

# NATURA 2000 and agriculture in the area of Ravni Kotari in Zadar County, state and challenges

## NATURA 2000 i poljoprivreda na području Ravnih Kotara u Zadarskoj županiji, stanje i izazovi

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### ABSTRACT

Ravni Kotari is registered as an important area for the conservation of endangered species and habitat types in Zadar County stretching from the town of Nin and the Karin Sea in the northwest to the Krka River in the south-east, the Bukovica region in the north-east and the city of Zadar in the south-west. It is an area characterized by agricultural production, especially in fruit and vegetable growing and more recently in viticulture, winemaking and olive growing. For this work, scientific data and other sources were collected and analyzed, and the state and challenges of conservation and agricultural use were identified. Specific challenges are to preserve a mosaic of agricultural areas, grasslands and forests, and a good state of water bodies, with sustainable production as suitable habitats for the conservation of target species. The research determined the spatial coverage of Natura 2000 target habitat types important for agriculture in Ravni Kotari.

**Keywords:** agriculture, habitats, Natura 2000, Ravni Kotari, target species

### SAŽETAK

Ravni Kotari su registrirani kao područje važno za očuvanje ugroženih vrsta i stanišnih tipova u Zadarskoj županiji, protežu se od Grada Nina i Karinskog mora na sjeverozapadu do rijeke Krke na jugoistoku, Bukovice na sjeveroistoku i Grada Zadra na jugozapadu. To je područje obilježeno poljoprivrednom proizvodnjom, posebice voćarstvom i povrtlarstvom, a u novije vrijeme vinogradarstvom, vinarstvom i maslinarstvom. Za ovaj rad prikupljeni su i analizirani znanstveni podaci i drugi izvori te utvrđeno stanje i izazovi u očuvanju i poljoprivrednom korištenju. Specifični izazovi su očuvanje mozaika poljoprivrednih površina, travnjaka i šuma, te dobrog stanja vodnih tijela, uz održivu proizvodnju, kao pogodnih staništa za očuvanje ciljnih vrsta. Istraživanjem je utvrđena prostorna pokrivenost Natura 2000 ciljnih stanišnih tipova značajnih za poljoprivredu u Ravnim Kotarima.

**Ključne riječi:** poljoprivreda, staništa, Natura 2000, Ravni Kotari, ciljne vrste

## INTRODUCTION

Natura 2000 is the ecological network of the European Union (hereafter referred to as the EU) which includes areas of interest for the conservation of endangered species, habitat types, and associated corridors. It covers almost to 20% of EU territory and some 27 500 sites, making it the largest system of nature reserves and protected areas in the world. The proclamation is based on EU directives, in particular the Birds Directive and the Habitats Directive, which form the basis of EU nature conservation. The regions are selected according to scientific criteria and include areas important for the conservation of endangered species and habitat types, as well as areas important for birds.

The Natura 2000 ecological network of the Republic of Croatia covers 36.8% of the land area and 9.3% of the seas under national jurisdiction (territorial sea and exclusive economic zone of the Republic of Croatia) (Ministry of Economy and Sustainable Development of the Republic of Croatia, 2019).

Natura 2000 covers 34.82% of the area of Zadar County and comprises exactly 100 areas (Zadar County, 2016). Natura 2000 areas are managed by national nature conservation institutions (national parks, nature parks) or regional or county nature conservation institutions, such as public institution Natura Jadera (for Zadar County).

Under the Natura 2000 programme, Ravni Kotari is registered under the codes HR2001361 and HR1000024 as an important site for the conservation of endangered species and habitat types and as an important site for birds (Mikulić et al., 2016). Ravni Kotari is in direct contact with the area of Lake Vrana, a very important wetland protected by the Ramsar Convention, and is also a nature park of the national nature conservation (Figure 1).

