Biodiversity Impact Assessment

460.8 MW Vifor Wind Farm Buzău County, Romania

First Look Solutions S.A.

15 February 2024

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15 February 2024

Biodiversity Impact Assessment

460.8 MW Vifor Wind Farm Buzău County, Romania

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List of acronyms

AoI	Area of Influence
DD	Data deficient
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EN	Endangered
ERM	Environmental Resources Management
ESIA	Environmental Impact Assessment
EU	European
EUNIS	European Nature Information System
ha	Hectare
IAP	Invasive Alien Plants
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IUCN	International Union for Conservation of Nature
km	Kilometre
LC	Least Concern
m	Metre
N/A	Not applicable
NPA	National Protectea Area
NT	Near threatened
OHL	Overhead line
SCI	Site of Community Importance
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
ST	Static detector
T	Transect
VP	Vantage Point
VU	Vulnerable
WF	Wind Farm
WTG	Wind Turbine Generators

1. INTRODUCTION

The Biodiversity Baseline presents the ecological description and assessment of the Project Area and the 2 km buffer zone around it, the sections below summarise the findings of this assessment.

When first announced in 2021, the Project consisted of 83 Wind Turbine Generators (WTGs). Since then, the Project has been revised to take into consideration findings from key assessment and comply with height limitations imposed by the Aviation Authority. This has resulted in removal of 11 turbines and re-design of access roads layouts. The chapters below comprises results on field surveys conducted on the initial layout configuration. The revised project is still within the project study area established for the original design.

Previous Biodiversity studies completed

The Project benefits from having a preliminary biodiversity data collected for the Appropriate Assessments conducted during the Strategic Environmental Assessment (SEA) stage:

- SC Mediu Research SRL, 2012. Appropriate Assessment for SEA Stage – Wind Park Costesti;
- SC Mediu Research SRL, 2012. Appropriate Assessment for SEA Stage - Wind Park Gheraseni;
- SC Mediu Research SRL, 2012. Appropriate Assessment for SEA Stage - Wind Park Luciu;
- SC Mediu Research SRL, 2012. Appropriate Assessment for SEA Stage - Wind Park Pogoanele;
- SC Mediu Research SRL, 2012. Appropriate Assessment for SEA Stage - Wind Park Smeeni;
- SC Mediu Research SRL, 2010. Fauna and Habitats Monitoring Report – Costesti, Gheraseni, Luciu, Pogoanele and Smeeni - Buzau County (2010 – 2011);

To support the Environmental Impact Assessment (ESIA) preparation, ERM team undertook a review of the previous studies and analysed the gaps. These were determined to be out of date[1] and unlikely to provide a sufficiently robust basis to evaluate the characteristics of the current conditions in the Project Area. As a result, a suite of surveys consistent with Good International Industry Practice (GIIP) were commissioned to inform the ESIA. A monitoring campaign was completed between March 2022 – February 2023 and the results are presented in this report.

The baseline studies were prepared by a team of six competent professionals with qualified degrees and relevant experience and knowledge in the region – the experts are listed in table Table 1-1 List of key local experts below:

Table 1-1 List of key local experts

No.	Name of specialist	Degree	Expert
Expert team			
1.	Roxana Nicoară	PhD in Biology	Habitat and flora species
2.	Chișamera Gabriel-Bogdan	PhD in Biology	Birds, Mammals
3.	Ioana Cobzaru	PhD in Biology	Birds
4.	Manci Cosmin-Ovidiu	PhD in Biology	Invertebrates
5.	Paul Tibu	PhD in Biology	Birds, Herpetofauna
6.	Dragoș Măntoiu	PhD in Biology	Bats

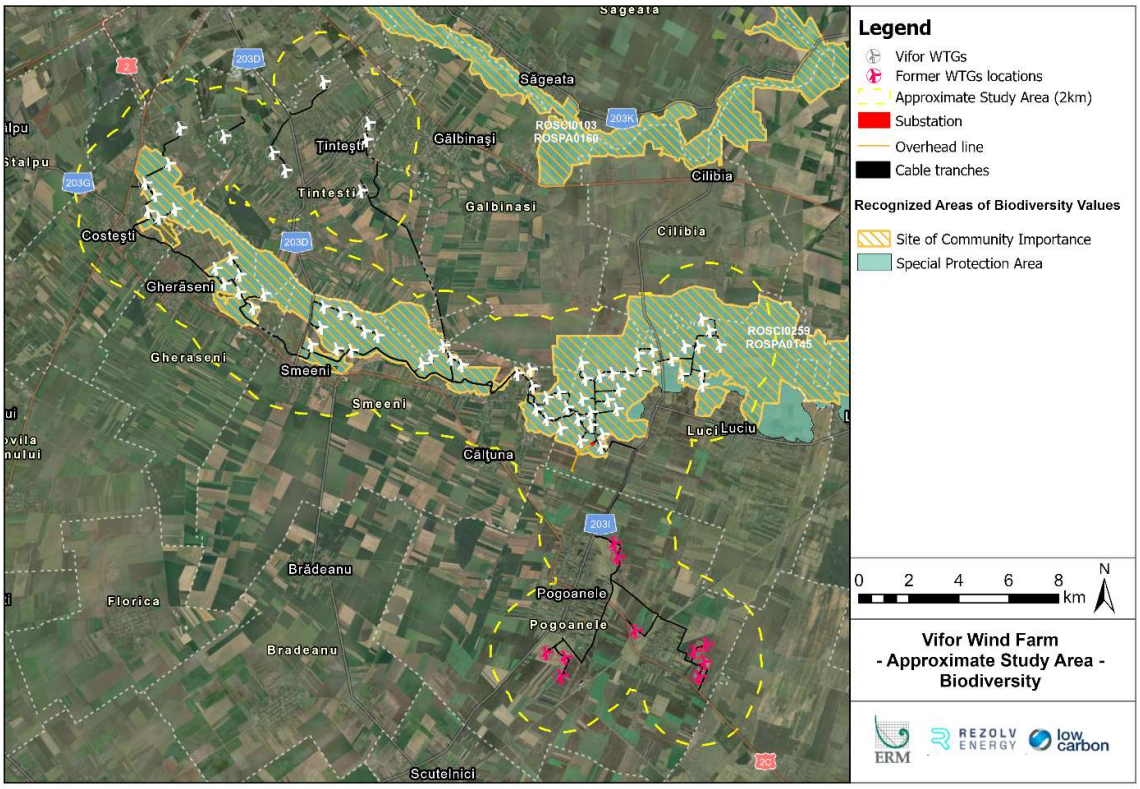
[1] Chartered Institute of Ecology and Environmental Management (CIEEM) advices that surveys are likely to be required where more than three years have elapsed since the original surveys were undertaken. Advice Note On the Lifespan of Ecological Reports and Surveys available: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

2. STUDY AREA

The “Study Area” is the area which has been assessed for ecological values related to the Project. It was defined as a buffer of 2 km radius around the project footprint. To identify sensitive biodiversity receptors in the wider area designated and recognised conservation sites have been identified out to 20 km from the Project Site using desk based study information. The study area is illustrated in .

Figure **2-1**.

Figure 2-1 Representation of the biodiversity-based study area



The area is situated into the western end of the Steppe Ecoregion, with only isolated zones within the Continental Ecoregion.

The two ecoregions overlap here with Bărăgan Plain and Călmățui Valley, sub units of the Romanian plain characterized by the presence of the Călmățui River, the agricultural lands and the meadows with a strong steppe aspect. The steppe area forms part of a large scale habitat running from Bulgaria through south east Europe and into Ukraine and Russia. Much of it now converted to intensive agricultural land.

The entire area has been shaped by the existing flat/tabular fields with fertile chernozem soils and micro-depressions with moderate saline soils and with excess moisture, and by the harsh continental climate. As a result, trees here are almost completely absent, except some areas along Călmăţui River watercourse, and the landscape is dominated by grasses and other drought resistant plants.

Traditionally the area is used as pasture, but it was progressively fragmented and transformed into arable land with only a relatively small part currently remaining as pasture, with floristic composition strongly modified due to excessive grazing and human intervention.

Currently, the major habitats include dry and salt steppes and pastures, such as the Pannonian and West-Pontic salt steppes with feather grasses and fescues, located in the flat/tabular fields. Aquatic

habitats also appear, with swamps and marshes, located only along the Călmățui River. Isolated, at the western edge of the area are small remnants of sylvosteppe woodland.

From a hydrogeological point of view, the study area is included in the upper basin of the Călmăţui River, with a permanent course and a superficial hydrographic network represented by temporary courses, currently abandoned, clogged, with excess moisture in some places, associated with phreatic[2] intake.
Near Stâlpu commune, the hydrographic network is represented by the Leoteasa stream, while Luciu Lake is located in the northern part of Luciu settlement.

3. BASELINE METHODOLOGY

3.1 Designated and protected sites

The international finance requirements indicate identification of internationally recognised and legally protected areas in relation to project location, in order to maintain the biodiversity values for which these were designated.
The presence of Protected Areas in accordance with the project layout was assessed using the IBAT tool (Integrated Biodiversity Assessment Tool). It generated a data report of the areas of known biodiversity value which may be directly and indirectly affected by the project.
Given a 20km Area of Influence the data obtain from the IBAT analyse was overlapped with the project layout to define the assessment of protected and designated sites.
Apart from the data obtain from the IBAT assessment, key information on designated species and habitats, data on population sizes and information on conservation status was collected using Natura 2000 viewer and the Standard Data Sheets of each site.

3.2 Habitats

Field surveys for habitats and flora were conducted from May to June 2022 (see Table 3-1 in section 3.3 for dates).

The field surveys for habitats were undertaken using transects method within the Project area and 200m buffer zone. A detailed research was conducted in representative areas for each identified habitat type.

Nine line transects were covered around Țintești, Caragele, Udați-Lucieni, Udați Mânzu, Albești, Smeeni, Pogoanele settlements.

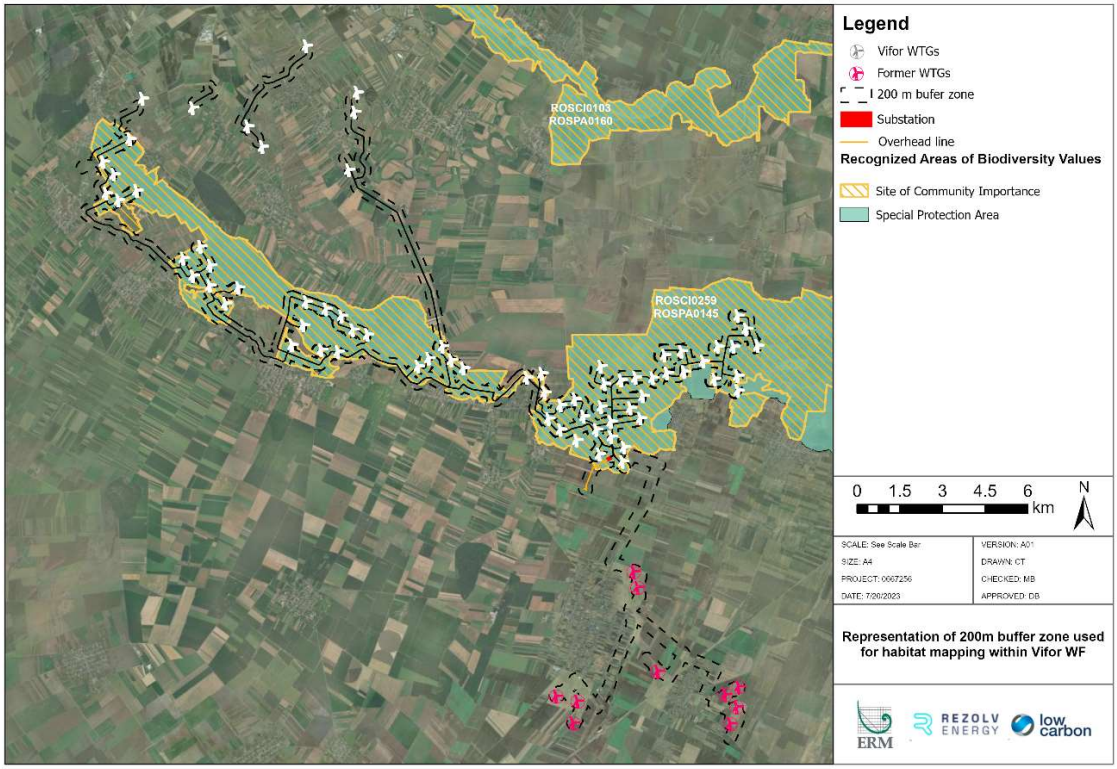
These were chosen to provide a representative sample of the habitat types present within the study area including 200m buffer around each transect.

Habitats classification was done by characteristic phytocenoses (based on species and ecological and/or cenological indicators), and by assessing the following characteristics: geographical location, altitude, landform, type of rock and soil.

All the habitats within the site and 200m buffer zone were mapped using EUNIS, and Natura 2000 habitat code where relevant – illustrated also in Figure 3-1.

[2] Phreatic intakes refers to groundwater that is closely dependent on rainfall, with the water table normally at three to five metres, but rising to one or two metres during heavy rainfall

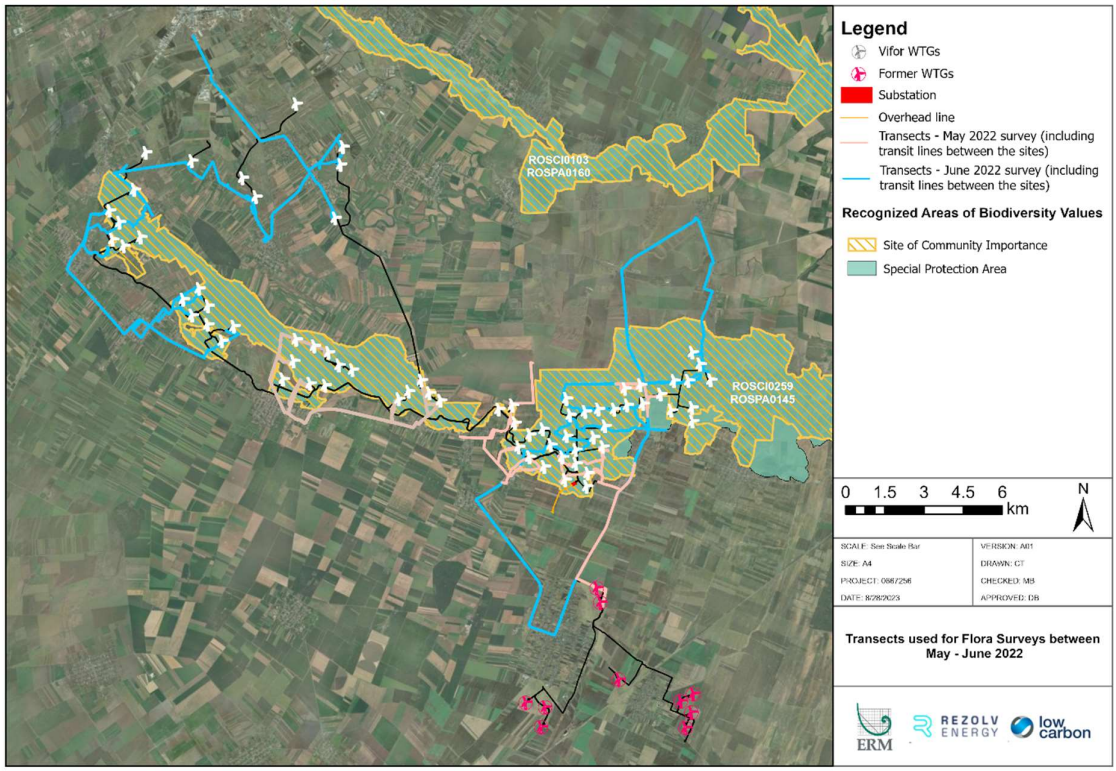
Figure 3-1 Representation of the 200m buffer zone area



3.3 Flora

In addition to annotation of flora during the habitat surveys focusing on the WTG's, flora survey transects were also undertaken over the wider study area, including areas of overlap with the Site of Community Importance ROSCI259 Valea Călmățuiului (see Figure 3-2).

Figure 3-2 Transects covered for flora surveys



Within a radius of 200m of each transect a list of plants was compiled. All notable species (those that are rare or of community interest) were photographed, recorded and target noted.

Specific survey dates were defined on optimum seasons for vegetation. The timing of habitat and flora monitoring activities which were carried out is presented in Table 3-1.

Table 3-1 Habitat and Flora survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (m/s)	Visibility
29.05.2022	min 15° - max 29°	0	5 - 30	Good
30.05.2022	min 14° - max 27°	0	11 - 28	Good
31.05.2022	min 14° - max 27°	0	10	Good
16.06.2022	min 15° - max 28°	0	3	Good
17.06.2022	min 16° - max 29°	0	3	Good
18.06.2022	min 16° - max 30°	0	3	Good

3.4 Birds

3.4.1 Vantage Point Survey

Vantage point survey was used to investigate the overlap between avifauna's movements and Project area (Scottish Natural Heritage, 2017[3]), between March 2022 and February 2023. For the purpose of this report the one year monitoring data collected was assessed for the collision risk modelling. Ten vantage points (VP) were used with 6h/VP effort per month and doubled effort 12h/VP for spring (March – May) and autumn migration (August – October), according to best international practices.

The number and the location of the 10 VP's was selected to provide a comprehensive sample of all the main turbine clusters. A sampling approach was adopted on the basis of the homongenous landscape and prevalence of agriculture. At each point, one experienced bird observer scanned the whole area for avifauna activity within a 2 km 180° arc from the vantage point. Once a bird or a group of birds were sighted, the observer would draw the flight path, relative to the ground as if looking down on the site from above, onto a pre-printed record sheet.

For each sighting, information on species, number of birds in the flight, start time and end time of flight, height of the flight in 15 second intervals, type of flight (flapping, soaring, gliding) and notes on activity/behaviour were recorded. Height of the flight was recorded in three height bands, namely:

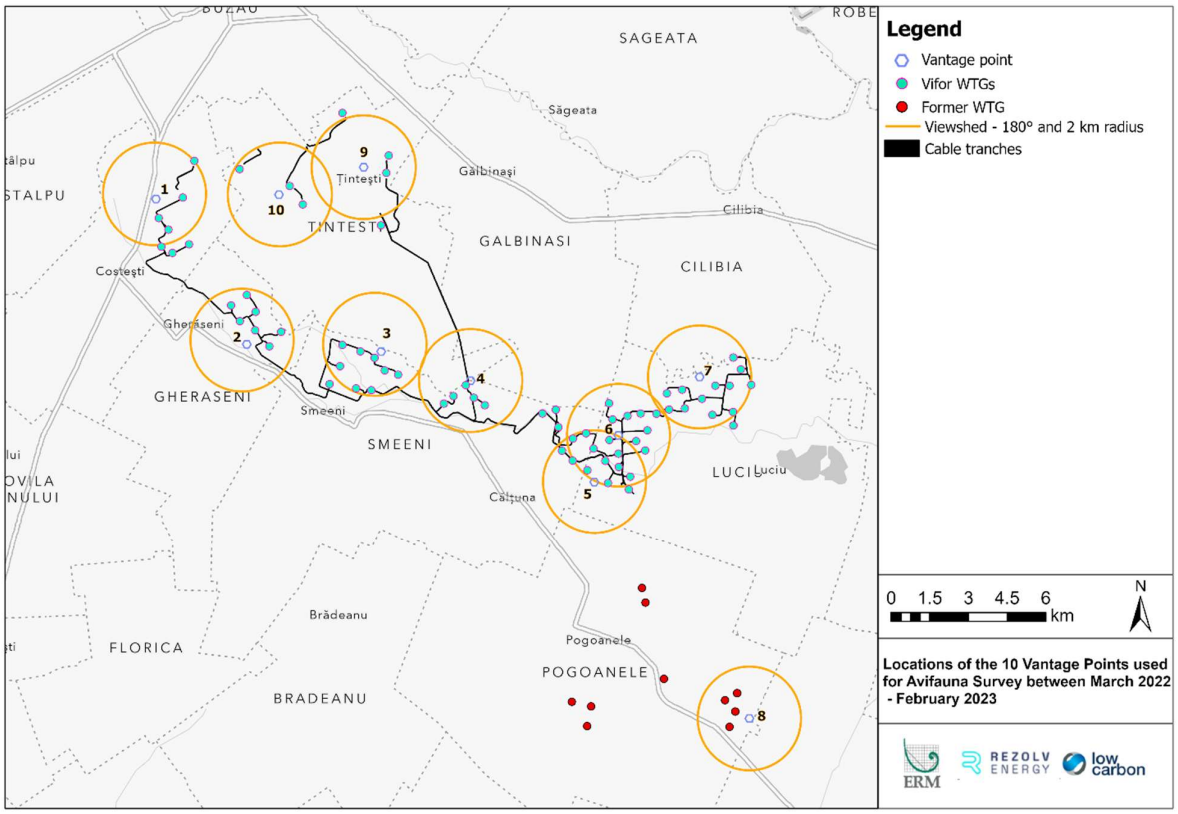
- Below rotor height, between 0-80m,
- At rotor height in the Rotor Swept Zone, between 81-250m (this is the height at which there is a collision risk with the turbine blades),
- Above rotor height, above 251m (any birds in this area will be above collision risk height).

