; Lormée, H. Habitats, Agricultural Practices, and Population Dynamics of a Threatened Species: The European Turtle Dove in France. *Biol. Conserv.* **2022**, *274*, 109730.
27. Fisher, I.; Ashpole, J.; Scallan, D.; Proud, T.; Carboneras, C. *International Single Species Action Plan for the Conservation of the European Turtle-Dove Streptopelia turtur (2018 to 2028)*; European Commission: Brussels, Belgium, 2018; pp. 81–83.
28. Marx, M.; Reiner, G.; Willems, H.; Rocha, G.; Hillerich, K.; Masello, J.F.; Mayr, S.L.; Moussa, S.; Dunn, J.C.; Thomas, R.C. High Prevalence of *Trichomonas gallinae* in Wild Columbids across Western and Southern Europe. *Parasit. Vectors* **2017**, *10*, 242. [CrossRef]
29. Stockdale, J.E.; Dunn, J.C.; Goodman, S.J.; Morris, A.J.; Sheehan, D.K.; Grice, P.V.; Hamer, K.C. The Protozoan Parasite *Trichomonas gallinae* Causes Adult and Nestling Mortality in a Declining Population of European Turtle Doves, *Streptopelia turtur*. *Parasitology* **2015**, *142*, 490–498.
30. Lormée, H.; Barbraud, C.; Peach, W.; Carboneras, C.; Lebreton, J.D.; Moreno-Zarate, L.; Bacon, L.; Eraud, C. Assessing the Sustainability of Harvest of the European Turtle-Dove along the European Western Flyway. *Bird. Conserv. Int.* **2020**, *30*, 506–521.
31. Marx, M.; Rocha, G.; Zehindjiev, P. Using Stable Isotopes to Assess Population Connectivity in the Declining European Turtle Dove (*Streptopelia Turtur*). *Conserv. Sci. Pract.* **2020**, *2*, E152.
32. Astaras, C.; Sideri-Manoka, Z.-A.; Vougioukalou, M.; Migli, D.; Vasiliadis, I.; Sidiropoulos, S.; Barboutis, C.; Manolopoulos, A.; Vafeiadis, M.; Kazantzidis, S. Acoustic Monitoring Confirms Significant Poaching Pressure of European Turtle Doves (*Streptopelia turtur*) during Spring Migration across the Ionian Islands, Greece. *Animals* **2023**, *13*, 687. [CrossRef]
33. Thomaidis, C.; Papaspyropoulos, K.G.; Karabatzakis, T.; Logothetis, G.; Christophoridou, G. European Turtle Dove Population Trend in Greece Using Hunting Statistics of the Past 16-Year Period as Indices. *Animals* **2022**, *12*, 368. [CrossRef]
34. Wretenberg, J.; Lindström, Å.; Svensson, S.; Thierfelder, T.; Pärt, T. Population Trends of Farmland Birds in Sweden and England: Similar Trends but Different Patterns of Agricultural Intensification. *J. Appl. Ecol.* **2006**, *43*, 1110–1120.
35. Chamberlain, D.E.; Fuller, J.R.; Bunce, G.H.R.; Duckworth, J.C.; Shrubbs, M. Changes in the Abundance of Farmland Birds in Relation to the Timing of Agricultural Intensification in England and Wales. *J. Appl. Ecol.* **2000**, *37*, 771–788.
36. Busch, M.; Katzenberger, J.; Trautmann, S.; Gerlach, B.; Droschmeister, R.; Sudfeldt, C. Drivers of Population Change in Common Farmland Birds in Germany. *Bird. Conserv. Int.* **2020**, *30*, 335–354.
37. Tilman, D.; Fargione, J.; Wolff, B.; D'antonio, C.; Dobson, A.; Howarth, R.; Schindler, D.; Schlesinger, W.H.; Simberloff, D.; Swackhamer, D. Forecasting Agriculturally Driven Global Environmental Change. *Science* **2001**, *292*, 281–284.