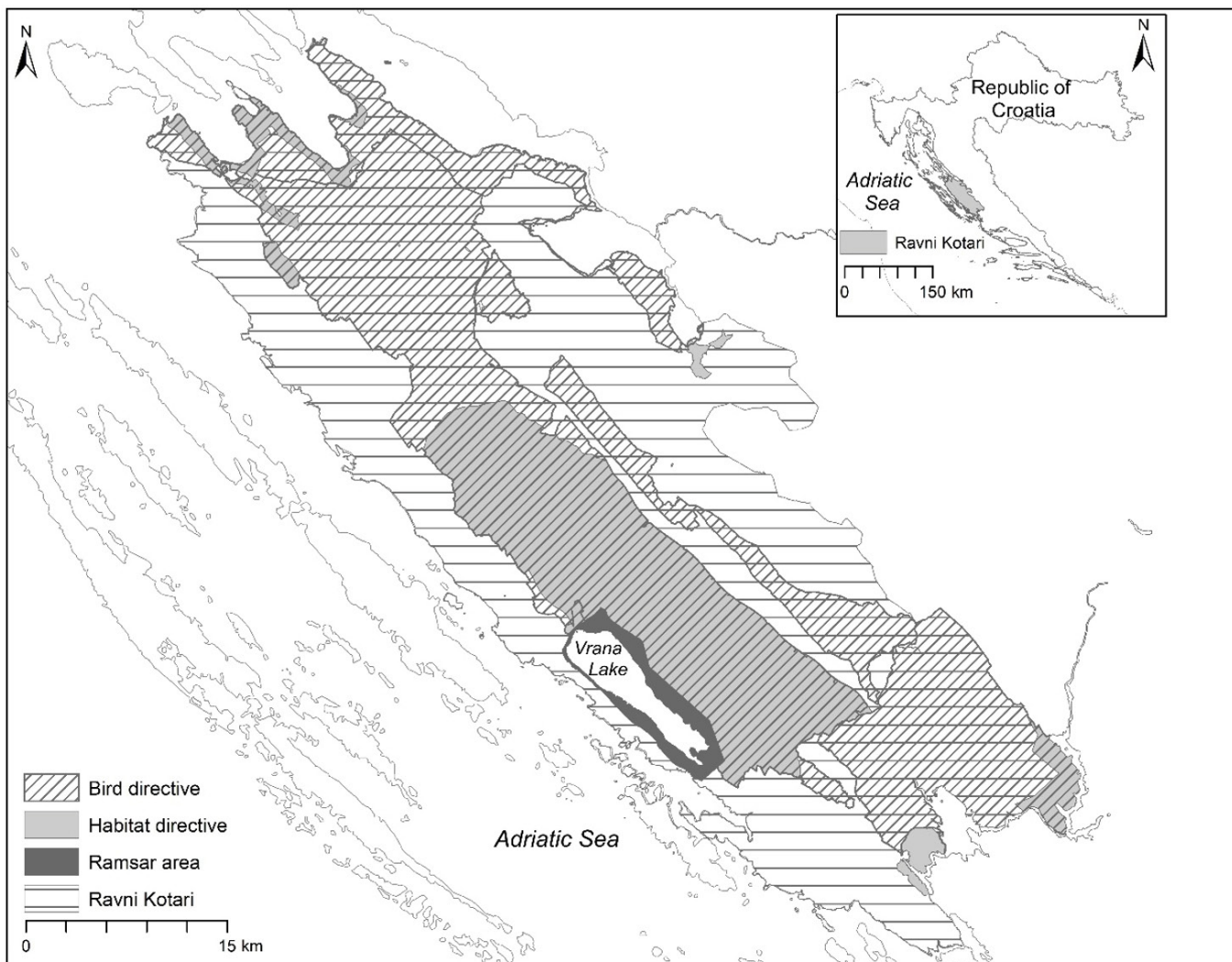
One of the starting points of the research is that Natura 2000 sites increase the attractiveness of this area and offer the opportunity to utilise EU funds to a greater extent, but also entail the obligation to assess planned activities in advance with regard to their ecological sustainability in relation to the conservation objectives (Šikić and Blaće, 2022).