Watches have been taken under favourable meteorological conditions with good visibility (>2km), and avoiding days of heavy rainfall, low cloud or high winds.[4]

[3] https://www.nature.scot/sites/default/files/2018-06/Guidance%20Note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf

[4] Scottish Natural Heritage, 2017. Recommended bird survey methods to inform impact assessment of onshore wind farms.

Figure 3-3 Locations of the 10 Vantage Points used for Avifauna Survey between March 2022 – February 2023



3.4.2 Breeding

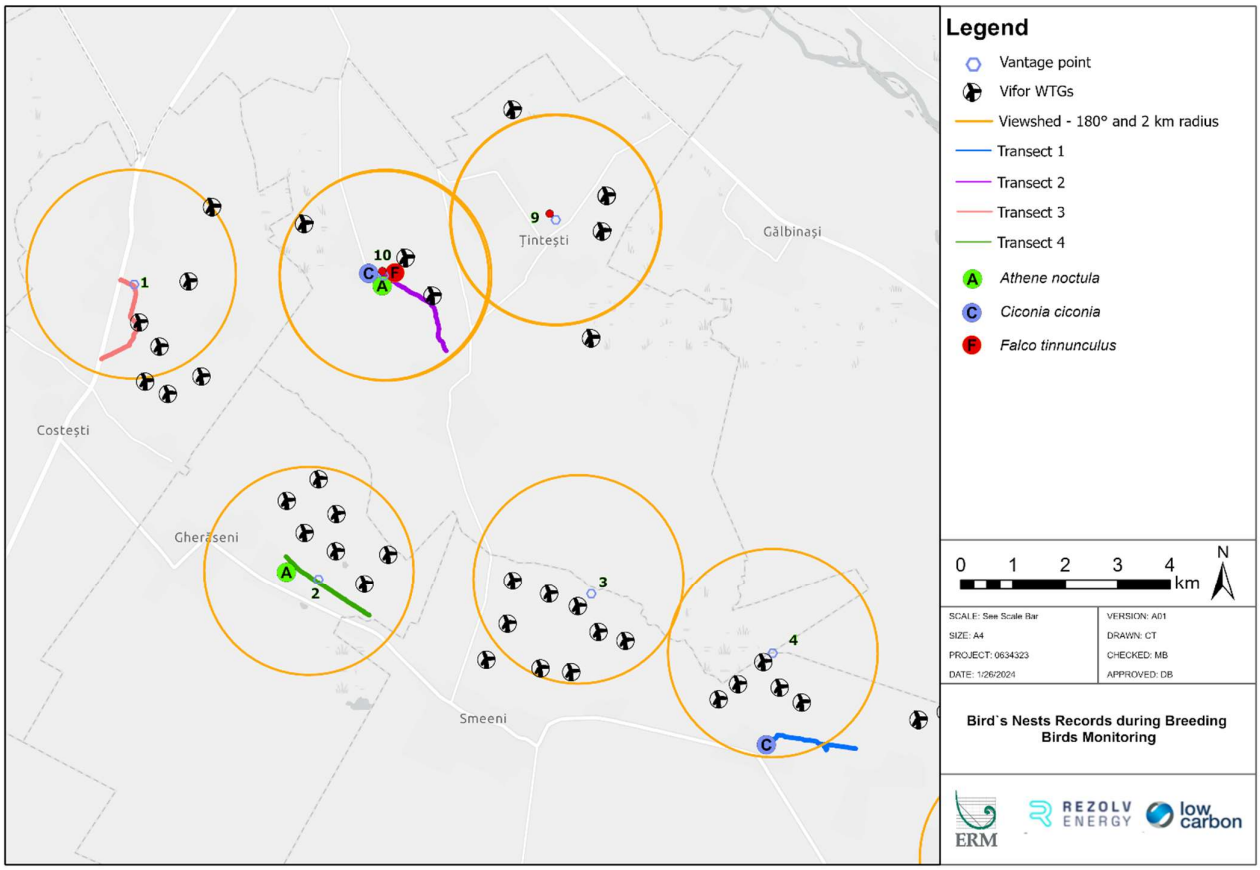
For breeding birds, line transects as described in Bibby[5] were conducted in 2022. A total of four visits separated by a minimum of 10 days were undertaken between April and June plus one early visit to establish the transect lines, check for access and safety issues, and record basic information on vegetation (e.g. cropland, grazing, woodland, scrub).

A total of four transects of 2 km length each were set up and arranged so that as far as possible they covered a representative area of all habitat types within the windfarm.

All birds were counted and a note made of whether they occurred within the near band (0-25m) or far band (25m-100m). A note of breeding activity (e.g. singing, food carrying, nesting, agitated behavior) was made to establish if birds were possibly, probably or definitely breeding. Any display flights observed were noted, including the height band at which the flight occurred, using the height bands used for VP surveys.

[5] Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. 2000. Bird Census Techniques (2nd Edition). Academic Press

Figure 3-4 Transects covered for Breeding Birds Survey between April - June 2022



Surveys were taken between dawn and 1200 hours (after 1200 hours bird activity declines significantly), in suitable weather, i.e. good visibility, dry and calm (i.e. less than a force 4-5 on the Beaufort scale). Information on the survey dates and conditions are presented Table 3-2.

Table 3-2 Breeding Birds survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (Beaufort)	Visibility
22.04.2022 (Transect 1)	12°	0	1NE	Good
23.04.2022 (Transect 2)	14°	0	0	Good
24.04.2022 (Transect 3)	20°	0	1NE	Good
25.04.2022 (Transect 4)	21°	0	2E	Good
23.05.2022 (Transect 2)	16°	0	2SW	Good
24.05.2022 (Transect 3)	14°	0	2W	Good

25.05.2022 (Transect 4)	19°	0	1NE	Good
26.05.2022 (Transect 1)	20°	0	2E	Good
19.06.2022 (Transect 3)	22°	0	1SE	Good
19.06.2022 (Transect 4)	24°	0	1SE	Good
20.06.2022 (Transect 1)	18°	0	1W	Good
20.06.2022 (Transect 2)	22°	0	2N	Good
29.06.2022 (Transect 3)	24°	0	1SE	Good
29.06.2022 (Transect 4)	26°	0	1SE	Good
30.06.2022 (Transect 1)	23°	0	1S	Good
30.06.2022 (Transect 2)	25°	0	1S	Good

3.5 Bats

Studies conducted in 2010 found no bats and concluded they were unlikely to occur within the Project area due to the habitat being unsuitable. On that basis, in line with the recommendations in Collins (2016)[6] , three survey campaigns to cover spring, summer and autumn were planned.

However, after the results from the April survey were received further assessment and consultation with bat experts was undertaken. This indicated that, contra to the 2010 assessment, the Călmățui Valley and the abandoned irrigation channels form an optimal habitat for bat feeding and a linear path for their migratory or dispersal movements, even though the area is largely comprised of open arable land and overgrazed meadows. After consultation with bat experts and Rezolv/ Low Carbon it was therefore decided to change to monthly survey campaigns, with the change coming into operation from July 2022.

The baseline surveys used multiple methods of bat identification on site, quantifying their activity and presence from April to October 2022 (except May and June), using bioacoustics (driven transects, point counts and static ultrasound detectors), visual observations on site in sensitive areas and active roost searches.

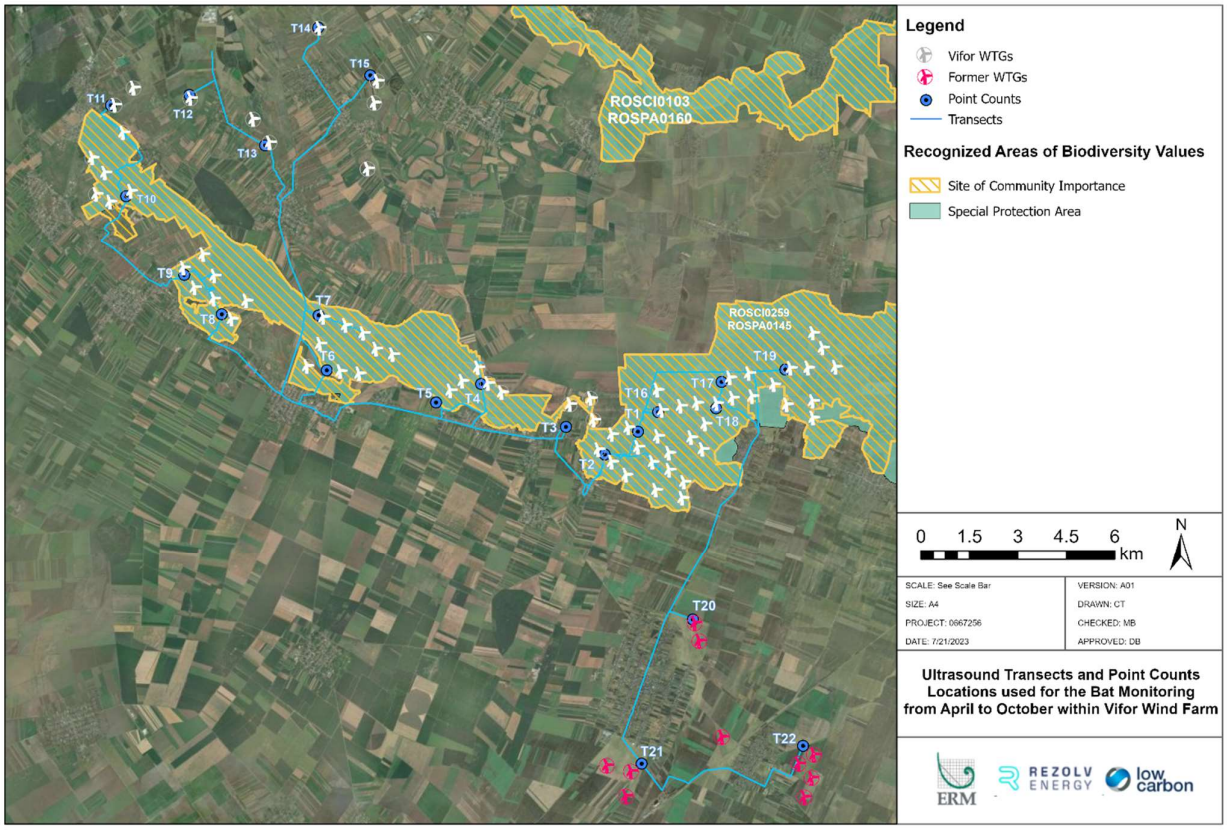
Given the high bat activity within the site, especially near ST5 (static detector) during April, additional data collection methods were proposed. These included a full night of bat observations near ST 5 for each monitoring month, emergence and re-entry surveys of up to five sites identified as high potential bat roosts in August and early September.

[6] Collins, J. (Ed) 2016. Bat surveys for professional ecologists: good practice guidelines (3rd Edition). Bat Conservation Trust, London

3.5.1 Point counts and ultrasound transects

Ultrasound transects were performed using an Anabat Walkabout with a GPS and twenty-two point locations were selected, each with a ten minute monitoring interval (see Figure 2-1. below). Ten points covering a 56.3 km transect (T1 – T5 and T16 – T22) and twelve points with a 80.4 km transect (T6 - T15).

Figure 3-5 Ultrasound transects and point counts locations



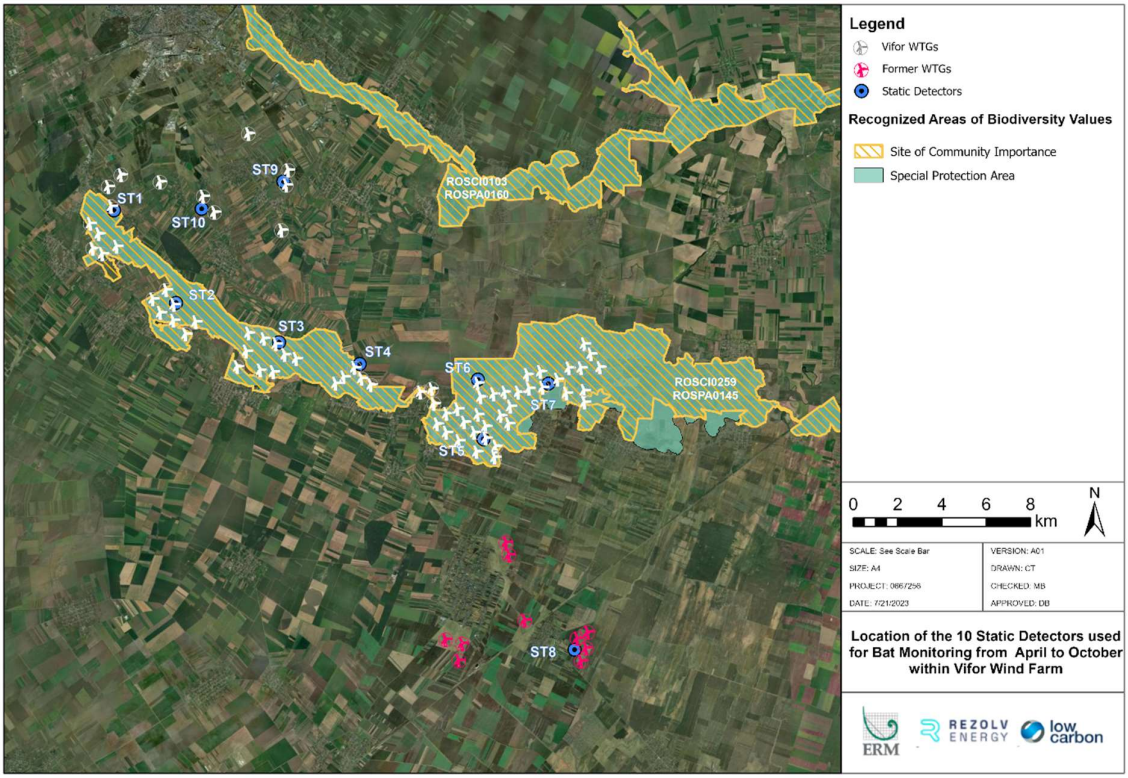
3.5.2 Static ultrasound detectors

Ten Anabat Chorus static bat detectors were deployed in the study area for full five nights per month of observation from April to October 2022, except for May and June (see Figure 3-6):

- ST1 – Costești commune;
- ST2 – Gherăseni commune;
- ST3 – Smeeni commune;
- ST4 – Smeeni commune;
- ST5 – Luciu commune;
- ST6 – Luciu commune;
- ST7 – Luciu commune;
- ST8 – Pogonele commune;
- ST9 – Țintesti commune;

- ST10 – Țintesti commune.

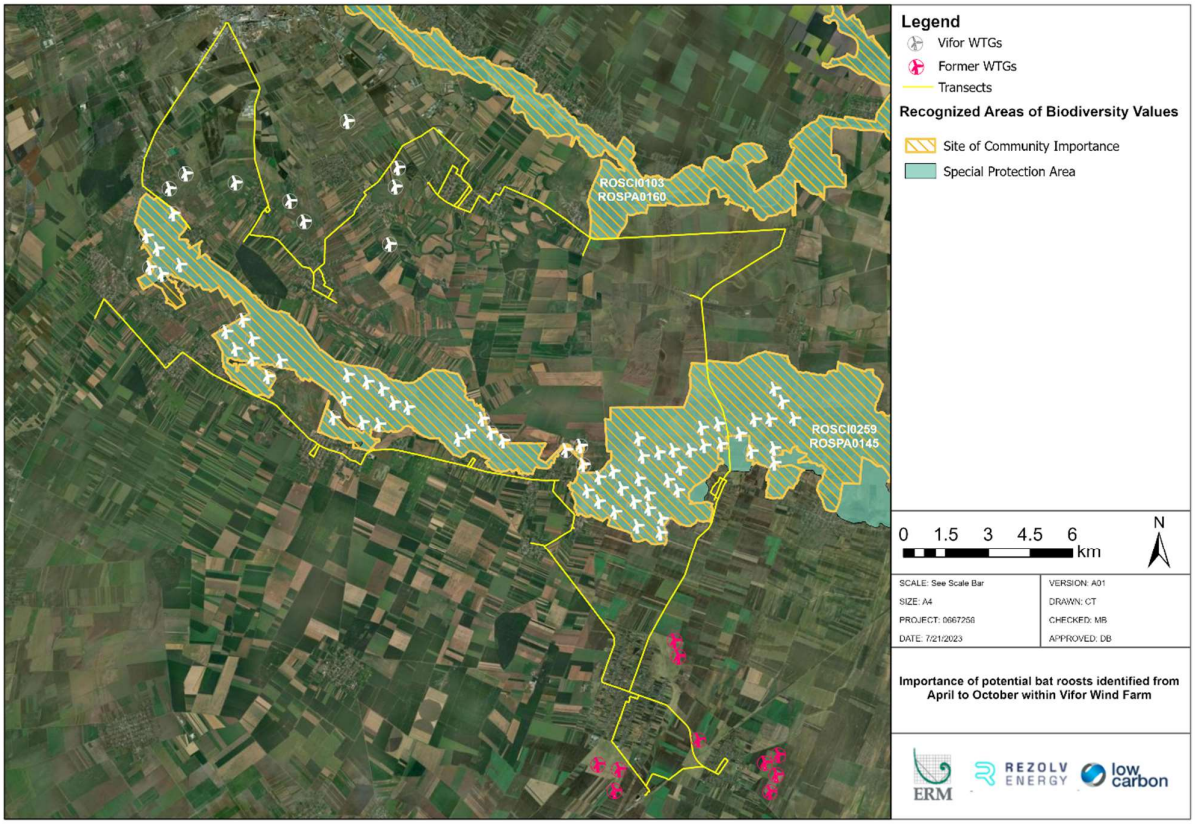
Figure 3-6 Static detectors location



3.5.3 Roost searches

Active search for shelters were undertaken in anthropogenic areas (churches, abandoned buildings, industrial areas, railway areas) and natural areas (forests). When a roost was found, it was thoroughly examinated, both for the presence of bats and also signs of their presence. The transects covered are illustrated in Figure 3-7.

Figure 3-7 Transects covered for bat roost searching



Each potential roost identified was mapped, photographed, briefly described, and an assessment of low, medium, or high roost potential assigned in line with published guidance (Collins 2016). Notes on the potential degree of disturbance/threat were also made.