38. Geldmann, J.; Barnes, M.; Coad, L.; Craigie, I.D.; Hockings, M.; Burgess, N.D. Effectiveness of Terrestrial Protected Areas in Reducing Habitat Loss and Population Declines. *Biol. Conserv.* **2013**, *161*, 230–238.
39. San-Miguel-Ayán, J.; Durrant, T.; Boca, R.; Camia, A. *Forest Fire Damage in Natura 2000 Sites 2000–2012*; Publications Office of the European Union: Luxembourg, 2012.
40. Newton, I. Relationship between Breeding and Wintering Ranges in Palaearctic-African Migrants. *Ibis* **1995**, *137*, 241–249.
41. Dias, S.; Moreira, F.; Beja, P.; Carvalho, M.; Gordinho, L.; Reino, L.; Oliveira, V.; Rego, F. Landscape Effects on Large Scale Abundance Patterns of Turtle Doves *Streptopelia turtur* in Portugal. *Eur. J. Wildl. Res.* **2013**, *59*, 531–541.
42. Bakaloudis, D.E.; Vlachos, C.G.; Chatzinikos, E.; Bontzorlos, V.; Papakosta, M. Breeding Habitat Preferences of the Turtledove (*Streptopelia turtur*) in the Dadia-Soufli National Park and Its Implications for Management. *Eur. J. Wildl. Res.* **2009**, *55*, 597–602.

43. Moreno-Zarate, L.; Estrada, A.; Peach, W.; Arroyo, B. Spatial Heterogeneity in Population Change of the Globally Threatened European Turtle Dove in Spain: The Role of Environmental Favourability and Land Use. *Divers. Distrib.* **2020**, *26*, 818–831.
44. Keller, V.; Herrando, S.; Vorišek, P.; Franch, M.; Kipson, M.; Milanesi, P.; Martí, D.; Anton, M.; Klvanová, A.; Kalyakin, M.V. *European Breeding Bird Atlas 2: Distribution, Abundance and Change*; Lynx Edicions: Barcelona, Spain, 2020; ISBN 8416728380.
45. Korejs, K.; Riegert, J.; Mikuláš, I.; Vrba, J.; Havlíček, J. Habitat Preferences of European Turtle Dove *Streptopelia turtur* in the Czech Republic: Implications for Conservation of a Rapidly Declining Farmland Species. *J. Vertebr. Biol.* **2024**, *73*, 24001–24004. [\[CrossRef\]](#)
46. Marx, M.; Quillfeldt, P. Species Distribution Models of European Turtle Doves in Germany Are More Reliable with Presence Only Rather than Presence Absence Data. *Sci. Rep.* **2018**, *8*, 16898.
47. Hamza, F.; Kahli, A.; Chokri, M.-A.; Almalki, M.; Hanane, S. Urban and Industrial Landscapes Interact with Microhabitat to Predict Occurrence of European Turtle Dove (*Streptopelia turtur*) in Mediterranean Oases: Implications for Conservation. *Landsc. Urban. Plan.* **2021**, *215*, 104219. [\[CrossRef\]](#)
48. Hanane, S. Multi-Scale Turtle Dove Nest Habitat Selection in a Mediterranean Agroforestry Landscape: Implications for the Conservation of a Vulnerable Species. *Eur. J. Wildl. Res.* **2018**, *64*, 45. [\[CrossRef\]](#)
49. European Environmental Agency. *CORINE Land Cover.2018 (Vector)*; Europe, 6-Yearly–Version 2020_20u1, May 2020; European Environmental Agency: Copenhagen, Denmark, 2019.
50. De Frutos, Á.; Olea, P.P.; Vera, R. Analyzing and Modelling Spatial Distribution of Summering Lesser Kestrel: The Role of Spatial Autocorrelation. *Ecol. Modell.* **2007**, *200*, 33–44. [\[CrossRef\]](#)
51. Tryjanowski, P.; Morelli, F. Presence of Cuckoo Reliably Indicates High Bird Diversity: A Case Study in a Farmland Area. *Ecol. Indic.* **2015**, *55*, 52–58. [\[CrossRef\]](#)
52. Bibby, C.J.; Burgess, N.D.; Hill, D.A.; Mustoe, S. *Bird Census Techniques*, 2nd ed.; Academic Press: London, UK, 2000.