Ravni Kotari in the broadest sense extends from the town of Nin, the town of Novigrad, and the Karin Sea in the north-west to the Krka River in the south-east, Bukovica region in the north-east and the city of Zadar and the Pašman Channels in the south-west (Blaće, 2014, Jurić, 2018).

Agriculture is a major driver of global biodiversity loss. The issue of agriculture and biodiversity needs to be embedded in a more holistic view that considers the implications of land use for a wide range of ecosystem services. Conservation science has an immensely important role to play if this opportunity is to be realized. We need a better understanding of biodiversity patterns in relation to land use and of the underlying processes; we need data to help design management strategies in landscapes to retain biodiversity; we need further work on the role of biodiversity in ecosystem function and the delivery of ecosystem services; we need to describe the relationships between biodiversity and other ecosystem services mediated by land-use; and we need to bring all these areas of research together with the agricultural and social sciences (Norris, 2008).

Measures taken to reduce the impact of human activities on biodiversity have rarely focused on managing the conflict between various land-use alternatives but have addressed the impact indirectly through, for instance, legislation to reduce pollution and the establishment of protected areas (Henle et al., 2008).

All EU member states implement The Common Agricultural Policy, which is common to all EU member states, including Croatia. But for each member state, so also Croatia, the possibility is left that within that common framework, the determinant and rules, designs and implements measures that are relevant to its specific situation – is especially true for Rural Development Policy. Croatia therefore devised and agreed with the European Commission on the need for its measures of rural development program for seven years. Today, the Common Agricultural Policy advocates and promotes the multifaceted role of agriculture. In addition to the economic, exceptional importance is also attached to the ecological and social role of agriculture (Pokos, 2016).



**Figure 1.** Nature Protected Areas in the Ravni Kotari

Source: made by authors & Croatian Geodetic Administration (2015, 2016)

The exceptional richness of Ravni Kotari's agrobiodiversity is part of the historical tradition and cultural heritage, but also the most important tool for the preservation of existing landscapes, habitats and biodiversity. Due to the favourable conditions, vegetables and cereals have always been grown and consumed in the Ravni Kotari area. Typical vegetables traditionally grown in Ravni Kotari are domestic onions, garlic, legumes (especially broad beans, chickpeas and pole beans), swedes, swiss chard, domestic melons and watermelons. The cultivation of cereals and old legume varieties is gradually being abandoned, and crops such as corn, tomatoes and potatoes are coming to the fore (Kremenčić and Ozimec, 2014). On the other hand, olive growing and

viticulture, as well as the cultivation of Marasca cherries, continue to develop, so Ravni Kotari is proud of these agricultural frontrunners today. Olive growing, as part of the old agricultural tradition, developed in the southern parts of Ravni Kotari. Along the coast, and under the mountain massifs, the olive is like a typical plant of the Mediterranean, at its limit and its best. The most typical fruit tree for Ravni Kotari is the Marasca cherry, which has almost disappeared in other parts of Dalmatia, while in Ravni Kotari new plantations are constantly being established. A typical species of Ravni Kotari is the almond, with numerous original but unexplored varieties. One of the most famous products of Ravni kotari are dried figs and fresh fruit, mainly peaches (Kremenčić and Ozimec,

2014). Medicinal and aromatic plants in the area of Ravni Kotar have been used since ancient times, but mostly as wild plants, much less from cultivation. In addition to rosemary, the following plants are most commonly used: Oregano (*Origanum vulgare*), Lesser Calamint (*Calamintha nepetrides*), Sage (*Salvia officinalis*), Lavender (*Lavandula* sp.), Laurel (*Laurus nobilis*), Myrtle (*Myrtus communis*), Immortelle (*Helichrysum italicum*), Wormwood (*Artemisia absinthium*), Winter Savory (*Satureja montana*) and Cade Juniper (*Juniperus oxycedrus*) (Kremenić and Ozimec, 2014). According to stakeholders, agricultural production in Ravni kotari is predominantly conventional, but there are already successful examples of developed integrated and ecological production, especially of olives, figs, vines and garlic. The products are sold on the markets in Zadar or directly on the farm and to a lesser extent through buying centres.