Where access and resources allowed high roost potential sites were subject to follow up emergence/ re-entry surveys, in suitable weather (temperatures of 10ºC and above at dusk, maximum ground level wind speed of 5m/s, no or only very light, rainfall). The timing of all bat monitoring activities carried out is presented in Table 3-3 Bat survey visit information

Table 3-3 Bat survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (m/s)	Visibility
Setting up static detectors				
22 - 27.04.2022	min 7° - max 13°	0	1-2	Good
19 - 24.07.2022	min 23°, max 25°	0	2-4	Good
19 – 24.08.2022	min 22°, max 24°	0	2-3	Good
19 - 24.09.2022	min 7°, max 19°	0	2-3	Good
18 – 23.10.2022	min 4°, max 18°	0	2-3	Good
Point counts and ultrasound transects				
25.04.2022	min 11° - max 13°	0	1-2	Good
26.04.2022	min 11° - max 12°	0	1-2	Good

27.04.2022	min 11° - max 13°	0	1-2	Good
29.05.2022	min 18° - max 22°	0	2-3	Good
30.05.2022	min 18° - max 24°	0	2-3	Good
31.05.2022	min 18° - max 23°	0	2-3	Good
24 – 25.07.2022	min 23°, max 25°	0	2-4	Good
24 - 25 .08.2022	min 22°, max 24°	0	2-3	Good
19 - 20.09.2022	min 7°, max 19°	0	2-3	Good
23 - 24.09.2022	min 9°, max 19°	0	2-3	Good
18 - 19.10.2022	min 5°, max 15°	0	2	Good
22 - 23.10.2022	min 4°, max 18°	0	2-3	Good
Active search for bats roosts				
06 - 07.05.2022	min 13° - max 17°	0	1	Good
02 - 03.08.2022	min 22°, max 24°	0	2-3	Good
16 - 17.09.2022	min 15°, max 26°	0	2-3	Good
Full night roost emergence/re-entry study				
09 - 10.08.2022	min 22°, max 24°	0	2-3	Good
10 - 11.08.2022	min 22°, max 24°	0	2-3	Good
11 - 12.08.2022	min 22°, max 24°	0	2-3	Good
12 - 13.08.2022	min 22°, max 24°	0	2-3	Good
05 - 06.09.2022	min 11°, max 17°	0	2	Good
06 - 07.09.2022	min 14°, max 21°	0	2	Good
Full night monitoring ST5				
12 - 13.08.2022	min 22°, max 24°	0	2-3	Good
18 - 19.09.2022	min 6°, max 18°	10	2-4	Good
17 - 18.10.2022	min 6°, max 12°	0	1-2	Good

3.5.4 Emergence/re-entry studies important bat roosts

Five full nights of emergence/re-entry monitoring studies were conducted at roosts deemed as high potential during the spring surveys which were close to the ST 5 static monitoring point, using the infrared camera, search lights and handheld ultrasound bat detector with real time sonogram analysis.

3.5.5 Full night monitoring at Static detector (ST) 5

Due to the very high bat activity recorded at ST5 during April, simultanous human observer surveys were commissioned at this location from August to help understand the basis of this activity. Full night monitoring at ST5 consisted of an Anabat Chorus static paired with an observer using a handheld Anabat Walkabout detector supported by visual observations regarding the flight path of bats (both during dusk/dawn - natural light and during the night using an infrared camera and strong search lights – flashed rarely only in bursts of a few seconds, to reduce the stress for the animals and to observe their natural behaviour).

3.6 Other fauna species

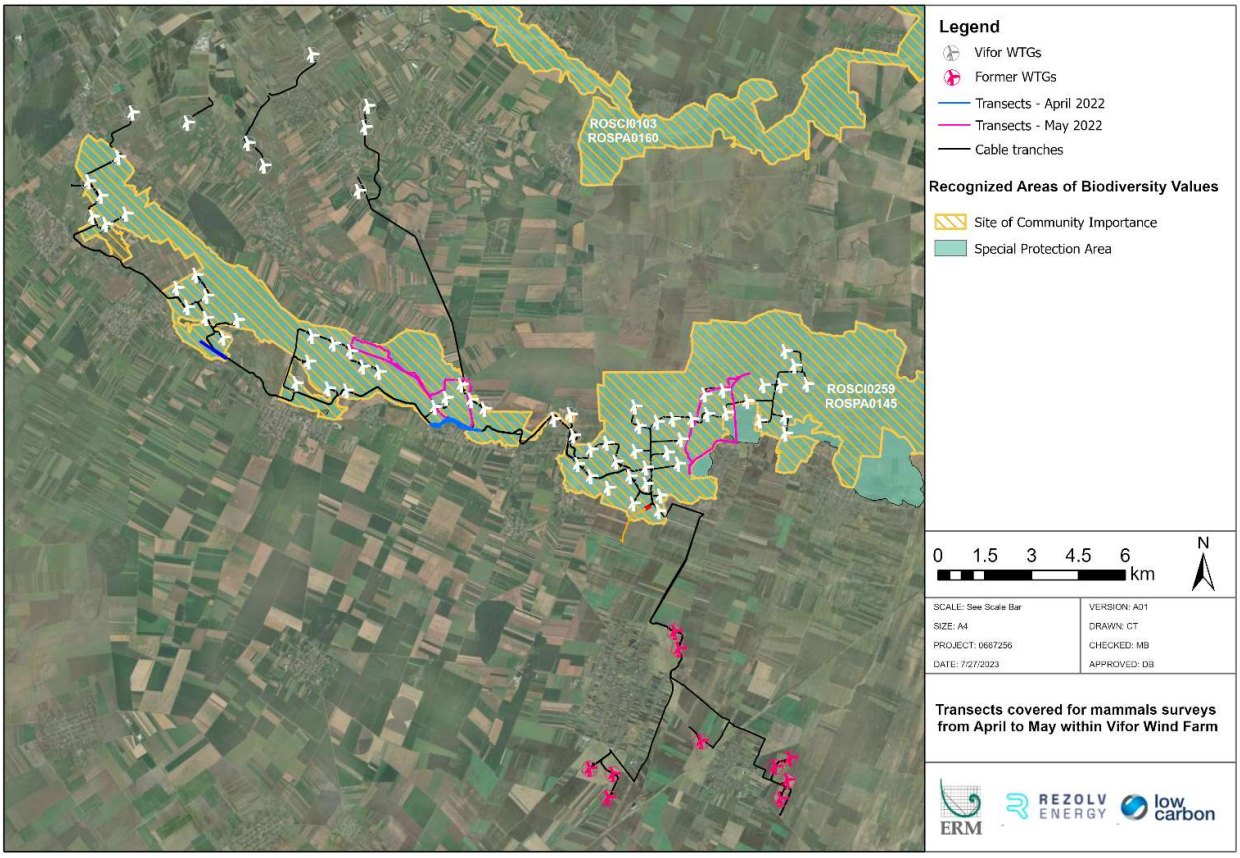
3.6.1 Mammals

Mammals presence in the wind farm area was studied during April-May 2022.

The monitoring campaign focused on *Spermophilus citellus* (European souslik) and *Lutra lutra* (Eurasian otter), species listed under Annex II of Habitats Directive and also qualifying species for the ROSCI0259 Valea Călmățuiului Site of Community Interest.

Walked transects in specific habitat were performed for mammals monitoring and focused on pellets, tracks, burrows and direct visual counts (see Figure 3-8 **Transects covered for mammals surveys**).

Figure 3-8 Transects covered for mammals surveys



For *Spermophilus citellus* (European souslik), transects were undertaken in higher areas, on canal embankment, and optimum areas near Sudiți, Smeeni, Albești and Caragele.

For *Lutra lutra* (Eurasian otter), transects were undertaken near watercourses, searching for traces such as tracks, slides and spraints on banks and under bridges. Surveys for otters holts consisted in searches 200m upstream and 200 downstream of each watercourse.

Surveys were undertaken in suitable conditions, and avoided periods of high precipitation that may remove otter signs. Details of surveys are presented in

Table 3-4.

Table 3-4 Mammals survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (m/s)	Visibility
23.04.2022	min15° - max 21°	0	2	Good
24.04.2022	min 22° - max 24°	0	2	Good
07.05.2022	min 19° - max 21°	0	0 - 1	Good
21.05.2022	min 23° - max 25°	0	0 - 1	Good

3.6.2 Reptiles and Amphibians

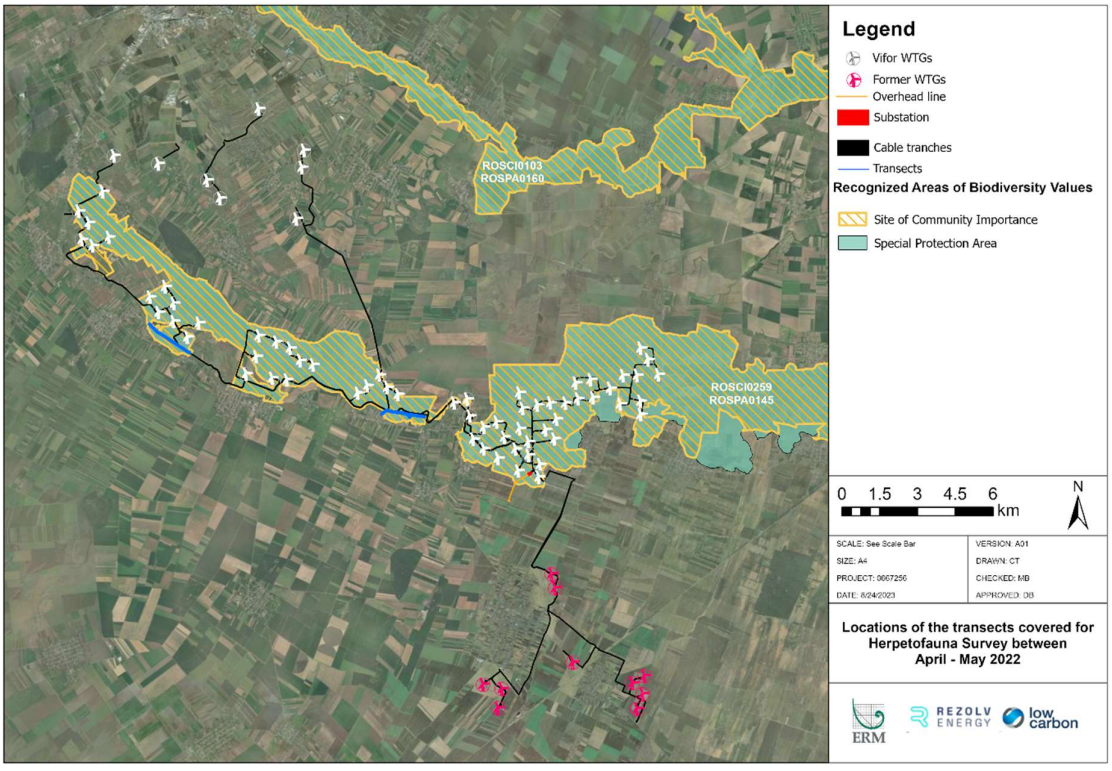
Herpetofauna presence in the wind farm area was studied during April-May 2022.

For amphibian species visual and/or auditory transects focusing on waterbodies and watercourses were used.

For reptiles, two transects of 1000 m each in the specific habitats were undertaken (see Figure 3-9). Searching concentrated on suitable features; lizards will bask on log piles, stumps, discrete open patches of ground among heather, stones, bare ground, and these were examined carefully.

The survey team also recorded incidental observations of reptiles and amphibians when conducting other surveys such as VP or breeding bird surveys. These opportunistic finds are also reported in the results section.

Figure 3-9 Transects covered for herpetofauna surveys



Transect surveys were undertaken in suitable weather conditions on the dates presented in Table 3-5

Table 3-5 Herpetofauna survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (Beaufort)	Visibility
22.04.2022	12°	0	1NE	Good
25.04.2022	14°	0	0	Good
25.05.2022	20°	0	1NE	Good
26.05.2022	21°	0	2E	Good

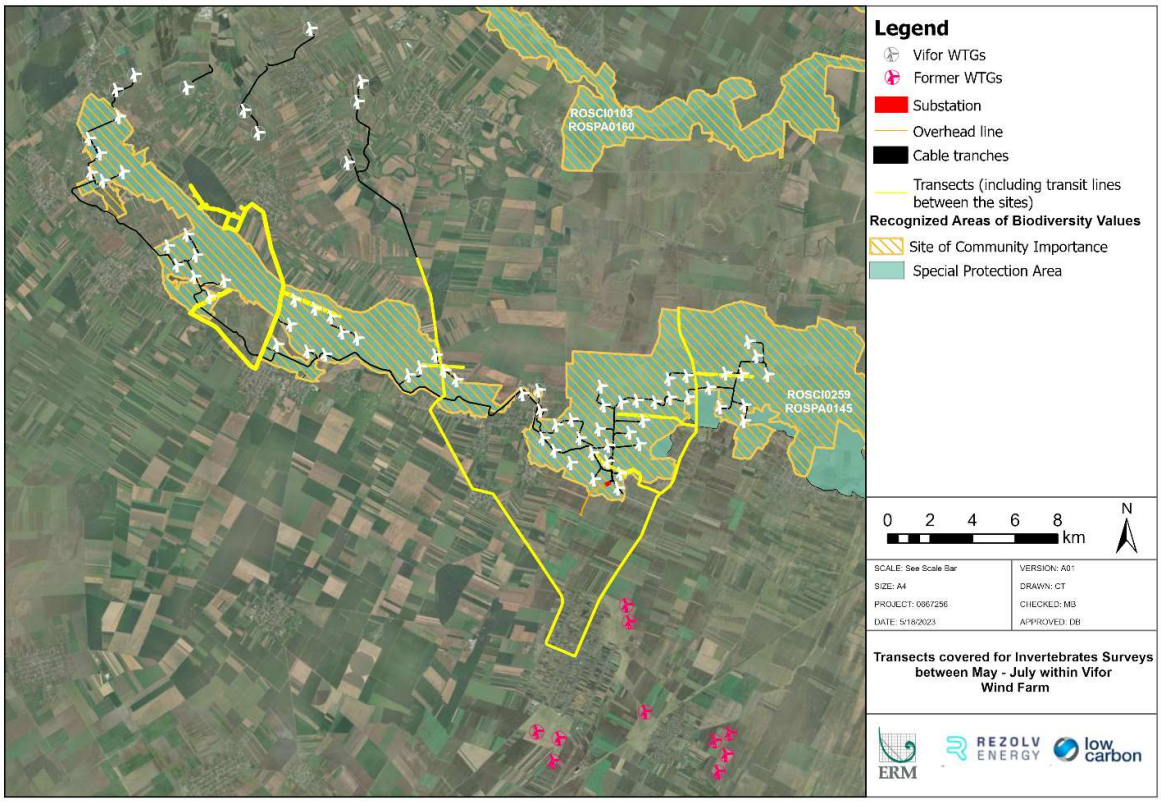
3.6.3 Invertebrates

Invertebrates presence in the wind farm area was studied during May-July 2022.

The monitoring campaign focused on *Lycaena dispar* (Large Copper), near threatened species listed on Annex II of Habitats Directive and as a qualifying species for the ROSCI0259 Valea Călmățuiului Site of Community Interest.

Six transects were used to conduct the field surveys targeting areas of likely insect occurrence such as waterbodies, puddles and flower rich habitats (see Figure 3-10). Surveys also concentrated on larvae search in specific habitats.

Figure 3-10 Transects covered for invertebrates surveys



Areas were searched within the Project layout and 200 m buffer in the specific habitat.

Surveys were carried out in suitable weather conditions no precipitation, temperature above 20°C, low average wind speed) at the appropriate time of year for the species. Details are presented in Table 3-6.

Table 3-6 Invertebrate survey visit information

Field visit	Temperature (°C)	Rain (%)	Wind Speed (m/s)	Visibility
04.05.2022	24°	0	1 - 5	Good
05.05.2022	24°	0	1 - 5	Good
26.07.2022	30°	0	1 - 5	Good
27.07.2022	30°	0	1 - 5	Good

4. BASELINE RESULTS

4.1 Designated and protected sites

The majority of Vifor WF infrastructure is located within the Natura 2000 sites ROSCI0259 Valea Călmățuiului (Site of Community Importance) and ROSPA0145 Valea Călmățuiului (Special Protection Area);

The following recognized areas of biodiversity values are located within 20 km around the Project site (illustrated in Figure 4-1):

IBA Lake Tataru located approximately 12.4 km SE;

IBA Balta Albă - Amara – Jirlău located approximately 9.2 km NE;

IBA Câmpia Gherghiţei located approximately 15 SW;

ROSPA0160 Lunca Buzăului located approximately 6 km N;

ROSPA0112 Câmpia Gherghiței located approximately 13.3 km SW;

ROSPA0118 Grindu - Valea Măcrișului located approximately 12 km S;

ROSPA0006 Balta Tătaru located approximately 13.7 km SE;

ROSPA0004 Balta Albă - Amara – Jirlău located approximately 19 km NE;

ROSCI0005 Balta Albă - Amara - Jirlău - Lacul Sărat Câineni located approximately 19 km NE;

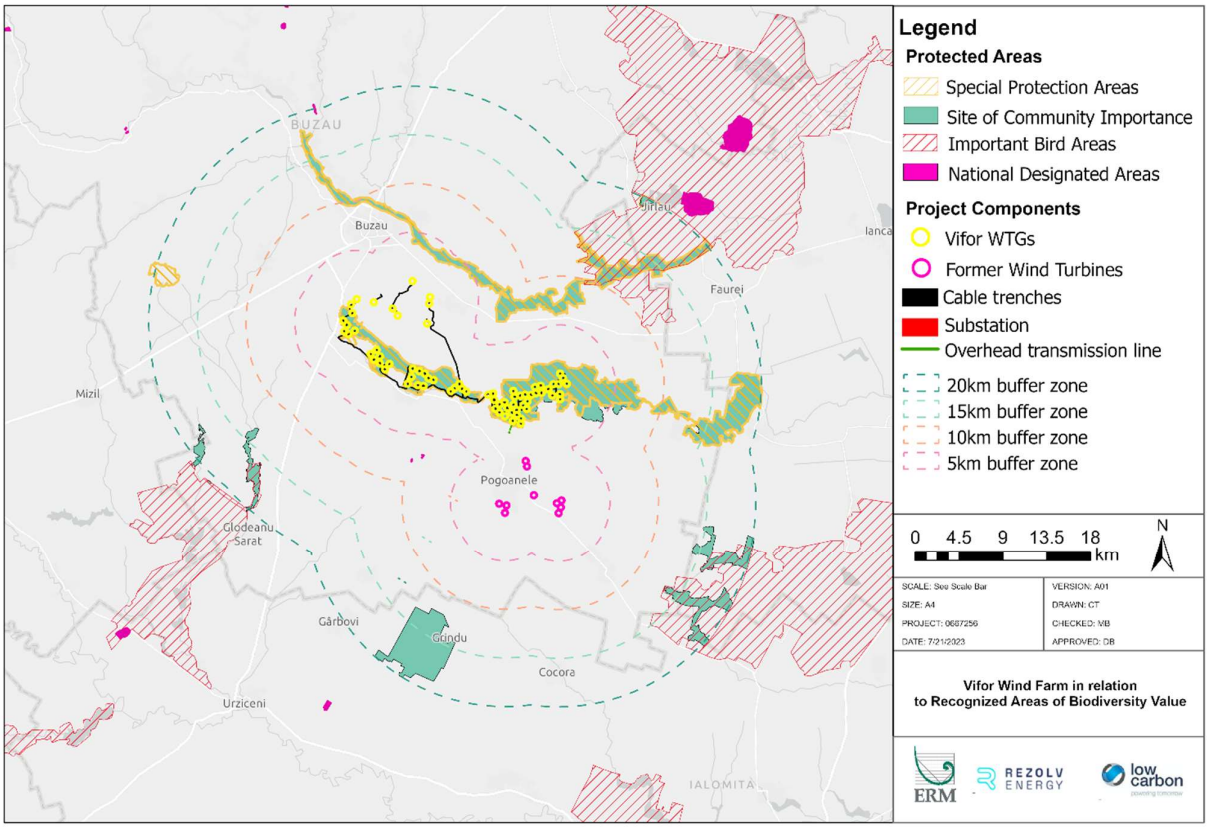
ROSCI0103 Lunca Buzăului located approximately 6 km N;

ROSCI0057 Dealul Istrița located approximately 16.7 km W;

RONPA0283 Pădurea Brădeanu located approximately 7.1 km SW and

RONPA0286 Dealul cu lilieci located approximately 19 km NE.

Figure 4-1 Project location in relation to Recognized Areas of Biodiversity Value



No Management Plan for the Natura 2000 sites is in place to date and no published conservation objectives are available. Table 4-1 summarises the site-specific data for ROSCI0259 Valea Călmățuiului and ROSPA0145 Valea Călmățuiului..