53. Browne, S.J.; Aebischer, N.J. Temporal Changes in the Breeding Ecology of European Turtle Doves *Streptopelia turtur* in Britain, and Implications for Conservation. *Ibis* **2004**, *146*, 125–137. [\[CrossRef\]](#)
54. Dunn, J.C.; Morris, A.J. Which Features of UK Farmland Are Important in Retaining Territories of the Rapidly Declining Turtle Dove *Streptopelia turtur*? *Bird Study* **2012**, *59*, 394–402. [\[CrossRef\]](#)
55. European Environmental Agency. *Impervious Built-Up 2018 (Raster 10 m)*; Europe, 3-Yearly, Aug. 2020; European Environmental Agency: Copenhagen, Denmark, 2020.
56. European Environmental Agency. *Tree Cover Density 2018 (Raster 10 m)*; Europe, 3-Yearly, Sep. 2020; European Environmental Agency: Copenhagen, Denmark, 2020.
57. European Environmental Agency. *European Digital Elevation Model (Raster 25 m)*; Apr. 2016; European Environmental Agency: Copenhagen, Denmark, 2016.
58. Fick, S.E.; Hijmans, R.J. WorldClim 2: New 1-km Spatial Resolution Climate Surfaces for Global Land Areas. *Int. J. Climatol.* **2017**, *37*, 4302–4315.
59. Hengl, T.; Mendes de Jesus, J.; Heuvelink, G.B.M.; Ruiperez Gonzalez, M.; Kilibarda, M.; Blagotić, A.; Shangguan, W.; Wright, M.N.; Geng, X.; Bauer-Marschallinger, B. SoilGrids250m: Global Gridded Soil Information Based on Machine Learning. *PLoS ONE* **2017**, *12*, e0169748. [\[CrossRef\]](#)
60. Carboneras, C.; Moreno-Zarate, L.; Arroyo, B. The European Turtle Dove in the Ecotone between Woodland and Farmland: Multi-Scale Habitat Associations and Implications for the Design of Management Interventions. *J. Ornithol.* **2022**, *163*, 339–355. [\[CrossRef\]](#)
61. De Buruaga, M.S.; Onrubia, A.; Fernández-García, J.M.; Campos, M.Á.; Canales, F.; Unamuno, J.M. Breeding Habitat Use and Conservation Status of the Turtle Dove *Streptopelia turtur* in Northern Spain. *Ardeola* **2013**, *59*, 291–300. [\[CrossRef\]](#)
62. Velazco, S.J.E.; Galvao, F.; Villalobos, F.; De Marco Junior, P. Using Worldwide Edaphic Data to Model Plant Species Niches: An Assessment at a Continental Extent. *PLoS ONE* **2017**, *12*, e0186025. [\[CrossRef\]](#)
63. Dormann, C.F.; Elith, J.; Bacher, S.; Buchmann, C.; Carl, G.; Carré, G.; Marquéz, J.R.G.; Gruber, B.; Lafourcade, B.; Leitão, P.J. Collinearity: A Review of Methods to Deal with It and a Simulation Study Evaluating Their Performance. *Ecography* **2013**, *36*, 27–46.
64. Phillips, S.J.; Anderson, R.P.; Schapire, R.E. Maximum Entropy Modeling of Species Geographic Distributions. *Ecol. Modell.* **2006**, *190*, 231–259.
65. Vignali, S.; Barras, A.G.; Arlettaz, R.; Braunisch, V. SDMtune: An R Package to Tune and Evaluate Species Distribution Models. *Ecol. Evol.* **2020**, *10*, 11488–11506. [\[CrossRef\]](#) [\[PubMed\]](#)
66. R Core Team. *R: A Language and Environment for Statistical Computing*; R Core Team: Vienna, Austria, 2013.
67. Baldwin, R.A. Use of Maximum Entropy Modeling in Wildlife Research. *Entropy* **2009**, *11*, 854–866. [\[CrossRef\]](#)
68. Radosavljevic, A.; Anderson, R.P. Making Better Maxent Models of Species Distributions: Complexity, Overfitting and Evaluation. *J. Biogeogr.* **2014**, *41*, 629–643.