As far as livestock farming is concerned, according to data from the Agency for Payments in Agriculture, Fisheries and Rural Development of the Republic of Croatia (2022), most sheep (41 995 livestock units) are kept in the settlement area in Ravni Kotari, followed by goats (6 207 livestock units) and cattle ( 2 788 livestock units).

The research determined the spatial coverage of Natura 2000 target habitat types important for agriculture in Ravni Kotari.

## MATERIAL AND METHODS

For this work, scientific data and other sources were collected and analysed from available sources, and the state and challenges of conservation and agricultural use were identified. Monitoring of the condition of target habitat types and target species in the area of Ravni Kotari has not been established so far, so the assessment of the condition is based on data collected through a review of existing literature, results of conducted research which were collected for the purposes of creating the Management Plan, consultations with stakeholders and insights from staff of public institutions responsible for the management protected areas and ecological network

areas. Natura 2000 areas are declared solely based on scientific data. These same data are also used to create a management plan as a strategic document for the management of ecological network areas. Therefore, through the creation of the Natura 2000 Management Plan for the Ravni Kotari area, the conducted and available research was collected, and new research was conducted by the authors mentioned in the paper. The original contribution is the determination of the state and challenges in the implementation of conservation measures that are significant only for agriculture.

In the Natura 2000 Ravni Kotari area, there are other target habitats and species, however, they do not have to be related to agriculture, but can be related to tourism or water management, forestry, etc. As part of the Management Plan development process, four stakeholder workshops were held. Two in the collection section information about the current state of the area (state evaluation) and defining the vision, topics and goals of the management plan and one related to the collection of proposals on the necessary activities management and cooperation opportunities, while the fourth was conducted as a public presentation as part of the Public discussions. All representatives of the main institutional stakeholders were invited to the stakeholder workshops and users of the area, 21 of them, including representatives of regional and local self-government, state, regional and local companies and representatives of the scientific community and organizations of civil society. Information and suggestions collected during the stakeholder engagement process are included in the relevant parts of the Management Plan and this paper. The spatial coverage of the habitat within the Natura 2000 area in Ravni Kotari was calculated.

Initially, habitat data as shapefile polygons were transferred to QGIS 3.12.1 software using the WFS service of Bioportal, an information system for nature protection (Ministry of Environmental Protection and Green Transition, 2024). Then, using geoprocessing tools such as Clip, Merge and Dissolve, a new habitat layer was created that corresponded to the spatial extent of the

Natura 2000 area in the study area. Finally, habitat areas were calculated by combining polygons within the same habitat category.

## RESULTS AND DISCUSSION

Objectives and conservation measures for target species and target habitat types are prescribed for each area of the Natura 2000 ecological network. In the Republic of Croatia, the Ordinance on Conservation Objectives and Conservation Measures for Target Bird Species in Ecological Network Areas (Official Gazette, 25/2020, 38/2020) prescribes conservation objectives and measures for conservation areas important for birds, and the Ordinance on Conservation Objectives and Conservation Measures for Target Species and of habitat types in ecological network areas (Official Gazette, 111/2022) prescribes objectives and conservation measures for conservation areas important for species and habitat types. Prescribed conservation measures are implemented within the framework of planning documents for natural resource management, spatial planning documents, management plans for protected areas and/or ecological network areas, management plans for strictly protected species, as well as when carrying out interventions and/or activities that could affect the conservation goals.