Table 4-1 Natura 2000 Sites overlapping Vifor Project

No.	Natura 2000 Sites	Species/ habitats under protection
1.	ROSCI0259 Valea Călmățuiului	**Area:** 18125.70 ha **Habitats:** 1530* Pannonic salt steppes and salt marshes 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation **Mammals:** *Lutra lutra* *Spermophilus citelus* **Herpetofauna:** *Bombina bombina* *Emys orbicularis* **Fish:** *Cobitis taenia* **Invertebrates:** *Lycaena dispar*
2.	ROSPA0145 Valea Călmățuiului	**Area:** 20862.10 ha **11 bird species**

No.	Natura 2000 Sites	Species/ habitats under protection
		Anas clypeata - concentration *Burhinus oedicnemus - breeding* *Ciconia ciconia - concentration* *Glareola pratincola- breeding* *Himantopus himantopus- reproducing* *Limosa limosa - concentration* *Numenius arquata - concentration* *Oenanthe isabellina – breeding* *Philomachus pugnax - concentration* *Recurvirostra avosetta – breeding* *Tadorna tadorna - breeding*

4.2 Habitats

During the first habitat survey conducted in 2010, habitat 1530* Pannonic salt steppes and salt marshes was identified in the proximity of the project area (1.5km) in Luciu commune. The habitat was defined by Astero pannonici – Puccinellietum distantis Gehu, Roman et Boullet 1994 Syn. Puccinellietum distantis Soó 1937 plant association.

The results presented in the Baseline Biodiversity Reports from 2022, indicates that the natural habitats in the Project area are considered relatively diverse but, the major EUNIS habitat types are: R622 Ponto-Sarmatic salt steppes and saltmarshes which covers a total area of 1817.52ha, followed by V1 Arable land and market gardens with 760.89ha and V15 Bare tilled, fallow or recently abandoned arable land with an area of 149.01ha.

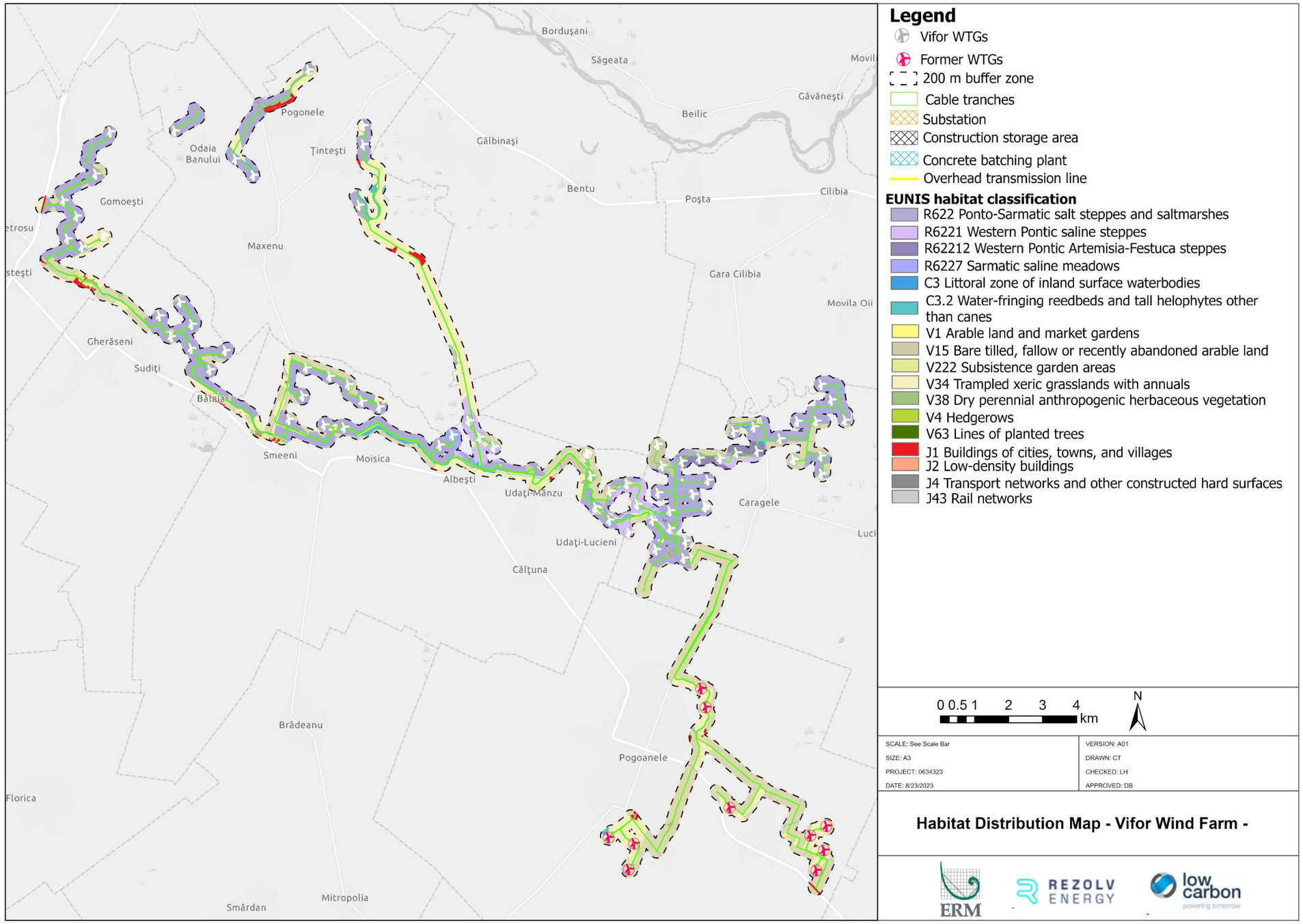
The habitat types identified are listed in Table 4-2 and have been classified as natural and modified, while Figure 4-2 shows their spatial distribution within the project area and 200 m buffer zone.

Table 4-2 List of habitat types present on site

No.	EUNIS Habitat Types	Annex 1 Habitat Status (Current Name as Adopted in Directive 97/62/EC)	Natural/ Modified	Surface (ha)
Habitats Located within the Project area and/or 200 m Buffer Zone				
1.	R622 Ponto-Sarmatic salt steppes and saltmarshes	1530* Pannonic salt steppes and salt marshes (certain sections of the terrain)	Natural	1817.52
2.	R6221 WesternPontic saline steppes	1530* Pannonic salt steppes and salt marshes (certain sections of the terrain)	Natural	204.22
3.	R62212 Western Pontic Artemisia-Festuca steppes	1530* Pannonic salt steppes and salt marshes (certain sections of the terrain)	Natural	68.10

No.	EUNIS Habitat Types	Annex 1 Habitat Status (Current Name as Adopted in Directive 97/62/EC)	Natural/ Modified	Surface (ha)
Habitats Located within the Project area and/or 200 m Buffer Zone				
4.	R6227 Sarmatic saline meadows	1530* Pannonic salt steppes and salt marshes (certain sections of the terrain)	Natural	83.01
5.	C3 Littoral zone of inland surface waterbodies	-	Natural	28.46
6.	C3.2 Water-fringing reedbeds and tall helophytes other than canes	-	Natural	92.42
7.	V1 Arable land and market gardens	-	Modified	760.89
8.	V15 Bare tilled, fallow or recently abandoned arable land	-	Modified	149.01
9.	V222 Subsistence garden areas	-	Modified	37.39
10.	V34 Trampled xeric grasslands with annuals	-	Modified	50.07
11.	V38 Dry perennial anthropogenic herbaceous vegetation	-	Modified	12.1
12.	V4 Hedgerows	-	Natural	0.98
14.	J1 Buildings of cities, towns, and villages	-	Modified	40.64
15.	J2 Low-density buildings	-	Modified	2.41
16.	J4 Transport networks and other constructed surfaces	-	Modified	20.67
17.	J43 Rail networks	-	Modified	0.65

Figure 4-2 Habitats distribution within 200m of the Project Area based on EUNIS classification



Habitats *R622 Ponto-Sarmatic salt steppes and saltmarshes, R6221 Western Pontic saline steppes*, *R62212 Western Pontic Artemisia-Festuca steppes* and *R6227 Sarmatic saline meadows* correspond to Annex 1 priority habitat *1530* Pannonic salt steppes and salt marshes* listed in the Habitat Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). Table 4-3 presents the location of priority habitat 1530* in relation to project layout.

Most of the priority habitat identified is in poor condition due to drought, continuous intensive grazing with unstainable stocking densities. Thus, the maximum height of vegetation is extremely low (<5 cm), and some plant species are adopting different reproductive strategy such as vegetative propagation.

Table 4-3 Location of priority habitat 1530*

No.	Habitat (Natura 2000/EUNIS)	Community/ Plant Association	Annex II GEO 57/2007	Surface (ha)	Location in relation to the Project
1.	1530* Pannonic salt steppes and salt marshes	*Halimionetum pedunculatae* Șerbănescu 1965	Yes	1 - 2 ha[7]	WTG 50 and access roads, near Udați-Lucieni
2.	1530* Pannonic salt steppes and salt marshes	*Puccinellietum limosae* Rapaics ex Soó 1933	Yes	10 - 20 ha[8]	WTG 17-20, near Smeeni
3.	1530* Pannonic salt steppes and salt marshes	*Achilleo-Festuca pseudovinae (Magyar 1928) Soo 1933, 1945*	Yes	< 50 ha[9]	12 turbines spread across the site

In response to the findings on habitat 1530*, detailed surveys were conducted for Annex 1 priority habitat 1530*, which is strictly protected under the EU habitats directive.

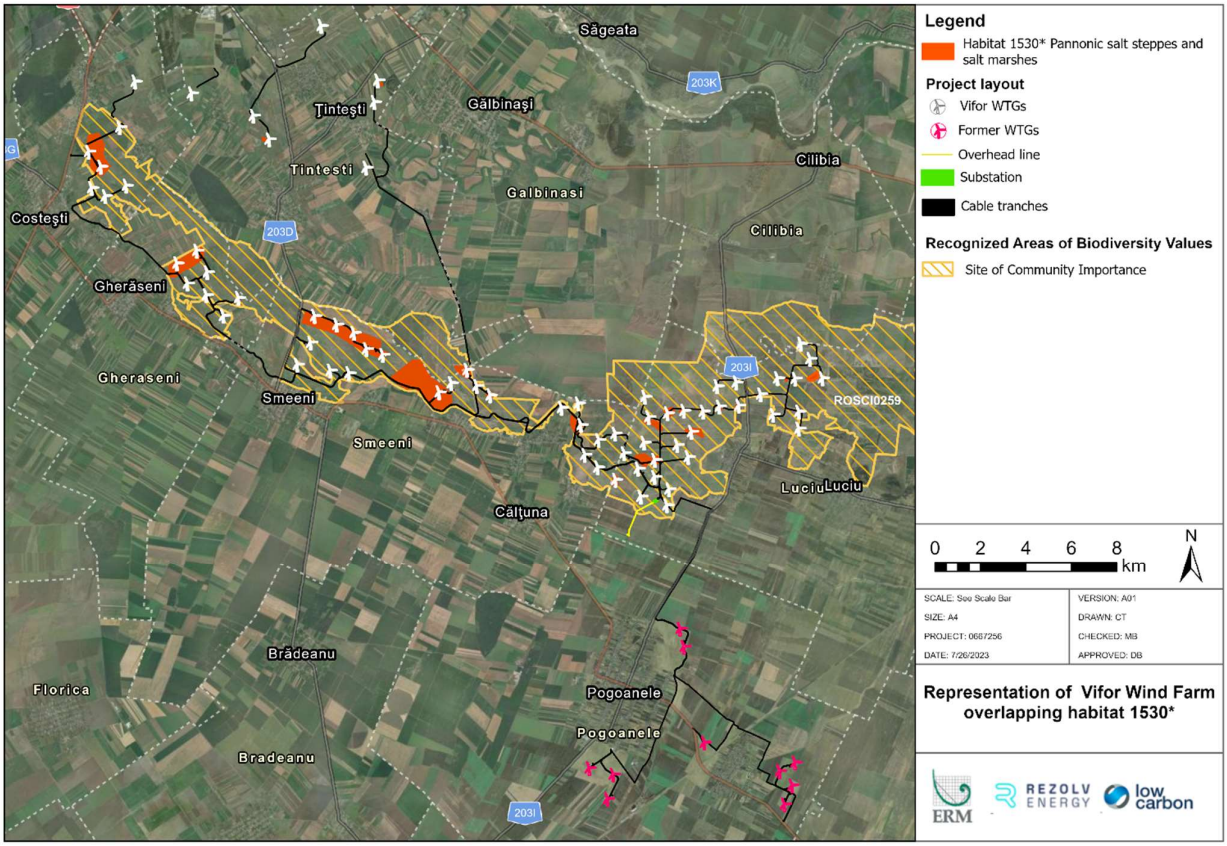
Figure 4-3 illustrates habitat 1530* distribution within the Project footprint and the changes that occur in the layout following the surveys conducted.

[7] Favourable conservation status

[8] Favourable conservation status

[9] Unfavourable conservation status

Figure 4-3 Representation of Vifor Wind Farm overlapping priority habitat 1530*



Surveys of the Tintești site, which lies outside the Site of Community Importance, identified three very small fragments of degraded 1530* grazing areas amongst a mainly arable landscape, these overlap with turbines 71, 73 and 74 (outside turbine footprint). All other areas were considered too modified by sheep grazing or intensive agriculture to qualify as natural or critical habitat. The deterioration in form, function and species composition, together with fragmentation and isolation comply with IFC PS6 guidance note 39 (IFC 2019) definition of modified.

4.3 Flora

The plant species recorded during baseline surveys (2010/2022) belong to the following categories:

- halophytic species that grow on heavily saline soils with excess moisture at the beginning of the vegetation period;
- optional or supporting halophytic species with fluctuating soil moisture regime and high salt content (1-1.5%);
- non-halophyte species, tolerant of salinity.

The majority of species recorded have not been evaluated by IUCN, but all those that occur within the project site, are listed as LC (Least Concern). No endemic plant species were recorded and also none of them is listed on the Red List of Plants in Romania (Oltean et al, 1994[10]).

In the areas of overlap with the Natura 2000 site ROSCI0259 Valea Călmățuiului, some of the plant species mentioned as present in the site have been found, but without conservation importance (*Puccinelia distans, Artemisia santonicum, Spergularia maritima, Juncus gerardi*), being neither species of community interest nor species present in the National Red List.

4.3.1 Invasive Species

Throughout the surveyed area, the presence of drainage/irrigation channels, currently semi-dry and dominated by invasive species (*Xanthium spinosum, Xanthium italicum*, *Eleagnus angustifolia*), can be observed. *Xanthium italicum* and *Sorghum halepense* are constantly found along access roads and near agricultural crops. *Robinia pseudoacacia*, *Amorpha fruticosa* and *Aillanthus altissima* were also recorded in isolated cases.

4.4 Birds

4.4.1 Desk Study Results

A point count bird survey was carried out in 2010-2011 and 72 species of birds were observed passing through or foraging on the project site.

It confirms the presence of six species of birds listed on Annex I of Birds Directive which were also confirmed during the 2022 surveys carried out by ERM. Only one species, *Coracias garrulus*, was recorded in 2010 and its presence was not mentioned in 2022.

The study conducted by ERM in 2022 - 2023 recorded seven qualifying species for ROSPA0145 Valea Călmățuiului (*Burhinus oedicnemus, Ciconia ciconia, Glareola pratincole, Himantopus himantopus, Numenius arquata, Philomachus pugnax, Tadorna tadorna*) in addition to the 2010 survey which only confirmed *Ciconia ciconia*.

4.4.2 2022 Field Survey Findings

From the three different kind of surveys that were conducted - focal VP surveys, casual activity surveys (counts made of non-flying or non focal species during VP surveys), and breeding birds survey, the following 99 species were identified during the field site visits:

[10] Oltean M. et al, 1994 - Lista Roșie a plantelor superioare din România

Table 4-4 Conservation Status of Bird Species Recorded in 2022-2023

No	Scientific Name	Common Name	Annex I of Bird Directive	Red Book of Vertebrates from Romania Status	IUCN Red List Status European/Global
1.	*Accipiter brevipes*	Levant Sparrowhawk	Yes	Vulnerable	LC/LC
2.	*Accipiter gentilis*	Northern Goshawk	No	No	LC/LC
3.	*Accipiter nisus*	Eurasian Sparrowhawk	No	No	LC/LC
4.	*Acrocephalus arundinaceus*	Great Reed-warbler	No	No	LC/LC
5.	*Acrocephalus palustris*	Marsh Warbler	No	No	LC/LC
6.	*Acrocephalus schoenobaenus*	Sedge warbler	No	No	LC/LC
7.	*Alauda arvensis*	Eurasian skylark	No	No	LC/LC
8.	*Anas crecca*	Common teal	No	No	LC/LC
9.	*Anas platyrhynchos*	Mallard	No	No	LC/LC
10.	*Anas querquedula*	Garganey	No	No	LC/LC
11.	*Anser albifrons*	Greater white-fronted goose	No	No	LC/LC
12.	*Anser anser*	Greylag Goose	No	No	LC/LC
13.	*Anthus campestris*	Tawny pipit	Yes	No	LC/LC
14.	*Aquila pennata (syn. Hieraaetus pennatus)*	Booted eagle	Yes	Critically Endangered	LC/LC
15.	*Aquila pomarina*	Lesser Spotted Eagle	Yes	Vulnerable	LC/LC
16.	*Ardea alba*	Great White Egret	Yes	Endangered	LC/LC
17.	*Ardea cinerea*	Grey heron	No	No	LC/LC
18.	*Ardea purpurea*	Purple heron	Yes	Endangered	LC/LC
19.	*Athene noctua*	Little Owl	No	No	LC/LC
20.	*Burhinus oedicnemus*	Eurasian thick-knee	Yes	Endangered	LC/LC
21.	*Buteo buteo*	Eurasian buzzard	No	No	LC/LC
22.	*Buteo lagopus*	Rough-legged Buzzard	No	No	LC/LC
23.	*Buteo rufinus*	Long-legged buzzard	Yes	Vulnerable	LC/LC

24.	*Carduelis cannabina*	Common linnet	No	No	LC/LC
25.	*Carduelis carduelis*	European goldfinch	No	No	LC/LC
26.	*Ciconia ciconia*	White stork	Yes	Vulnerable	LC/LC
27.	*Ciconia nigra*	Black stork	Yes	Vulnerable	LC/LC
28.	*Circaetus gallicus*	Short-toed snake-eagle	Yes	Vulnerable	LC/LC
29.	*Circus aeruginosus*	Western marsh-harrier	Yes	No	LC/LC
30.	*Circus cyaneus*	Hen harrier	Yes	No	LC/LC
31.	*Circus macrourus*	Pallid harrier	Yes	Endangered	Near Threatened /LC
32.	*Circus pygargus*	Montagu's harrier	Yes	Endangered	LC/LC
33.	*Columba oenas*	Stock dove	No	No	LC/LC
34.	*Columba palumbus*	Common woodpigeon	No	No	LC/LC
35.	*Corvus corax*	Common raven	No	Endangered	LC/LC
36.	*Corvus cornix*	Hooded crow	No	No	LC/LC
37.	*Corvus frugilegus*	Rook	No	No	LC/Vulnerable
38.	*Coturnix coturnix*	Common quail	No	No	LC/Near Threatened
39.	*Cuculus canorus*	Common cuckoo	No	No	LC/LC
40.	*Cygnus cygnus*	Whooper Swan	Yes	No	LC/LC
41.	*Cygnus olor*	Mute Swan	No	No	LC/LC
42.	*Delichon urbicum*	Northern house martin	No	No	LC/LC
43.	*Egretta garzetta*	Little egret	Yes	Endangered	LC/LC
44.	*Emberiza calandra*	Corn bunting	No	No	LC/LC
45.	*Emberiza citrinella*	Yellowhammer	No	No	LC/LC
46.	*Emberiza schoeniclus*	Reed bunting	No	No	LC/LC
47.	*Falco columbarius*	Merlin	Yes	No	LC/Vulnerable
48.	*Falco eleonorae*	Eleonora's Falcon	Yes	No	LC/LC
49.	*Falco peregrinus*	Peregrine Falcon	Yes	Endangered	LC/LC