69. Kass, J.M.; Muscarella, R.; Galante, P.J.; Bohl, C.L.; Pinilla-Buitrago, G.E.; Boria, R.A.; Soley-Guardia, M.; Anderson, R.P. ENMeval 2.0: Redesigned for Customizable and Reproducible Modeling of Species' Niches and Distributions. *Methods Ecol. Evol.* **2021**, *12*, 1602–1608.
70. Elith, J.; Graham, C.H.; Anderson, R.P.; Dudík, M.; Ferrier, S.; Guisan, A.; Hijmans, R.J.; Huettmann, F.; Leathwick, J.R.; Lehmann, A. Novel Methods Improve Prediction of Species' Distributions from Occurrence Data. *Ecography* **2006**, *29*, 129–151.
71. Pearce, J.; Ferrier, S. Evaluating the Predictive Performance of Habitat Models Developed Using Logistic Regression. *Ecol. Modell.* **2000**, *133*, 225–245.
72. Hanane, S.; Yassin, M. Nest-Niche Differentiation in Two Sympatric Columbidae Species from a Mediterranean Tetraclinis Woodland: Considerations for Forest Management. *Acta Oecologica* **2017**, *78*, 47–52. [[CrossRef](#)]
73. Browne, S.J.; Aebischer, N.J.; Crick, H.Q.P. Breeding Ecology of Turtle Doves *Streptopelia turtur* in Britain during the Period 1941–2000: An Analysis of BTO Nest Record Cards. *Bird Study* **2005**, *52*, 1–9.
74. Browne, S.J.; Aebischer, N.J. Habitat Use, Foraging Ecology and Diet of Turtle Doves *Streptopelia turtur* in Britain. *Ibis* **2003**, *145*, 572–582.
75. Hanane, S. Plasticity in Nest Placement of the Turtle Dove (*Streptopelia turtur*): Experimental Evidence from Moroccan Agro-Ecosystems. *Avian Biol. Res.* **2014**, *7*, 65–73.
76. Hanane, S. Do Age and Type of Plantings Affect Turtle Dove *Streptopelia turtur* Nest Placement in Olive Agro-Ecosystems? *Ethol. Ecol. Evol.* **2012**, *24*, 284–293.
77. Hanane, S.; Besnard, A. Are Nest-Detection Probability Methods Relevant for Estimating Turtle Dove Breeding Populations? A Case Study in Moroccan Agroecosystems. *Eur. J. Wildl. Res.* **2014**, *60*, 673–680.
78. Browne, S.J.; Aebischer, N.J. Studies of West Palearctic Birds: Turtle Dove. *Br. Birds* **2005**, *98*, 58–72.
79. Browne, S.J.; Aebischer, N.J. *The Role of Agricultural Intensification in the Decline of the Turtle Dove Streptopelia turtur*; English Nature: London, UK, 2001.
80. Cabodevilla, X.; Wright, A.D.; Villanua, D.; Arroyo, B.; Zipkin, E.F. The Implementation of Irrigation Leads to Declines in Farmland Birds. *Agric. Ecosyst. Environ.* **2022**, *323*, 107701.
81. Benton, T.G.; Vickery, J.A.; Wilson, J.D. Farmland Biodiversity: Is Habitat Heterogeneity the Key? *Trends Ecol. Evol.* **2003**, *18*, 182–188.
82. Stoate, C.; Boatman, N.D.; Borralho, R.J.; Carvalho, C.R.; De Snoo, G.R.; Eden, P. Ecological Impacts of Arable Intensification in Europe. *J. Environ. Manag.* **2001**, *63*, 337–365.