Two target habitat types and seven target species (Table 1) have been identified for Natura 2000 Ravni Kotari (Topić and Vukelić, 2009).

In addition, 18 target bird species were identified, of which the golden crow (*Coracias garrulus*) has the largest population recorded in Croatia in this area. In the meantime, in 2023, the Management Plan of the Areas of the Ecological Network Ravni Kotari was adopted, which was implemented within the project "Development of the framework for the management of the ecological network Natura 2000" co-financed by the European Cohesion Fund through the Operational Programme Competitiveness and Cohesion (Management plan for areas of the Ravni kotari Ecological Network 2023 – 2032, 2023).

The mosaic landscape where agricultural land, grasslands, forests and aquatic habitats alternate, is the main feature of Ravni Kotari and is important for the preservation of endangered and/or rare plant and animal species, especially birds. Grassland habitats are mostly created by human impact on the environment and contribute significantly to the biodiversity and recognition of the area. Grassland habitats are not only a habitat in which numerous plant species from which most of them are included in the class *Festuco-Brometea* and groups of invertebrates spend their entire lives, but also serve as hunting grounds for species that shelter or nest in forests or rocky habitats and, together with them and agricultural land form a unique mosaic that is of key importance for many rare and endangered species.

**Table 1.** Target Habitats and species in HR2001361 Ravni Kotari

Habitat types	Mediterranean tall humid grasslands of the <i>Molinio-Holoschoenion</i>
	Caves not open to the public
Target species	<i>Austroptamobius pallipes</i>
	<i>Testudo hermanni</i>
	<i>Elaphe quatuorlineata</i>
	<i>Zamenis situla</i>
	<i>Protoerebia afra dalmata</i>
	<i>Myotis blythii</i>
	<i>Miniopterus schreibersii</i>



As a semi-natural habitat, grasslands are dependent on maintenance in the form of mowing and/or grazing and are closely linked to animal husbandry. While in the past large areas of Ravni Kotari were regularly flooded and were therefore under greater water influence, they were drained by the construction of drainage channels to enable agricultural production (Barišić et al., 2019). The Mediterranean wet grasslands are included in the *Molinio-Holoschoenion* Mediterranean High Wet Grasslands' target habitat type. These grasslands, consisting of tall grasses and *Holoschoenus vulgaris*, are used as pastures and are rare in Croatia (Topić and Vukelić, 2009), and in the Ravni Kotari area, they have only been recorded in places, although they are well represented on the gentler slopes of the nearby Lake Vrana and the surrounding flat areas of the Vrana Basin (MESD, 2021). Most of the grasslands in Ravni Kotari are Open dry grasslands (Table 2), which have not been designated as a target habitat type but are important habitats for numerous target bird species (Table 3).

Open dry grasslands with a higher proportion of rocks on the surface (karst grasslands) are suitable for the target species Rock Partridge (*Alectoris graeca*) and the Tawny Pipit (*Anthus campestris*) (Table 2). The partridge nests on rocky slopes, in clearings, but also among scattered trees and bushes (Svensson et al., 2018). For nesting, the Tawny Pipit requires dry karst grasslands of a more open type, without many bushes and trees as well as bare slopes (Lukač, 2011; Svensson et al., 2018). Karst grasslands and other dry open rocky areas interspersed with forests, groves, maquis or garrigue are suitable habitats for the target species of the Short-toed Snake Eagle (*Circaetus gallicus*). Namely, this predator nests in the tops of low trees, and hunts its main prey, reptiles, on grasslands and open rocky areas (Svensson et al., 2018; Tutiš et al., 2013). Dry grasslands as part of a mosaic of habitats in combination with agricultural land correspond to the target species of the Greater Short-toed Lark (*Calandrella brachydactyla*) and the Calandra Lark (*Melanocorypha calandra*) (Table 2). The Calandra Lark nests in dry grasslands and dry agricultural areas with various low crops, on field edges, and sometimes in areas with