50.	*Falco subbuteo*	Eurasian hobby	No	No	LC/LC
51.	*Falco tinnunculus*	Common kestrel	No	No	LC/LC
52.	*Falco vespertinus*	Red-footed falcon	Yes	Vulnerable	Vulnerable / Vulnerable
53.	*Galerida cristata*	Crested lark	No	No	LC/LC
54.	*Gallinula chloropus*	Common Moorhen	No	No	LC/LC
55.	*Gallinago gallinago*	Common Snipe	No	No	LC/ Vulnerable
56.	*Glareola pratincola*	Collared pratincole	Yes	Vulnerable	LC/LC
57.	*Grus grus*	Common crane	Yes	Vulnerable	LC/LC
58.	*Haliaeetus albicilla*	White-tailed sea-eagle	Yes	Critically Endangered	LC/LC
59.	*Himantopus himantopus*	Black-winged stilt	Yes	Endangered	LC/LC
60.	*Hirundo rustica*	Barn swallow	No	No	LC/LC
61.	*Lanius collurio*	Red-backed shrike	Yes	No	LC/LC
62.	*Lanius minor*	Lesser Grey Shrike	Yes	No	LC/LC
63.	*Larus cachinnans*	Caspian Gull	No	-	LC/LC
64.	*Larus michahellis*	Yellow-legged Gull	No	No	LC/LC
65.	*Larus ridibundus*	Black-headed gull	No	No	LC/LC
66.	*Luscinia megarhynchos*	Common Nightingale	No	No	LC/LC
67.	*Melanocorypha calandra*	Calandra lark	Yes	No	LC/LC
68.	*Merops apiaster*	European bee-eater	No	No	LC/LC
69.	*Milvus migrans*	Black kite	Yes	Critically Endangered	LC/LC
70.	*Motacilla flava*	Western yellow Wagtail	No	No	LC/LC
71.	*Numenius arquata*	Eurasian curlew	No	No	NT / NT
72.	*Nycticorax nycticorax*	Black-crowned Night-heron	Yes	Vulnerable	LC/LC
73.	*Oenanthe oenanthe*	Northern wheatear	No	No	LC/LC
74.	*Oriolus oriolus*	Eurasian Golden Oriole	No	No	LC/LC
75.	*Passer domesticus*	House Sparrow	No	No	LC/LC

76.	*Passer hispaniolensis*	Spanish Sparrow	No	No	LC/LC
77.	*Passer montanus*	Eurasian Tree Sparrow	No	No	LC/LC
78.	*Pelecanus onocrotalus*	Great white pelican	Yes	Vulnerable	LC/LC
79.	*Pernis apivorus*	European honey-buzzard	Yes	Vulnerable	LC/LC
80.	*Phalacrocorax carbo*	Great cormorant	No	No	LC/LC
81.	*Phasianus colchicus*	Common pheasant	No	No	LC/LC
82.	*Philomachus pugnax*	Ruff	Yes	No	LC/ Near Threatened
83.	*Phylloscopus collybita*	Common Chiffchaff	No	No	LC/LC
84.	*Pica pica*	Eurasian magpie	No	No	LC/LC
85.	*Platalea leucorodia*	Eurasian spoonbill	Yes	No	LC/LC
86.	*Plegadis falcinellus*	Glossy ibis	Yes	Vulnerable	LC/LC
87.	*Pluvialis apricaria*	Eurasian golden plover	Yes	No	LC/LC
88.	*Riparia riparia*	Collared sand martin	No	No	LC/LC
89.	*Saxicola rubetra*	Whinchat	No	No	LC/LC
90.	*Saxicola rubicola*	European stonechat	No	-	LC/LC
91.	*Streptopelia decaocto*	Eurasian Collared-dove	No	No	LC/LC
92.	*Streptopelia turtur*	European Turtle-dove	No	Vulnerable	VU/VU
93.	*Sturnus vulgaris*	Common Starling	No	-	LC/LC
94.	*Sylvia curruca*	Lesser Whitethroat	No	No	LC/LC
95.	*Tadorna ferruginea*	Ruddy shelduck	Yes	Critically Endangered	LC/LC
96.	*Tadorna tadorna*	Common shelduck	No	Vulnerable	LC/LC
97.	*Tringa nebularia*	Common greenshank	No	No	LC/LC
98.	*Upupa epops*	Common Hoopoe	No	Vulnerable	LC/LC
99.	*Vanellus vanellus*	Northern lapwing	No	No	NT / VU

4.4.2.1 Vantage Point Survey

Vantage point survey conducted from March 2022 - February 2023 recorded 63 species of birds across the project footprint.

Species on Annex I of Bird Directive (which requires member states to establish Special Protection Areas for their conservation) and/or included as threatened species on the IUCN/ Romanian Red Lists are marked in blue in Table 4-6). In summary:

Thirty three are listed in the Annex I of Birds Directive;

Eight species are listed as Near Threatened or higher on the IUCN global or European list;

Twenty eight species are listed in the Romanian Red Book of Vertebrates as Vulnerable or higher;

No endemic bird species were recorded.

Table 4-5 presents the species diversity recorded at the during the monitoring campaign and identifies the number of flights at high risk of collision with the wind turbines.

In terms of abundance, Vantage point 7 recorded the most birds, with 5226 individuals, followed by VP6 with 5097 and VP4 with 4295 (see Figure 4-4).

Figure 4-4 Birds Distribution per Vantage Point

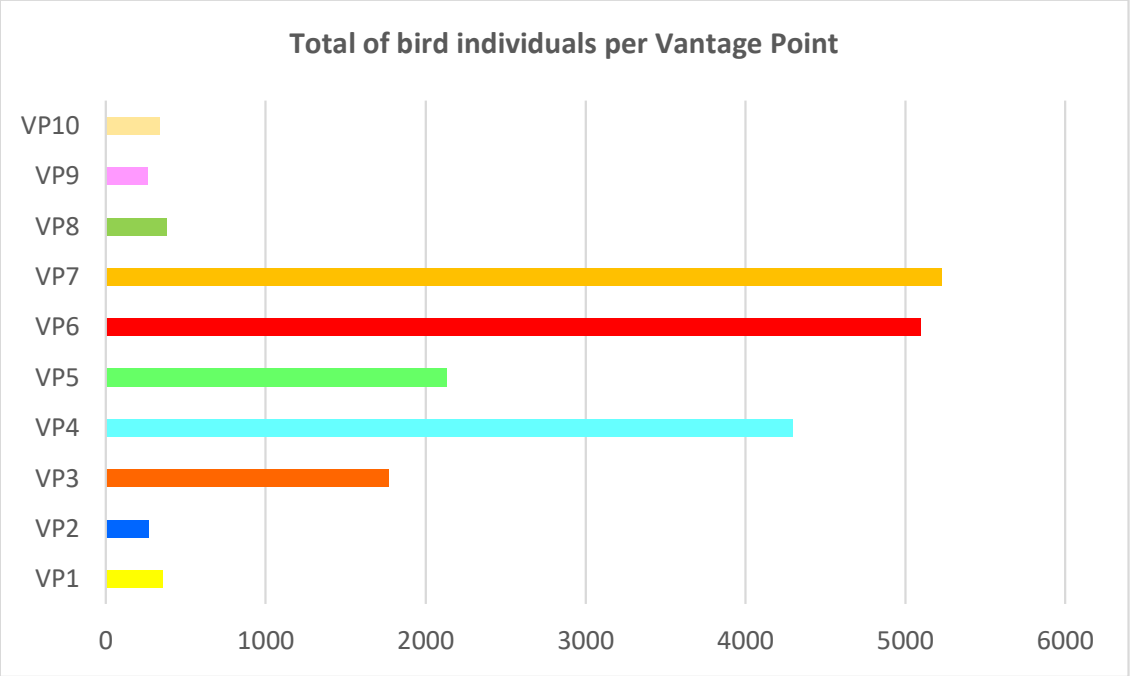


Table 4-5 Summary of Vantage Points Data

Quarter	No and list of species	No of flights	No of flights at risk	Number and list of species per Vantage Point									
				VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10
Q1 (March 2022 – May 2022)	***8351 (numbers in bold are total birds recorded)***	1006	186	**62**	**111**	**345**	**1334**	**992**	**2677**	**2255**	**288**	**139**	**148**
	Accipiter gentilis	1	0	*Accipiter gentilis*	*Accipiter nisus*	*Accipiter nisus*	*Accipiter nisus*	*Accipiter nisus*	*Accipiter nisus*	*Anas platyrhynchos*	*Accipiter nisus*	*Accipiter nisus*	*Accipiter nisus*
	Accipiter nisus	29	6	*Accipiter nisus*	*Anser albifrons*	*Ardea alba*	*Anas crecca*	*Alauda arvensis*	*Anas crecca*	*Aquila pomarina*	*Aquila pomarina*	*Aquila pomarina*	*Buteo buteo*
	Alauda arvensis	1	0	*Aquila pomarina*	*Aquila pomarina*	*Anas platyrhynchos*	*Anas platyrhynchos*	*Anas platyrhynchos*	*Anas platyrhynchos*	*Ardea alba*	*Ardea cinerea*	*Buteo buteo*	*Buteo rufinus*
	Anas crecca	3	0	*Buteo buteo*	*Ardea alba*	*Aquila pomarina*	*Anas querquedula*	*Aquila pomarina*	*Anas querquedula*	*Ardea cinerea*	*Ardea purpurea*	*Buteo rufinus*	*Ciconia ciconia*
	Anas platyrhynchos	23	4	*Ciconia ciconia*	*Buteo buteo*	*Ardea cinerea*	*Aquila pomarina*	*Ardea alba*	*Aquila pomarina*	*Burhinus oedicnemus*	*Buteo buteo*	*Ciconia ciconia*	*Ciconia nigra*
	Anas querquedula	4	0	*Ciconia nigra*	*Buteo rufinus*	*Buteo buteo*	*Ardea alba*	*Ardea cinerea*	*Ardea alba*	*Buteo buteo*	*Buteo rufinus*	*Ciconia nigra*	*Circus aeruginosus*
	Anser albifrons	1	1	*Circus aeruginosus*	*Ciconia ciconia*	*Buteo lagopus*	*Ardea cinerea*	*Buteo buteo*	*Ardea cinerea*	*Ciconia ciconia*	*Ciconia ciconia*	*Circus aeruginosus*	*Corvus corax*
	Aquila pomarina	25	7	*Circus cyaneus*	*Ciconia nigra*	*Ciconia ciconia*	*Buteo buteo*	*Buteo lagopus*	*Burhinus oedicnemus*	*Ciconia nigra*	*Ciconia nigra*	*Circus cyaneus*	*Falco tinnunculus*
	Ardea alba	17	1	*Circus pygargus*	*Circaetus gallicus*	*Circaetus gallicus*	*Ciconia ciconia*	*Buteo rufinus*	*Buteo buteo*	*Circus aeruginosus*	*Circus aeruginosus*	*Circus pygargus*	*Falco vespertinus*
	Ardea cinerea	23	4	*Corvus corax*	*Circus aeruginosus*	*Circus aeruginosus*	*Ciconia nigra*	*Ciconia ciconia*	*Buteo lagopus*	*Circus cyaneus*	*Circus pygargus*	*Falco tinnunculus*	*Pelecanus onocrotalus*
	Ardea purpurea	1	0	*Falco subbuteo*	*Circus cyaneus*	*Circus aeruginosus*	*Circus aeruginosus*	*Circus aeruginosus*	*Ciconia ciconia*	*Columba palumbus*	*Phalacrocorax carbo*	*Pernis apivorus*	*Pernis apivorus*
	Burhinus oedicnemus	6	0	*Falco tinnunculus*	*Circus macrourus*	*Circus cyaneus*	*Circus cyaneus*	*Circus cyaneus*	*Ciconia nigra*	*Corvus corax*			*Circus pygargus*
	Buteo buteo	117	42	*Grus grus*	*Circus pygargus*	*Corvus frugilegus*	*Columba palumbus*	*Circus pygargus*	*Circus aeruginosus*	*Corvus frugilegus*			*Falco tinnunculus*
	Buteo lagopus	8	5	*Milvus migrans*	*Corvus corax*	*Egretta garzetta*	*Egretta garzetta*	*Columba palumbus*	*Circus cyaneus*	*Egretta garzetta*			*Falco vespertinus*
	Buteo rufinus	11	6	*Pernis apivorus*	*Falco tinnunculus*	*Falco subbuteo*	*Falco subbuteo*	*Corvus corax*	*Columba palumbus*	*Falco tinnunculus*			*Galerida cristata*
	Ciconia ciconia	135	38		*Falco vespertinus*	*Falco tinnunculus*	*Falco tinnunculus*	*Corvus frugilegus*	*Cuculus canorus*	*Pelecanus onocrotalus*			*Glareola pratincola*
	Ciconia nigra	16	8		*Pelecanus onocrotalus*	*Falco vespertinus*	*Glareola pratincola*	*Egretta garzetta*	*Egretta garzetta*	*Philomachus pugnax*			*Grus grus*
	Circaetus gallicus	3	1			*Numenius arquata*	*Himantopus himantopus*	*Falco columbarius*	*Falco tinnunculus*	*Pluvialis apricaria*			*Himantopus himantopus*
	Circus aeruginosus	42	5			*Philomachus pugnax*	*Phalacrocorax carbo*	*Falco peregrinus*	*Numenius arquata*	*Sturnus vulgaris*			*Merops apiaster*
	Circus cyaneus	52	2			*Upupa epops*	*Philomachus pugnax*	*Falco tinnunculus*	*Pelecanus onocrotalus*	*Vanellus vanellus*			*Milvus migrans*
	Circus macrourus	2	2			*Vanellus vanellus*	*Platalea leucorodia*	*Falco vespertinus*	*Philomachus pugnax*				*Numenius arquata*
	Circus pygargus	5	0				*Pluvialis apricaria*	*Galerida cristata*	*Pluvialis apricaria*				*Pelecanus onocrotalus*
	Columba palumbus	8	0				*Sturnus vulgaris*	*Glareola pratincola*	*Sturnus vulgaris*				*Philomachus pugnax*
	Corvus corax	8	0				*Tadorna tadorna*	*Merops apiaster*	*Tadorna ferruginea*				*Pluvialis apricaria*
	Corvus frugilegus	13	4				*Upupa epops*	*Milvus migrans*	*Tadorna tadorna*				*Sturnus vulgaris*
	Cuculus canorus	1	0				*Vanellus vanellus*	*Pelecanus onocrotalus*	*Vanellus vanellus*				*Tadorna tadorna*
	Egretta garzetta	17	0					*Philomachus pugnax*					*Vanellus vanellus*
	Falco columbarius	3	1					*Plegadis falcinellus*					
	Falco peregrinus	1	0					*Pluvialis apricaria*					
	Falco subbuteo	4	0					*Sturnus vulgaris*					
	Falco tinnunculus	187	7					*Tadorna ferruginea*					
	Falco vespertinus	19	6					*Tadorna tadorna*					
	Galerida cristata	2	0					*Vanellus vanellus*					
	Glareola pratincola	22	6										
	Grus grus	2	0										
	Himantopus himantopus	1	0										
	Merops apiaster	2	0										
	Milvus migrans	2	2										
	Numenius arquata	5	1										
	Pelecanus onocrotalus	6	3										
	Pernis apivorus	3	1										
	Phalacrocorax carbo	2	0										
	Philomachus pugnax	20	8										
	Platalea leucorodia	2	0										
	Plegadis falcinellus	4	2										
	Pluvialis apricaria	14	3										

Quarter	No and list of species	No of flights	No of flights at risk	Number and list of species per Vantage Point									
				VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10
	Sturnus vulgaris *Tadorna ferruginea* *Tadorna tadorna* *Upupa epops* *Vanellus vanellus*	23 3 20 2 85	2 0 0 0 8										
Q2 (June 2022 – August 2022)	***2859***	473	75	**29**	**29**	**76**	**432**	**479**	**861**	**887**	**23**	**20**	**23**
	Accipiter gentilis *Anas platyrhynchos* *Aquila pennata* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Ciconia nigra* *Circaetus gallicus* *Circus aeruginosus* *Circus pygargus* *Columba palumbus* *Corvus frugilegus* *Egretta garzetta* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Glareola pratincola* *Larus michahellis* *Pernis apivorus* *Plegadis falcinellus* *Sturnus vulgaris* *Tringa nebularia* *Vanellus vanellus*	1 2 7 8 17 34 14 61 2 20 11 5 1 4 16 13 174 62 2 3 4 1 1 1 9	0 0 6 2 2 7 6 11 2 8 1 0 0 2 0 0 10 9 1 3 2 0 1 0 2	*Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Falco subbuteo* *Falco tinnunculus* *Pernis apivorus*	*Aquila pennata* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Circaetus gallicus* *Circus aeruginosus* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus*	*Ciconia ciconia* *Circaetus gallicus* *Circus aeruginosus* *Circus pygargus* *Falco tinnunculus* *Falco vespertinus* *Vanellus vanellus*	*Anas platyrhynchos* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Circaetus gallicus* *Circus aeruginosus* *Circus pygargus* *Egretta garzetta* *Falco tinnunculus* *Falco vespertinus* *Glareola pratincola* *Vanellus vanellus*	*Anas platyrhynchos* *Aquila pennata* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Ciconia nigra* *Circaetus gallicus* *Circus aeruginosus* *Egretta garzetta* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Larus michahellis* *Pernis apivorus* *Sturnus vulgaris* *Vanellus vanellus*	*Accipiter gentilis* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Circaetus gallicus* *Circus aeruginosus* *Columba palumbus* *Corvus frugilegus* *Egretta garzetta* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Plegadis falcinellus* *Vanellus vanellus*	*Ardea cinerea* *Buteo buteo* *Ciconia ciconia* *Circus aeruginosus* *Corvus frugilegus* *Falco tinnunculus* *Falco vespertinus* *Glareola pratincola* *Tringa nebularia*	*Buteo buteo* *Ciconia ciconia* *Circus aeruginosus* *Falco subbuteo* *Falco tinnunculus*	*Buteo buteo* *Buteo rufinus* *Ciconia ciconia* *Circus aeruginosus* *Falco subbuteo* *Falco tinnunculus* *Pernis apivorus*	*Buteo buteo* *Ciconia ciconia* *Falco tinnunculus* *Pernis apivorus*
Q3 (September 2022 – November 2022)	***7606***	701	162	**158**	**85**	**1267**	**2232**	**409**	**1328**	**1894**	**40**	**82**	**111**
	Accipiter brevipes *Accipiter gentilis* *Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Aquila pennata* *Aquila pomarina* *Ardea alba* *Ardea cinerea* *Burhinus oedicnemus*	1 2 43 12 41 40 3 8 18 25 7	0 1 19 6 18 2 1 1 2 2 0	*Accipiter nisus* *Anser albifrons* *Buteo buteo* *Buteo rufinus* *Circaetus gallicus* *Circus aeruginosus* *Circus cyaneus* *Falco eleonorae* *Falco subbuteo* *Falco tinnunculus*	*Accipiter gentilis* *Accipiter nisus* *Aquila pennata* *Aquila pomarina* *Ardea alba* *Buteo buteo* *Buteo rufinus* *Circaetus gallicus* *Circus aeruginosus* *Circus cyaneus* *Falco subbuteo*	*Anas platyrhynchos* *Anser albifrons* *Aquila pomarina* *Ardea alba* *Ardea cinerea* *Burhinus oedicnemus* *Buteo buteo* *Buteo rufinus* *Ciconia ciconia*	*Ardea cinerea* *Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Aquila pomarina* *Ardea alba* *Ardea cinerea* *Burhinus oedicnemus* *Buteo buteo* *Ciconia ciconia*	*Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Circus aeruginosus* *Circus cyaneus* *Circus pygargus* *Columba palumbus*	*Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Aquila pomarina* *Ardea alba* *Ardea cinerea* *Burhinus oedicnemus* *Buteo buteo* *Buteo lagopus* *Buteo rufinus*	*Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Ciconia ciconia* *Ciconia nigra*	*Accipiter nisus* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus*	*Accipiter nisus* *Anser albifrons* *Aquila pennata* *Buteo buteo* *Buteo rufinus* *Circaetus gallicus* *Circus cyaneus* *Falco peregrinus* *Falco tinnunculus*	Accipiter brevipes Accipiter gentilis Accipiter nisus Anser albifrons Aquila pennata