83. Baldock, D.; Dwyer, J.; Sumpster, J.; Varela-Ortega, C.; Caraveli, H.; Einschütz, S.; Petersen, J.E. *The Environmental Impacts of Irrigation in the European Union*; Institute for European Environmental Policy: London, UK, 2000; pp. 1–147.
84. Cabodevilla, X.; Estrada, A.; Mougeot, F.; Jimenez, J.; Arroyo, B. Farmland Composition and Farming Practices Explain Spatio-Temporal Variations in Red-Legged Partridge Density in Central Spain. *Sci. Total Environ.* **2021**, *799*, 149406.
85. Cabodevilla, X.; Arroyo, B.; Wright, A.D.; Salguero, A.J.; Mougeot, F. Vineyard Modernization Drives Changes in Bird and Mammal Occurrence in Vineyard Plots in Dry Farmland. *Agric. Ecosyst. Environ.* **2021**, *315*, 107448.
86. Traba, J.; Morales, M.B. The Decline of Farmland Birds in Spain Is Strongly Associated to the Loss of Fallowland. *Sci. Rep.* **2019**, *9*, 9473.
87. Vickery, J.A.; Bradbury, R.B.; Henderson, I.G.; Eaton, M.A.; Grice, P.V. The Role of Agri-Environment Schemes and Farm Management Practices in Reversing the Decline of Farmland Birds in England. *Biol. Conserv.* **2004**, *119*, 19–39.
88. Young, R.E.; Dunn, J.C.; Vaughan, I.P.; Mallord, J.W.; Drake, L.E.; Orsman, C.J.; Ka, M.; Diallo, M.B.; Sarr, M.; Lormée, H. The Role of Cultivated versus Wild Seeds in the Diet of European Turtle Doves (*Streptopelia turtur*) across European Breeding and African Wintering Grounds. *Environ. DNA* **2024**, *6*, e539.
89. Dias, S.; Fontoura, A.P. The Summer Diet of the Turtle-Dove (*Streptopelia turtur*) in Southern Portugal. *Rev. Florest.* **1996**, *9*, 227–241.
90. Suárez, F. Farming in the Drylands of Spain: Birds of the Pseudosteppes. In *Farming and birds in Europe*; Academic Press: London, UK, 1997; pp. 297–330.
91. Carricondo, A. *Analysis of Environmental Correlates of Turtle Dove Streptopelia turtur Abundance in Spain Using Data from SACRE; SEO/BirdLife*; Madrid, Spain, 2016.
92. Berg, Å. Composition and Diversity of Bird Communities in Swedish Farmland–Forest Mosaic Landscapes. *Bird Study* **2002**, *49*, 153–165.
93. Chiatante, G.; Porro, Z.; Meriggi, A. The Importance of Riparian Forests and Tree Plantations for the Occurrence of the European Turtle Dove *Streptopelia turtur* in an Intensively Cultivated Agroecosystem. *Bird. Conserv. Int.* **2021**, *31*, 605–619.
94. Camprodon, J.; Brotons, L. Effects of Undergrowth Clearing on the Bird Communities of the Northwestern Mediterranean Coppice Holm Oak Forests. *For. Ecol. Manag.* **2006**, *221*, 72–82.
95. Brown, G.S.; Pollock, L.; DeWitt, P.D.; Dawson, N. Responses of Terrestrial Animals to Forest Characteristics and Climate Reveals Ecological Indicators for Sustaining Wildlife in Managed Forests. *For. Ecol. Manag.* **2020**, *459*, 117854.

96. Appleby, S.M.; Bebre, I.; Riebl, H.; Balkenhol, N.; Seidel, D. Linking Small Mammal Capture Probability with Understory Structural Complexity Using a Mobile Laser Scanning-derived Metric: A Case Study. *Ecol. Res.* **2024**, *39*, 360–367.
97. Bakaloudis, D.E.; Vlachos, C.G.; Holloway, G.J. Habitat Use by Short-Toed Eagles *Circaetus gallicus* and Their Reptilian Prey during the Breeding Season in Dadia Forest (North-Eastern Greece). *J. Appl. Ecol.* **1998**, *35*, 821–828.

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