scattered bushes or low trees (Kralj et al., 2013a; Tutiš et al., 2013). The Greater Short-toed Lark also inhabits dry grasslands and agricultural areas with low vegetation and inhabits garrigues, especially areas with bare ground (Tutiš et al., 2013). Both species feed and nest on the ground (Tutiš et al., 2013). Dry grasslands and agricultural lowlands with low vegetation are suitable habitats for the target species of Lesser Kestrel (*Falco naumanni*), one of the most endangered bird species in Europe (Table 2). This species was thought to have become extinct in Croatia in the second half of the 20<sup>th</sup> century, but in 2010, a nesting colony of about twenty pairs was found on Rab (Tutiš et al., 2013). It is a burrowing bird and nests colonially in holes in old houses and ruins, on cliffs or, exceptionally, in holes on the ground (Mikulić et al., 2010, 2014; Tutiš et al., 2013).

In Croatia, the nests are located on the ground, between scree and boulders (Mikulić et al., 2010, 2014). As the birds visit relatively wide areas before and after nesting, Ravni Kotari is an interesting location for this species (Mikulić et al., 2010, 2014). Open grasslands and mosaic areas with agricultural areas represent favourable habitats for two target species of Harrier: Hen Harrier (*Circus cyaneus*), which is a wintering and migratory bird in Croatia, and Montagu's Harrier (*Circus pygargus*), which is a nester in Croatia (Kralj et al., 2013b; Tutiš et al., 2013). Karst grassland habitats in a mosaic with maquis, garrigue, agricultural land, hedgerows and other marginal habitats and drywalls are a favorable habitat for the target species of reptiles, Four-lined Snake (*Elaphe quatuorlineata*), Hermann's Tortoise (*Testudo hermanni*) and European Ratsnake (*Zamenis situla*) (Table 2). While the Four-lined snake is the longest European snake and can be found in a variety of habitats, the European ratsnake is considered one of the most beautiful European snakes. It is an extremely secretive animal that is very difficult to spot in the wild. Both snakes are less common in the area of Ravni Kotari compared to the islands of the Zadar archipelago, while Hermann's Tortoise is among the more common reptiles in the area (Lauš, 2015). The target species of reptiles were recorded in the area of Kakma, Polača and Gornja Jagodnja, but the entire area of Ravni Kotari is

**Table 2.** Threats, pressures and activities of agriculture on the target habitats and species

Habitat	Area/ha	Target species and endangered species	Threats, pressures and activities with impacts on the site
Mediterranean wet grasslands	10.93	<i>Holoschoenus vulgaris</i> <i>Carex divisa</i>	<ul style="list-style-type: none"> <li>- agricultural intensification</li> <li>- abandonment of pastoral systems, lack of grazing, lack of mowing</li> </ul>
Open dry grasslands	3 125.07	<i>Alectoris graeca</i> <i>Anthus campestris</i> <i>Circaetus gallicus</i> <i>Calandrella brachydactyla</i> <i>Falco naumanni</i> <i>Proterebia afra dalmata</i>	<ul style="list-style-type: none"> <li>- roads, paths and railroads</li> <li>- urbanised areas, human habitation</li> <li>- taking and removal of animals (terrestrial)</li> <li>- human-induced changes in hydrological conditions</li> <li>- anthropogenic reduction of habitat connectivity</li> <li>- other forms of pollution</li> <li>- hunting</li> <li>- human intrusions and disturbances</li> </ul>
Mosaics of agricultural areas	23 530.51	<i>Coracias garrulus</i> <i>Lanius collurio</i> <i>Lanius minor</i> <i>Lullula arborea</i> <i>Falco columbarius</i> <i>Hippolais olivertorum</i> <i>Grus grus</i>	
Dry grasslands as part of a mosaic of habitats in combination with agricultural areas	5 782.70	<i>Calandrella brachydactyla</i> <i>Melanocorypha calandra</i> <i>Falco naumanni</i> <i>Circus cyaneus</i> <i>Circus pygargus</i>	
Karst grassland in a mosaic with maquis, garrigue, agricultural land, hedgerows and other marginal habitats and drywalls	37 639.26	<i>Elaphe quatuorlineata</i> <i>Testudo hermanni</i> <i>Zamenis situla</i> <i>Melanocorypha calandra</i> <i>Circus cyaneus</i> <i>Circus pygargus</i>	
Forest	38 559.76	<i>Leiopicus medius</i> <i>Caprimulgus europaeus</i> <i>Circaetus gallicus</i>	
Water	5 345.78	<i>Austropotamobius pallipes</i>	