Quarter	No and list of species	No of flights	No of flights at risk	Number and list of species per Vantage Point									
				VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10
	Buteo buteo *Buteo lagopus* *Buteo rufinus* *Ciconia ciconia* *Ciconia nigra* *Circaetus gallicus* *Circus aeruginosus* *Circus cyaneus* *Circus pygargus* *Columba palumbus* *Corvus corax* *Corvus frugilegus* *Cygnus cygnus* *Cygnus olor* *Egretta garzetta* *Falco columbarius* *Falco eleonorae* *Falco peregrinus* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Gallinago gallinago* *Haliaeetus albicilla* *Larus cachinnans* *Larus michahellis* *Merops apiaster* *Numenius arquata* *Pernis apivorus* *Phalacrocorax carbo* *Pluvialis apricaria* *Vanellus vanellus*	117 2 24 19 5 14 23 23 1 25 2 2 1 1 20 1 1 2 5 137 11 6 1 1 1 1 10 2 4 18 21	21 1 11 2 0 7 2 4 1 6 0 2 0 0 3 1 1 0 2 28 3 0 1 1 1 1 1 3 4 2		*Falco tinnunculus*	*Circaetus gallicus* *Circus aeruginosus* *Columba palumbus* *Egretta garzetta* *Falco tinnunculus* *Falco vespertinus* *Numenius arquata* *Pernis apivorus* *Pluvialis apricaria* *Vanellus vanellus*	*Ciconia nigra* *Circus aeruginosus* *Circus cyaneus* *Columba palumbus* *Egretta garzetta* *Falco tinnunculus* *Falco vespertinus* *Gallinago gallinago* *Numenius arquata* *Phalacrocorax carbo* *Pluvialis apricaria* *Vanellus vanellus*	*Egretta garzetta* *Falco columbarius* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Larus cachinnans* *Larus michahellis* *Merops apiaster* *Numenius arquata* *Phalacrocorax carbo* *Vanellus vanellus*	*Ciconia ciconia* *Ciconia nigra* *Circaetus gallicus* *Circus aeruginosus* *Circus cyaneus* *Columba palumbus* *Corvus corax* *Cygnus cygnus* *Cygnus olor* *Egretta garzetta* *Falco tinnunculus* *Falco vespertinus* *Gallinago gallinago* *Numenius arquata* *Phalacrocorax carbo* *Pluvialis apricaria* *Vanellus vanellus*	*Circus aeruginosus* *Circus cyaneus* *Columba palumbus* *Corvus frugilegus* *Egretta garzetta* *Falco subbuteo* *Falco tinnunculus* *Falco vespertinus* *Numenius arquata* *Pluvialis apricaria* *Vanellus vanellus*			Aquila pomarina Ardea cinerea Buteo buteo Buteo rufinus Ciconia nigra Circaetus gallicus Circus aeruginosu s Circus cyaneus Falco peregrinus Falco tinnunculus Haliaeetus albicilla Pernis apivorus
Q4 (December 2022 – February 2023)	**1302**	275	78	**106**	**44**	**79**	**297**	**253**	**231**	**190**	**28**	**20**	**54**
	Accipiter gentilis *Accipiter nisus* *Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Anser anser* *Arda cinerea* *Ardea alba* *Bueo buteo* *Buteo rufinus* *Circus cyaneus* *Columba oenas* *Columba palumbus*	2 9 9 20 9 1 11 27 48 9 20 8 2	1 0 4 13 2 1 4 6 6 5 5 3 2	*Accipiter gentilis* *Accipiter nisus* *Anser albifrons* *Bueo buteo* *Circus cyaneus* *Falco tinnunculus* *Phalacrocorax carbo*	*Accipiter nisus* *Anser albifrons* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Falco tinnunculus* *Haliaeetus albicilla*	*Anas platyrhynchos* *Ardea alba* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Columba oenas* *Corvus corax* *Falco tinnunculus*	*Ardea alba* *Anas crecca* *Anas platyrhynchos* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Columba palumbus* *Corvus corax* *Falco tinnunculus* *Tadorna tadorna* *Vanellus vanellus*	*Anas crecca* *Anas platyrhynchos* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Corvus corax* *Falco columbarius* *Falco tinnunculus* *Larus cachinnans* *Vanellus vanellus*	*Anas crecca* *Anas platyrhynchos* *Anser albifrons* *Arda cinerea* *Ardea alba* *Buteo buteo* *Buteo rufinus* *Circus cyaneus* *Columba oenas* *Corvus corax* *Falco tinnunculus* *Tadorna tadorna* *Vanellus vanellus*	*Anser albifrons* *Ardea alba* *Ardea cinerea* *Buteo buteo* *Circus cyaneus* *Columba oenas* *Corvus corax* *Falco tinnunculus* *Vanellus vanellus*	*Accipiter nisus* *Anser albifrons* *Buteo buteo* *Buteo rufinus* *Falco tinnunculus*	*Accipiter nisus* *Buteo buteo* *Cygnus olor* *Falco tinnunculus* *Phalacrocorax carbo*	*Accipiter gentilis* *Accipiter nisus* *Anser anser* *Buteo buteo* *Buteo rufinus* *Circus cyaneus*

Quarter	No and list of species	No of flights	No of flights at risk	Number and list of species per Vantage Point									
				VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP8	VP9	VP10
	Corvus corax	28	11										*Falco tinnunculus*
	Cygnus olor	1	0										
	Falco columbarius	1	1										
	Falco tinnunculus	52	2										
	Haliaeetus albicilla	1	1										
	Larus cachinnans	4	4										
	Phalacrocorax carbo	2	1										
	Tadorna tadorna	3	2										
	Vanellus vanellus	8	4										

Table 4-6 List of Recorded Focal Species and their Conservation Status

No.	Scientific Name	Common Name	Annex I Birds Directive	Red Book of Vertebrates from Romania Status	IUCN Red List Global/European	Location of Recordings
1.	*Accipiter brevipes*	Levant Sparrowhawk	Yes	Vulnerable	LC/LC	VP 10
2.	*Accipiter gentilis*	Northern Goshawk	No	No	LC/LC	VP1, VP2, VP6, VP 10
3.	*Accipiter nisus*	Eurasian Sparrowhawk	No	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
4.	*Alauda arvensis*	Eurasian skylark	No	No	LC/LC	VP5
5.	*Anas crecca*	Common teal	No	No	LC/LC	VP4, VP5, VP6, VP7
6.	*Anas platyrhynchos*	Mallard	No	No	LC/LC	VP3, VP4, VP5, VP6, VP7
7.	*Anas querquedula*	Garganey	No	No	LC/LC	VP4, VP6
8.	*Anser albifrons*	Greater white-fronted goose	No	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
9.	*Anser anser*	Greylag Goose	No	No	LC/LC	VP10
10.	*Aquila pennata*	Booted eagle	Yes	Critically Endangered	LC/LC	VP2, VP5, VP9, VP 10
11.	*Aquila pomarina*	Lesser Spotted Eagle	Yes	Vulnerable	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
12.	*Ardea alba*	Great White Egret	Yes	Endangered	LC/LC	VP2, VP3, VP4, VP5, VP6, VP7
13.	*Ardea cinerea*	Grey heron	No	No	LC/LC	VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP10
14.	*Ardea purpurea*	Purple heron	Yes	Endangered	LC/LC	VP9
15.	*Burhinus oedicnemus*	Eurasian thick-knee	Yes	Endangered	LC/LC	VP3, VP4, VP6, VP7
16.	*Buteo buteo*	Eurasian buzzard	No	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
17.	*Buteo lagopus*	Rough-legged Buzzard	No	No	LC/LC	VP3, VP5, VP6
18.	*Buteo rufinus*	Long-legged buzzard	Yes	Vulnerable	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
19.	*Ciconia ciconia*	White stork	Yes	Vulnerable	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
20.	*Ciconia nigra*	Black stork	Yes	Vulnerable	LC/LC	VP1, VP2, VP4, VP5, VP6, VP7, VP 9, VP10
21.	*Circaetus gallicus*	Short-toed snake-eagle	Yes	Vulnerable	LC/LC	VP1, VP2, VP4, VP5, VP6, VP 9, VP10
22.	*Circus aeruginosus*	Western marsh-harrier	Yes	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
23.	*Circus cyaneus*	Hen harrier	Yes	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10

No.	Scientific Name	Common Name	Annex I Birds Directive	Red Book of Vertebrates from Romania Status	IUCN Red List Global/European	Location of Recordings
24.	*Circus macrourus*	Pallid harrier	Yes	Endangered	Near Threatened /LC	VP2
25.	*Circus pygargus*	Montagu's harrier	Yes	Endangered	LC/LC	VP1, VP2, VP3, VP4, VP5, VP7, VP8, VP10
26.	*Columba oenas*	Stock dove	No	No	LC/LC	VP3, VP6, VP7
27.	*Columba palumbus*	Common woodpigeon	No	No	LC/LC	VP3, VP4, VP5, VP6, VP7
28.	*Corvus corax*	Common raven	No	Endangered	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP 9, VP10
29.	*Corvus frugilegus*	Rook	No	No	LC/Vulnerable	VP3, VP5, VP6, VP7
30.	*Cuculus canorus*	Common cuckoo	No	No	LC/LC	VP6
31.	*Cygnus cygnus*	Whooper Swan	Yes	No	LC/LC	VP6
32.	*Cygnus olor*	Mute Swan	No	No	LC/LC	VP6, VP9
33.	*Egretta garzetta*	Little egret	Yes	Endangered	LC/LC	VP3, VP5, VP6, VP7
34.	*Falco columbarius*	Merlin	Yes	No	LC/Vulnerable	VP5
35.	*Falco eleonorae*	Eleonora's Falcon	Yes	No	LC/LC	VP1
36.	*Falco peregrinus*	Peregrine Falcon	Yes	Endangered	LC/LC	VP5, VP9, VP10
37.	*Falco subbuteo*	Eurasian hobby	No	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8
38.	*Falco tinnunculus*	Common kestrel	No	No	LC/LC	VP1, VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP 9, VP10
39.	*Falco vespertinus*	Red-footed falcon	Yes	Vulnerable	Vulnerable /Vulnerable	VP2, VP3, VP4, VP5, VP6, VP7, VP8, VP9
40.	*Galerida cristata*	Crested lark	No	No	LC/LC	VP5
41.	*Gallinago gallinago*	Common Snipe	No	No	LC/VU	VP4, VP6
42.	*Glareola pratincola*	Collared pratincole	Yes	Vulnerable	LC/LC	VP4, VP5, VP7
43.	*Grus grus*	Common crane	Yes	Vulnerable	LC/LC	VP1, VP10
44.	*Haliaeetus albicilla*	White-tailed sea-eagle	Yes	Critically Endangered	LC/LC	VP2, VP10
45.	*Himantopus himantopus*	Black-winged stilt	Yes	Endangered	LC/LC	VP4
46.	*Larus cachinnans*	Caspian Gull	No	No	LC/LC	VP5
47.	*Larus michahellis*	Yellow-legged Gull	No	No	LC/LC	VP5
48.	*Merops apiaster*	European bee-eater	No	No	LC/LC	VP5
49.	*Milvus migrans*	Black kite	Yes	Critically Endagered	LC/LC	VP1, VP5
50.	*Numenius arquata*	Eurasian curlew	No	No	Near Threatened / Near Threatened	VP3, VP4, VP5, VP7
51.	*Pelecanus onocrotalus*	Great white pelican	Yes	Vulnerable	LC/LC	VP2, VP5, VP6, VP7, VP9

No.	Scientific Name	Common Name	Annex I Birds Directive	Red Book of Vertebrates from Romania Status	IUCN Red List Global/European	Location of Recordings
52.	*Pernis apivorus*	European honey-buzzard	Yes	Vulnerable	LC/LC	VP1, VP3, VP5, VP9, VP10
53.	*Phalacrocorax carbo*	Great cormorant	No	No	LC/LC	VP1, VP4, VP5, VP6, VP9
54.	Philomachus pugnax	Ruff	Yes	No	LC/ Near Threatened	VP3, VP4, VP5, VP6, VP7
55.	Platalea leucorodia	Eurasian spoonbill	Yes	No	LC/LC	VP4
56.	*Plegadis falcinellus*	Glossy ibis	Yes	Vulnerable	LC/LC	VP5, VP6
57.	*Pluvialis apricaria*	Eurasian golden plover	Yes	No	LC/LC	VP3, VP4, VP5, VP6, VP7
58.	*Sturnus vulgaris*	Common Starling	No	-	LC/LC	VP4, VP5, VP6, VP7
59.	*Tadorna ferruginea*	Ruddy shelduck	Yes	Critically Endangered	LC/LC	VP5, VP6
60.	*Tadorna tadorna*	Common shelduck	No	Vulnerable	LC/LC	VP4, VP5, VP6
61.	*Tringa nebularia*	Common greenshank	No	No	LC/LC	VP7
62.	*Upupa epops*	Common Hoopoe	No	Vulnerable	LC/LC	VP3, VP4
63.	*Vanellus vanellus*	Northern lapwing	No	No	Near Threatened /Vulnerable	VP3, VP4, VP5, VP6, VP7

4.4.2.2 Breeding bird

Of 43 species recorded during the breeding bird surveys, 31 species were confirmed breeding[11]. The species and maximum number of individuals observed monthly during April – July 2022 are given in Table 4-7.

Species on Annex I of Bird Directive (which requires member states to establish Special Protection Areas for their conservation) and/or included as threatened species on the IUCN/ Romanian Red Lists are marked in blue. In addition, qualifying interest features of ROSPA0142 Valea Călmățuiului Special Protection Area are marked in bold.

The collected data reveal that most of the species are either wetland breeding birds, or relatively common and/or widespread farmland birds whose nesting habits are likely to be linked to changing crop patterns and/or retained habitat features such as ditches, thickets and trees.

Given that counts for some species were often higher in June, this appears to be linked to the appearance of fledged juveniles (e.g. *Corvus frugilegus*, *Sturnus vulgaris* and *Vanellus vanellus*).

Breeding bird surveys found evidence of nest site for *Falco tinunclus, Ciconia ciconia and Athene noctule*. Two nests of *Anthene noctule* were confirmed within the area of VP 10 and VP2, two nests of *Ciconia Ciconia* within VP10 and VP4 while only one nest of *Falco tinunculus* was located within VP 10.

Table 4-7 Breeding bird transect peak counts

No.	Species	Transect 1			Transect 2			Transect 3			Transect 4			Breeding status
		April	May	June	April	May	June	April	May	June	April	May	June	
1.	*Acrocephalus arundinaceus*	-	3	3	-	1	5	-	-	-	-	1	1	Possible breeding
2.	*Acrocephalus palustris*	-	-	-	-	1	-	-	2	-	-	-	-	Possible breeding
3.	*Alauda arvensis*	3	4	-	7	5	-	9	3	5	3	3	2	Confirmed breeding
4.	*Anas platyrhynchos*	2	12	-	-	-	-	-	-	-	4	-	7	Confirmed breeding
5.	*Anthus campestris*	-	-	-	-	-	4	-	2	2	-	-	-	Confirmed breeding

11 Breeding status was based on the British Trust for Ornithology Breeding Status Codes https://www.bto.org/sites/default/files/u36/downloads/breedingcodes.pdf

No.	Species	Transect 1			Transect 2			Transect 3			Transect 4			Breeding status
		April	May	June	April	May	June	April	May	June	April	May	June	
6.	*Ardea alba*	-	-	7	-	-	-	-	-	-	1	-	-	Confirmed breeding
7.	*Ardea cinerea*	-	-	8	-	-	-	-	-	-	-	-	-	Confirmed breeding
8.	*Athene noctua*	-	-	-	-	-	-	-	-	-	-1	-	-	Confirmed breeding
9.	*Carduelis carduelis*	-	-	4	7	7	-	-	-	-	2	8	6	Confirmed breeding
10.	***Ciconia ciconia***	**2**	**2**	**4**	**2**	**2**	-	**4**	**2**	**4**	-	-	-	**Confirmed breeding**
11.	*Columba palumbus*	-	11	9	-	5	2	-	-	-	8	4	-	Confirmed breeding
12.	*Corvus frugilegus*	11	22	50	8	6	51	-	-	6	6	11	8	Confirmed breeding
13.	*Cuculus canorus*	-	-	8	-	1	11	-	-	-	-	-	-	Confirmed breeding
14.	*Delichon urbicum*	8	8	36	-	-	-	-	-	5	-	8	6	Confirmed breeding
15.	*Egretta garzetta*	-	-	4	-	-	-	-	-	-	-	-	3	Confirmed breeding
16.	*Emberiza calandra*	6	8	-	12	13	4	7	9	6	9	7	7	Confirmed breeding
17.	*Galerida cristata*	2	2	4	4	-	-	4	-	8	-	4	8	Confirmed breeding
18.	*Gallinula chloropus*	-	-	-	-	-	-	-	-	-	1	-	-	Probably breeding
19.	***Himantopus himantopus***	**2**	**4**	-	-	-	-	-	-	-	-	-	-	**Confirmed breeding**
20.	*Hirundo rustica*	4	19	47	4	17	22	-	13	6	4	25	13	Confirmed breeding
21.	*Lanius collurio*	-	-	-	-	2	-	-	4	4	-	-	-	Probably breeding
22.	*Lanius minor*	-	-	-	-	-	-	-	-	-	-	1	-	Probably breeding
23.	*Luscinia megarhynchos*	1	1	-	-	-	-	-	-	-	-	-	-	Possible breeding
24.	*Merops apiaster*	-	15	8	-	-	-	-	-	-	-	-	-	Confirmed breeding
25.	*Motacilla flava*	13	5	-	21	19	-	1	7	6	2	6	6	Confirmed breeding
26.	*Nycticorax nycticorax*	-	-	8	-	-	-	-	-	-	-	-	-	Confirmed breeding

No.	Species	Transect 1			Transect 2			Transect 3			Transect 4			Breeding status
		April	May	June	April	May	June	April	May	June	April	May	June	
27.	*Oenanthe oenanthe*	-	-	7	-	1	-	-	-	-	-	2	4	Confirmed breeding
28.	*Oriolus oriolus*	-	-	1	-	2	1	-	-	-	-	2	-	Possible breeding
29.	*Passer domesticus*	-	12	16	6	8	44	-	5	22	2	-	15	Confirmed breeding
30.	*Passer hispaniolensis*	-	-	8	-	-	-	-	-	-	-	-	-	Confirmed breeding
31.	*Passer montanus*	-	-	-	-	-	-	-	-	-	-	4	-	Probable breeding
32.	*Phylloscopus collybita*	-	-	-	1	-	-	-	-	-	-	-	-	Possible breeding
33.	*Pica pica*	3	10	13	-	7	32	-	6	9	7	5	6	Confirmed breeding
34.	*Plegadis falcinellus*	-	-	4	-	-	-	-	-	-	-	-	-	Confirmed breeding
35.	*Riparia riparia*	-	-	44	-	-	-	-	-	-	-	-	-	Confirmed breeding
36.	*Streptopelia decaocto*	-	-	13	-	5	8	-	-	-	4	5	7	Confirmed breeding
37.	*Streptopelia turtur*	-	-	-	-	-	-	-	-	-	-	1	-	Probable breeding
38.	*Sturnus vulgaris*	12	14	164	11	9	62	-	-	12	-	12	8	Confirmed breeding
39.	*Sylvia curruca*	-	-	-	1	-	-	-	-	-	-	-	-	Possible breeding
40.	*Tadorna ferruginea*	-	2	-	-	-	-	-	-	-	-	-	-	Probable breeding
41.	***Tadorna tadorna***	**4**	**6**	-	-	-	-	-	-	-	-	-	-	**Confirmed breeding**
42.	*Upupa epops*	1	2	9	1	-	-	2	-	-	2	2	1	Confirmed breeding
43.	*Vanellus vanellus*	8	6	22	22	-	-	4	-	-	-	-	-	Confirmed breeding

4.5 Bats

A total of 15 species or species groups[12] of bats were recorded during the survey period, representing 46% of the total bat species (32 species) found in Romania.

4.5.1 Point counts and ultrasound transects

According to the field data analysis, during April – October 2022, eleven species or species groups were recorded using point counts and ultrasound transects method. The most frequently recorded bat species were *Pipistrellus nathusii/kuhlii* (with 776 contacts), followed by *Nyctalus leisleri* (with 133 contacts). The least recorded bat species were *Barbastella barbastellus* (only one contact in April 2022), *Plecotus sp.* (four contacts, one in April and three in August), *Hypsugo savii* (six contacts, five in August and once in October) – see Figure 4-5**.**

All species are listed in Annex IV (strictly protected species), and two of them are listed in Annex II (species that member states are required to designate sites for) of the Habitat Directive. None of the Sites of Community Interest located within 10-15km area from the Project footprint lists bats as qualifying features. According to IUCN Red list, the following species are globally threatened at international level (marked in blue in Table 4-8).