Source: calculated by authors based on Ministry of Environmental Protection and Green Transition (2024)

a potential distribution area (MESD, 2021). The reptile fauna of Ravni Kotar is generally poorly studied, but rich (Jelić et al., 2016). The Ravni Kotari represent one of the main distribution centres of the target species Dalmatian Ringlet (*Proterebia afra dalmata*), one of the rare endemic butterflies of Croatia, which occurs here in almost all suitable habitats, and is sometimes found in gardens and villages. This species utilises a range of habitats of varying openness, from completely open dry grasslands to areas overgrown with common juniper (*Juniperus*) vegetation, with populations showing lower densities in more densely vegetated habitats (Koren, 2010; MESD, 2021). Among the target species related to the mosaic of agricultural areas, European Roller (*Coracias garrulus*) stands out, for which Ravni Kotari is the most important nesting area in Croatia. The mosaic of agricultural areas represents the foraging area, where the birds choose tall grass, grazed grass, medium-high bushes and fallow while avoiding arable fields, permanent plantations and forests, in addition, the availability of elevated points as observation points for hunting is important to them. European Roller is a burrowing animal and they need cavities for nesting, with the key role being played by the mature poplar trees, which were planted here in abundance in the past in the form of rows of trees to protect against wind erosion. The poplars have softwood in which cavities can easily be formed and are therefore extremely favourable for all cavity-nesting birds (Barišić et al., 2019). Mosaics of agricultural areas are the habitat for two target species of Magpies, The Red-backed Shrike (*Lanius collurio*) and the Lesser Grey Shrike (*Lanius minor*) (Lukač, 2011; Svensson et al., 2018). The target species of Woodlark (*Lullula arborea*) requires mosaic-like agricultural habitats for nesting (Lukač, 2011; Svensson et al., 2018). The target species, Olive-tree Warbler (*Hippolais olivetorum*), mainly chooses open areas dominated by rare trees with large canopies and inhabits rare groves of Pubescent Oak and Oriental Hornbeam, as well as olive and almond groves, where it nests. In its habitat, the presence of bushes and vineyards favours it, but the territory must also include more open areas (Kralj et al., 2011). During wintering, large agricultural areas are of great importance for the

target species, Merlin (*Falco columbarius*). These habitats are also important for the target species Common Crane (*Grus grus*), which uses them as feeding grounds during migration (MESD, 2021). The forest habitat types in this area mainly occupy hilly ridges that extend between cultivated fields (Table 2). It is mostly Pubescent Oak forests, which, however, are often not fully developed here, but occur in various stages of degradation or low forests (Vukelić, 2012). Although oak forests have not been designated as a target habitat type, they are precisely the important habitat for the target species of Middle Spotted Woodpecker (*Leiopicus medius*). Middle Spotted Woodpecker is tied to deciduous oak trees and nests in mature lowland and hilly oak forests with admixtures of other deciduous tree species (Lukač, 2011; Svensson et al., 2018; Tutiš et al., 2013).