- *Barbastella barbastellus* – Western Barbastelle, assessed globally as Near Threatened and at European level as Vulnerable;
- *Nyctalus lasiopterus* – Giant Noctule, assessed globally as Vulnerable

Figure 4-5 Bat Species Recordings per ultrasound transects within the Project Area from April to October

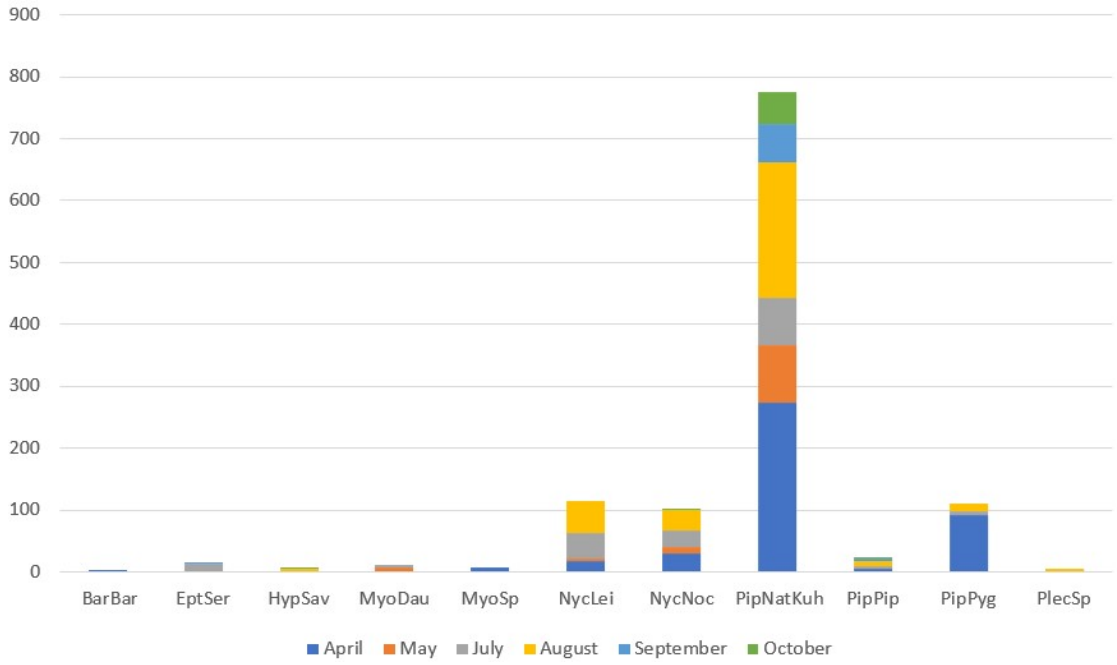


Figure 4-6, Figure 4-7 and Figure 4-8 illustrates the distribution of bat species within the Project area during the six months monitoring.

[12] Bat groups refer to contacts that could not be identified at the species level, due to overlapping call characteristics. For these the following commonly adopted groupings were used: *Pipistrellus nathusii/Pipistrellus kuhlii*, *Myotis sp* (can refer to ten species), *Plecotus sp.* (can refer to two species)

Figure 4-6 Mobile ultrasound transects results - Spring (April – May) 2022

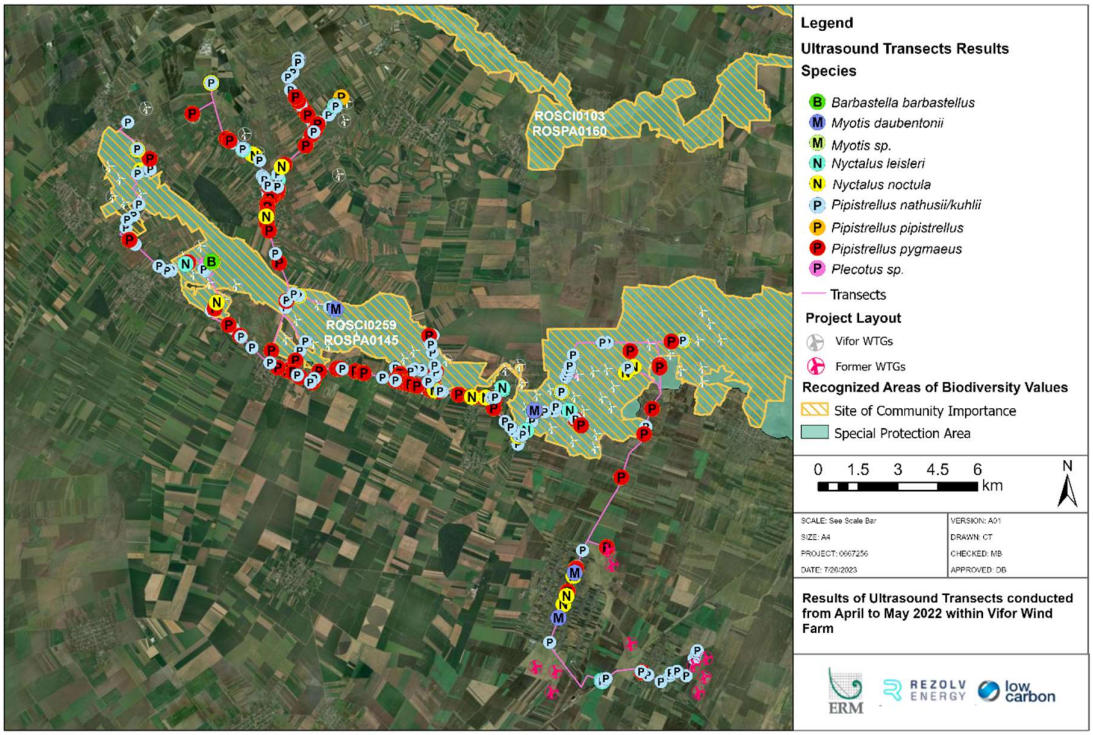


Figure 4-7 Mobile ultrasound transects results - Summer (July – Aug) 2022

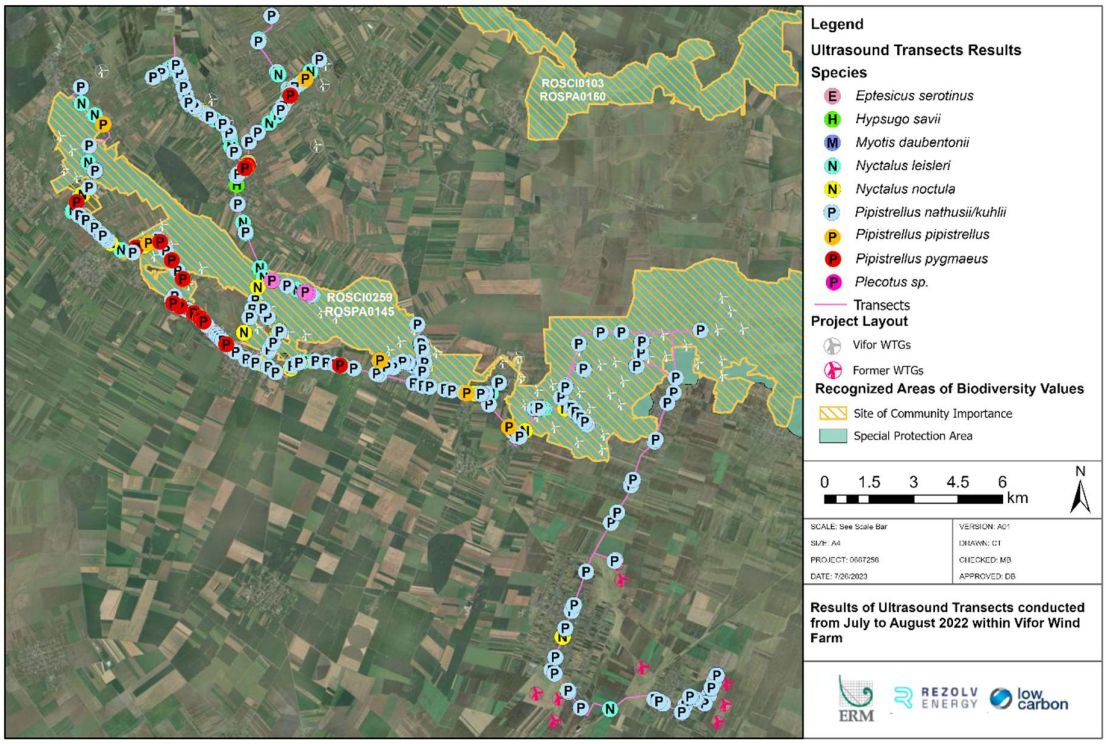
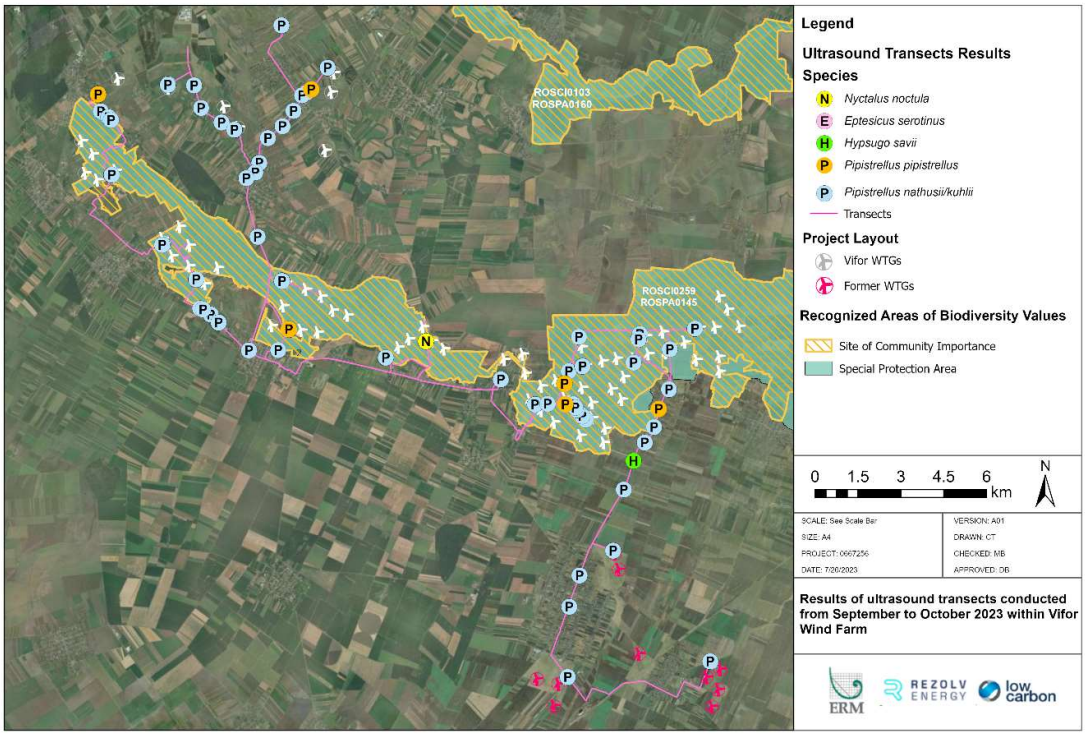


Figure 4-8 Mobile ultrasound transects results - Autumn (Sept – Oct) 2022



4.5.2 Static ultrasound detectors

The detectors recorded 25,714 registrations in spring (April), 15,049 registrations in summer (July, August) and 5,245 in autumn (September, October).

Calls of 15 bat species or species groups were identified on the project`s area (Table 4-8). The misidentification of calls from *Pipistrellus nathusii* and *Pipistrellus kuhlii* is possible because these species have similar and, overlapping parameters of ultrasound signals. Also, commonly adopted groupings were used for *Myotis sp.* (can refer to 10 species) and *Plecotus sp.* (can refer to 2 species).

During the spring recording, very high levels of activity were recorded at ST5 near turbines no 47-48-49-51-52 with a cumulative total over the five nights in April of 15,206 contacts The Bat Activity Index (BAI)[13] shows higher activity near the Călmățui River and the northwestern forested areas. Bat diversity was highest in the central part of the Project site, near an irrigation canal.

Among the summer recordings, the highest recorded number of total contacts was 3,325 recorded over ten nights in July and August at ST10, near turbines 71 and 72. Maximum species diversity was reached at ST1, ST10 and ST5 (12 species/groups), located in the central and northern part of the site. The BAI index per static detector reached a peak at the ST10 monitoring point, with significant differences compared to all the other stations. *Pipistrellus nathusii/kuhlii* accounted for most of the recordings (most likely *Pipistrellus kuhlii*).

During autumn the maximum total count was 2,763 contacts detected over ten nights in September and October by ST5, near turbines 46-47-59-51-52. Maximum species diversity was reached at ST5, ST8 and ST10 (9 species/groups), located in the central, northern, and south-eastern part of the site. The BAI index per static detector reached a peak at the ST5 monitoring point, with significant differences compared to all the other stations.

[13] The total number of contacts divided by the total number of nights the static detector was deployed.

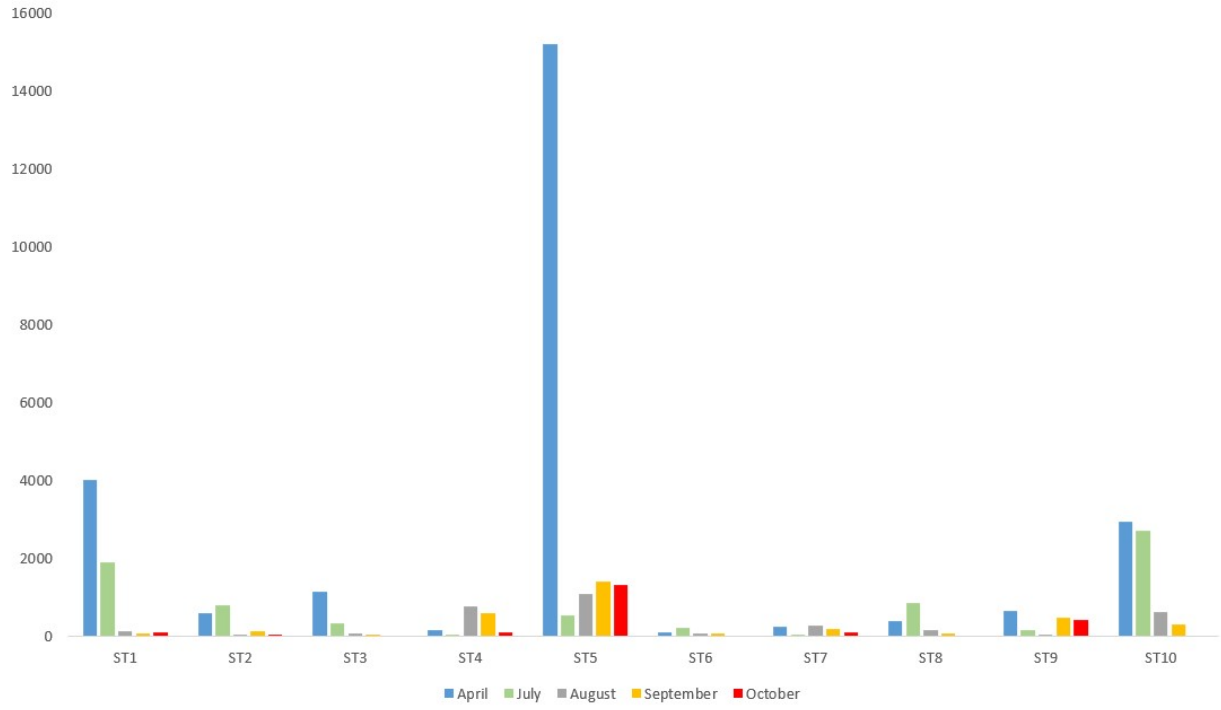
According to the data collected ST1, ST5 and ST10 are the main areas of higher activity, due to the locations where these were installed - foraging sites, water bodies and potential roosts that can serve as points of attraction for bats.

ST1 and ST 10 were installed near Călmățui and Negreasca streams and also on the path to two high potential roosts (one natural – woodland between Maxenu and Pogonele; one anthropogenic – abandoned church in Maxenu).

ST 5 was placed on Călmățui river banks which provides appropriate habitat for drinking and foraging. In addition, this location also represents the path to three anthropogenic high potential roosts (abandoned house in Udați – Lucieni; abandoned industrial building in Caragele; abandoned house in Caragele).

The highest bat activity was recorded during April (Figure 4-9), and most of it was at the ST5 monitoring point, which may suggest a migratory path towards northern maternity roosts. Some species can migrate to Russia for this season. There was no obvious return migration in the autumn, although as migration may occur over a small number of favourable nights of optimal weather, the possibility that the survey campaigns did not overlap with these cannot be excluded.

Figure 4-9 Bat activity (number of calls per month) registered at each static detector from April to October



Calls of *Pipistrellus nathusii/kuhlii* are dominant on project`s area (27,877 contacts) over the three seasons, followed by *Nyctalus noctula* (6,913 contacts) and, *Pipistrellus pipistrellus* (3,309 contacts). In addition, of the least frequently recorded species, there were only 34 contacts for *Barbastella barbastellus*, which is listed on Annex II, IV of habitats Directive and Near Threatened (EU)/Vulnerable (globally) on IUCN Red list – see figures below.

Figure 4-10 Species`diversity recorded at static detectors from April to October

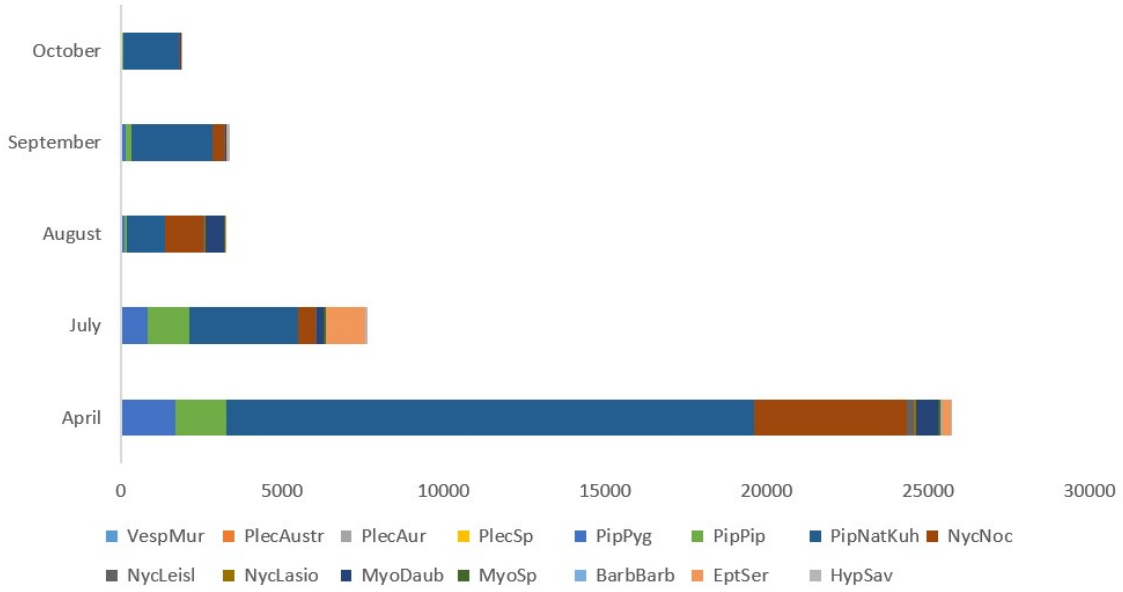


Figure 4-11 Static monitoring points (species diversity and BAI) during Spring 2022