**Table 3.** Target bird species in HR1000024 Ravni Kotari

Target birds species	
	<i>Alectoris graeca</i>
	<i>Anthus campestris</i>
	<i>Bubo bubo</i>
	<i>Calandrella brachydactyla</i>
	<i>Caprimulgus europaeus</i>
	<i>Circaetus gallicus</i>
	<i>Circus cyaneus</i>
	<i>Circus pygargus</i>
	<i>Coracias garulus</i>
	<i>Dendrocopos medius</i>
	<i>Falco columbarius</i>
	<i>Falco naumanni</i>
	<i>Grus grus</i>
	<i>Hippolais olivetorum</i>
	<i>Lanius collurio</i>
	<i>Lanius minor</i>
	<i>Lullula arborea</i>
	<i>Melanocorypha calandra</i>



After the drying out of the natural habitats of Ravni Kotari, the water habitats were reduced to a few small permanent ponds and occasional watercourses and artificially created channels for water drainage, which are regularly maintained by machines (Table 2). Vegetation develops in shallow water or areas with a high groundwater level, such as reeds, rushes, tall sedges and sedges. Although aquatic habitats have not been designated as target areas, the target species White-clawed Crayfish (*Austropotamobius pallipes*) lives in them. Aquatic habitats are important as waterholes for all target species, and drainage channels and the vegetation that develops along them are an essential component of agricultural mosaics to which many target bird species are linked. Aquatic habitats are also important as hunting grounds for bat species. White-clawed Crayfish live in lakes and rivers of the Adriatic basin on sandy and rocky bottoms, along the coast where the water currents are slower and aquatic vegetation has developed. The presence of coastal vegetation is a very important factor for this species, as the crabs find shelter in their roots, and at the same time, it reduces warming and creates favorable microclimatic conditions by shading the water (Maguire et al., 2010). This species is relatively resistant to poorer physico-chemical water quality and tolerates higher oxygen and temperature fluctuations well, provided that the water hardness is high, that the water is not heavily polluted and that the bottom is not muddy (MESD, 2021).

Declaring every area protected, including Natura 2000 Ravni Kotari, is only a form of passive protection. That is why the global challenge is to move into the sphere of active protection of a formally protected area. The main tool for this is the creation, adoption and implementation of the Management Plan. The Management Plan aims to concisely present all the main information in one place the area covered by the plan, and the strategy determined through the participatory process (through objectives and activities) that direct the management of the area and resources of the Public Institution. The Management plan, first of all, helps the Public Institution to effectively manage the preservation of the protected area in the long term and ecological network areas. However, the

Management Plan is also a public document, accessible to everyone, which enables stakeholders and the interested public to follow the activities of the Public Institution and their involvement, where possible, they get involved in the management and thus contribute to conservation area values. With the adoption of the Management Plan, it becomes an official document of the Public Institution that manages the area, and the activities of all legal and physical entities that perform activities in the area in question should be aligned with the management goals established by the Management Plan. The specific challenge for the agriculture of Natura 2000 Ravni Kotari is to achieve a preserved mosaic of agricultural areas, grasslands and forests as suitable habitats for the conservation of target species in the surface areas determined by this research. It is also a specific challenge to achieve a good state (ecological and chemical) and ecological potential of water bodies in the area of Ravni Kotari, for which monitoring is necessary.

## CONCLUSION

In order to make a more informed assessment of the state and trends in the coming period, it is necessary to establish monitoring of the state of target species and their habitats and target habitat types for which insufficient data are available, and to implement measures for their conservation, including those set out in the Regulations on conservation goals and conservation measures species and target habitat types in the areas of Natura 2000 ecological network.

The area of Ravni Kotari has been identified at the EU level by the Natura 2000 ecological network as an important area in terms of natural features and biodiversity, and further economic development, including agriculture, should be developed in this area, emphasizing the fact of a healthy ecosystem, confirming its maintenance and carrying out activities that contribute to it.

A specific challenge for the agriculture of Ravni Kotar is sustainable development, which includes the spatial coverage of habitats essential for the conservation of target species.

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