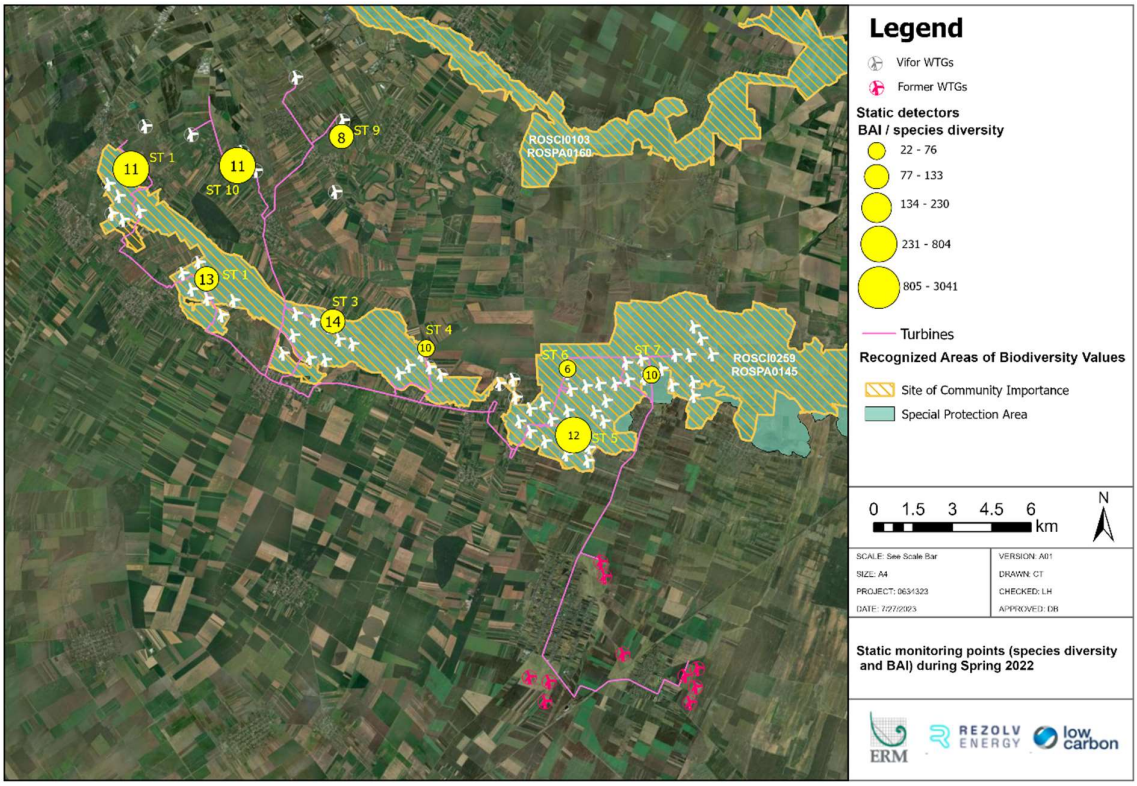


Figure 4-12Static monitoring points (species diversity and BAI) during Summer 2022

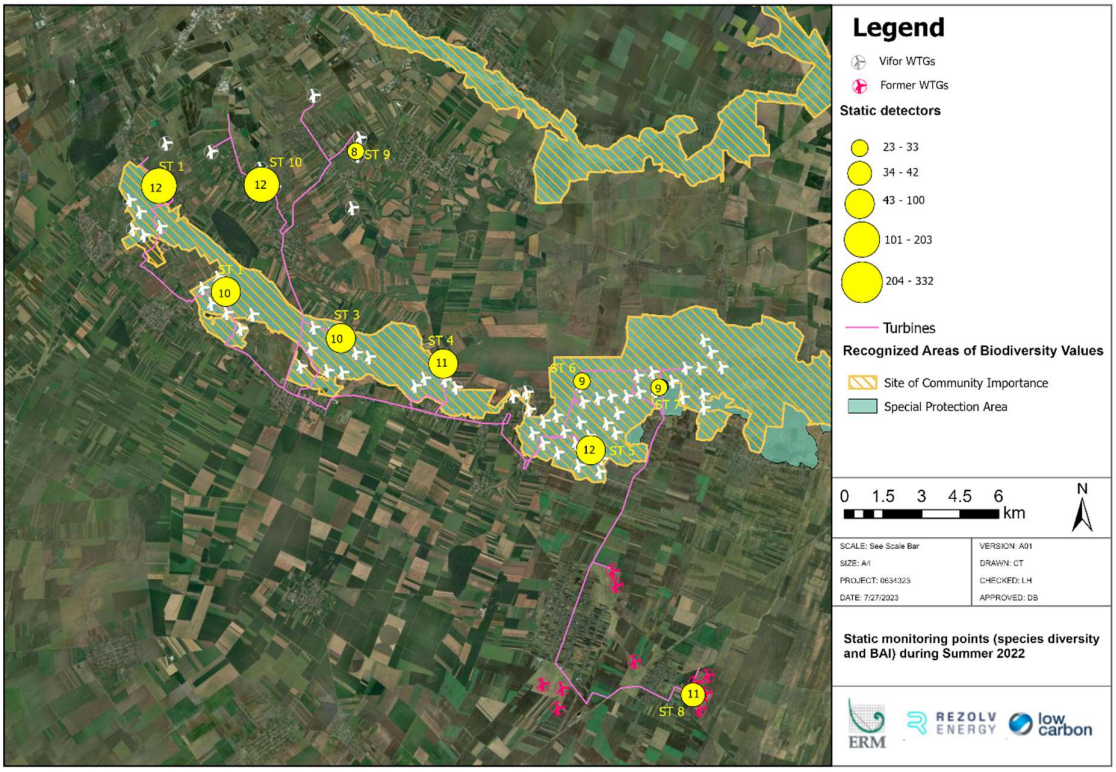


Figure 4-13Static monitoring points (species diversity and BAI) during Autumn 2022

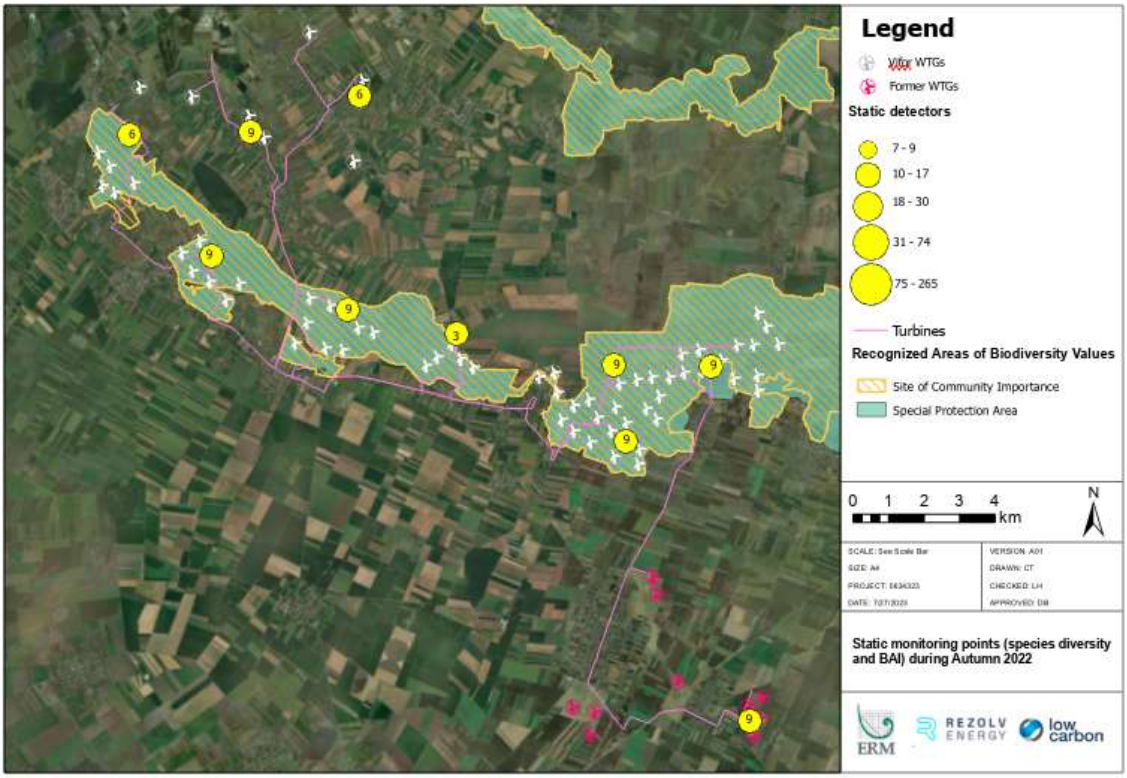


Table 4-8 List of bat species recorded within Vifor Wind Farm

No.	Scientific Name	Common Name	Detection type[14]	No of contacts during all transects	No of contacts during all static detection	IUCN Red List Global European/Global	Habitats Directive	Location in relation to the Project	Risk of wind turbine collision[15]
1.	*Barbastella barbastellus*	Western Barbastelle	S -T	1	34	NT/VU	Annex II, IV	Transects: proximity of WTG 12 Statics: ST1, ST2, ST3, ST4, ST5	Medium
2.	*Eptesicus serotinus*	Serotine	S - T	15	1682	LC/LC	Annex IV	Ubiquitous	Medium
3.	*Hypsugo savii*	Savi's Pipistrelle	S - T	6	154	LC/LC	Annex IV	Ubiquitous	High
4.	*Myotis daubentonii*	Daubenton's Myotis	S -T	11	2558	LC/LC	Annex IV	Ubiquitous	Low
5.	*Myotis sp.*	-	S -T	8	159	-	-	Ubiquitous	Low
6.	*Nyctalus lasiopterus*	Giant Noctule	S	0	115	VU/DD	Annex II	ST1, ST2, ST3, ST4, ST5, ST6, ST7, ST9, ST10	High
7.	*Nyctalus leisleri*	Lesser Noctule	S -T	114	355	LC/LC	Annex IV	Ubiquitous	High
8.	*Nyctalus noctula*	Noctule	S -T	102	6913	LC/LC	IV	Ubiquitous	High
9.	*Pipistrellus nathusii/kuhlii*	Nathusius' / Kuhl's Pipistrelle	S-T	776	27.877	LC/LC	IV	Ubiquitous	High
10.	*Pipistrellus pipistrellus*	Common Pipistrelle	S -T	24	3309	LC/LC	IV	Ubiquitous	High
11.	*Pipistrellus pygmaeus*	Soprano Pipistrelle	S -T	111	2.796	LC/LC	IV	Ubiquitous	High
12.	*Plecotus auritus*	Brown Long-eared bat	S	0	19	LC/LC	IV	ST1, ST2, ST3, ST5, ST10	Low
13.	*Plecotus austriacus*	Grey big-eared bat	S	0	23	LC/LC	IV	ST1, ST2, ST5, ST8, ST9, ST10	Low

[14] T=transects, S=static detector
[15] According to Eurobats Guide EUROBATS_6_wind turbines_engl_web_neu.pdf

No.	Scientific Name	Common Name	Detection type[14]	No of contacts during all transects	No of contacts during all static detection	IUCN Red List Global European/Global	Habitats Directive	Location in relation to the Project	Risk of wind turbine collision[15]
14.	*Plecotus sp.*	-	S -T	4	7	-	-	Transects: proximity of WTG 12, WTG16, WTG 18 Statics: ST2, ST3, ST4, ST5, ST7, ST9, ST 10	Low
15.	*Vespertilio murinus*	Particoloured bat	S	0	7	LC	IV	ST3, ST4, ST7, ST8, ST10	High

4.5.3 Roost searches

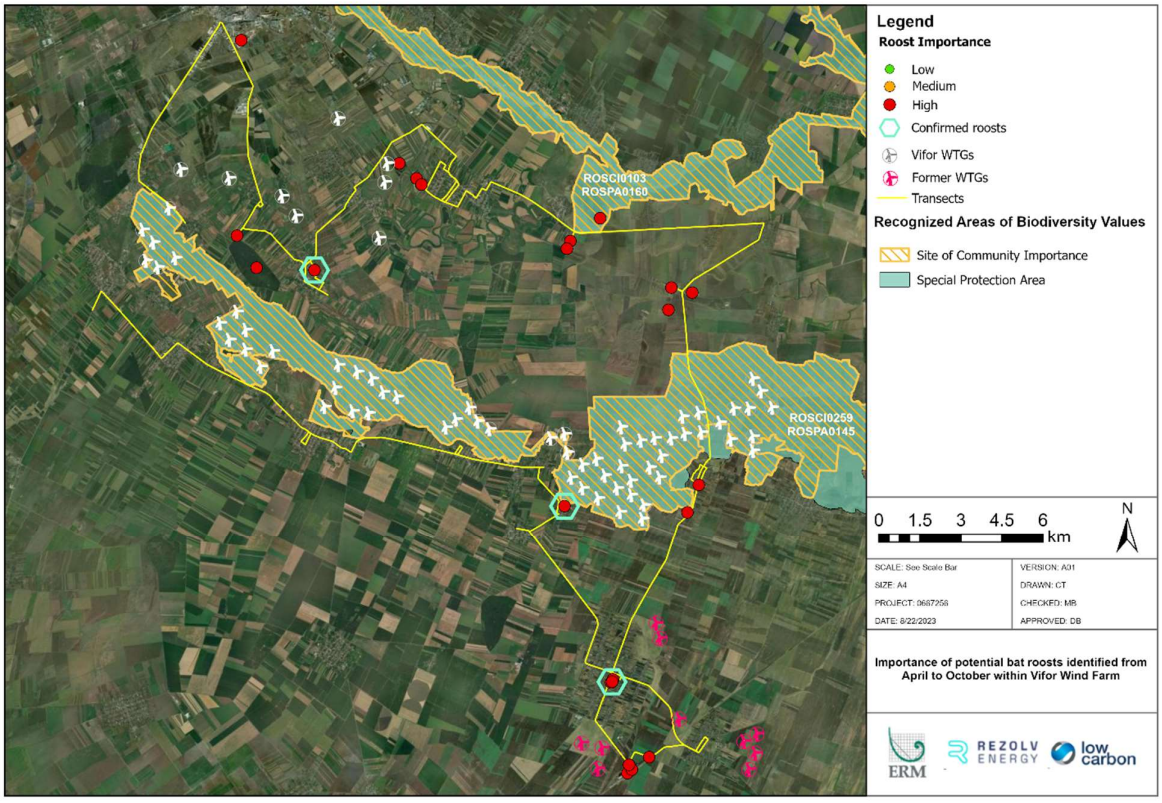
Potential bat roosts in the Project Area can be divided into: *anthropogenic* – abandoned buildings (residential buildings, industrial buildings, railway station), churches, bridges and *natural* - forest, tree lines.

Where access was possible roost sites were identified as high, medium or low based on existing signs, condition and suitability of buildings, and constraints on likely use by bats.

Two roosts of *Pipistrellus kuhlii* were confirmed during the summer survey - an abandoned church in Maxenu and an abandoned house in Pogoanele, while the autumn survey confirmed the maternity roost of *Eptesicus serotinus* in an abandoned house in Udati- Lucieni.

These are mapped in Figure 4-14. Where access and health and safety allowed emergence surveys of high potential roosts were undertaken.

Figure 4-14 Importance of potential bat roosts identified from April – October monitoring campaign



4.5.4 Emergence/re-entry surveys at high bat roost potential sites.

Emergency/ re-entry studies were conducted from August to October at locations which were deemed of high importance where access was possible and health and safety allowed.

In August roosting was confirmed at the Pogoanele abandoned four story building which hosted a maternity colony of *Pipistrellus kuhlii*. The abandoned sanitary building from Caragele and the abandoned train station in Cilibia did not record any entry or re-entry bat activity.

Autumn studies confirmed roost usage at Udați-Lucieni site (two *Eptesicus serotinus* exiting at dusk) and continued presence at the maternity roost Pogoanele (three *Pipistrellus kuhlii* exiting at dusk), albeit in much smaller numbers.

The four important bat roosts are listed below:

Table 4-9 Important bat roosts

No.	Roost	Date of survey	Location (WGS coordinates)	Species	Roost type
1.	Abandoned building in the center of Pogoanele	10-11.08.2023 06-07.09.2023	44.913844 N, 26.990542 E 6.8 km south to ST5	*Pipistrellus kuhlii*	Maternity roost
2.	Abandoned sanitary building in Caragele	11-12.08.2023	44.978154 N, 27.033026 E 2.4 km east to ST5	nul	N/A
3.	Old train station in Cilibia	12-13.08.2023	45.043173 N, 27.022653 E 7.7 km north to ST5	nul	N/A
4.	Abandoned house in the Udați-Lucieni	05-06.09.2023	44°58'20.36"N, 26°58'14.04"E 1 km south toST5	*Eptesicus serotinus*	N/A

Figure 4-15 Left - Abandoned building in the center of Pogoanele settlement Right – Abandoned sanitary building in Caragele

Figure 4-16 Infrared camera monitoring – example of flight path of re-entry for *Pipistrellus kuhlii* – roost in the Pogoanele Settlement

Figure 4-17 Monitoring the Cilibia abandoned train station – bat activity

Figure 4-18 Emergence locations for *Eptesicus serotinus* individuals – mating – Abandoned house in Udaţi-Lucieni settlement

4.5.5 Full night monitoring at Static detector (ST) 5

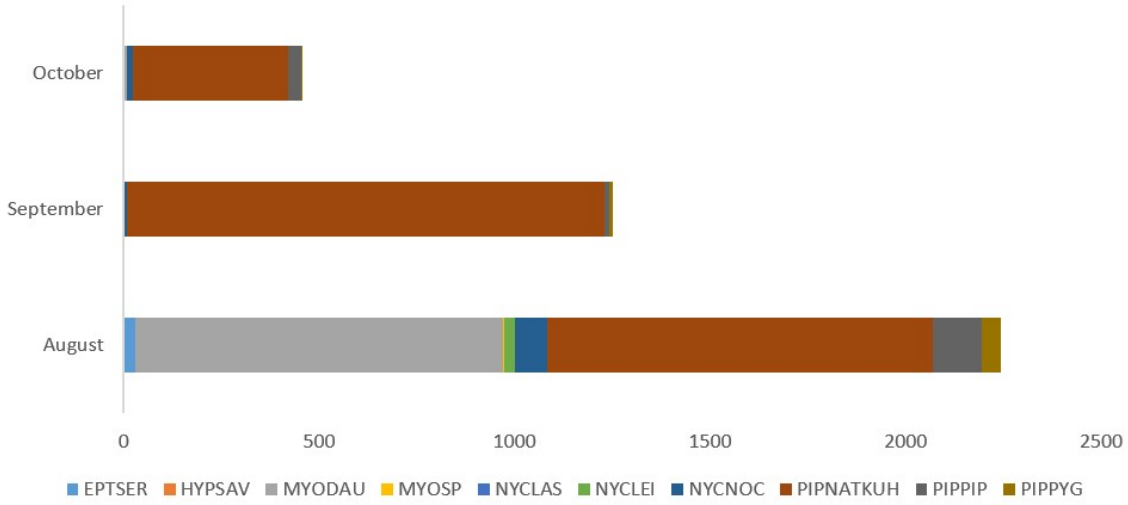
After the high activity recorded at ST5 during April complimentary human observer surveys for one night during each monthly static deployment at the site were implemented from August onwards to help understand the basis of the activity recorded on the static detector. Earlier commissioning of such surveys was resource constrained.

The first night of full observation was in August (12-13.08.2022). The static detector identified 2242 recordings of 9 species. Calls of *Pipistrellus nathusii/kuhlii* were dominant (984 recordings), followed by *Myotis daubentonii* (942 recordings). Among the visual (human) observations, a minimum of nine *Nyctalus noctula* were observed feeding around ST5 with smaller numbers transiting high over the site. The noctules were followed by at least 12 individuals of *Pipistrellus kuhlii* hunting in large circles and along the channel, just above the monitoring point. *Myotis daubentonii* was almost constantly observed in much lower numbers compared to the other bat species recorded. Two individuals were observed flying above the hygrophilous vegetation of the channels, periodically dropping towards the water level to feed.

In September (18-19.09.2022) the number of contacts on the static detector fell to 1250 recordings, approximately half that of August with a corresponding decline in species diversity (six species). Calls of *Pipistrellus nathusii/kuhlii* are dominant (1220 recordings), followed by *Pipistrellus pipistrellus* (14 recordings), with *Hypsugo savi*, *P.pygmaeus, M. daubentonii, N.noctula.* Visual (human) observations confirmed only *P. kuhlii* in the area, with approximately 10 individuals at once flying in large circles above the study area, at a height of 5-10 m above ground, with sudden hunting dives towards 2-3 m.

The last month of full night observations performed in October (17-18.10.2022) saw further decreases with only 456 records from the static detector of seven species. *Pipistrellus nathusii/kuhlii* was dominant (397 calls) followed by *P. pipstrellus*. The same species mix as September was present although a few calls from *Eptesicus serotinus* were also recorded.
Visual (human) observations confirmed only *P. kuhlii* in the area, with approximately seven individuals at once flying in large circles above the study area, at a height of 5-10 m above ground, with sudden hunting dives towards 2-3 m. Activity levels dropped sharply as the temperature decreased, and when it reached 6-7°C passes were extremely scarce (after 2 AM).

Figure 4-19 Bats recoded on static detector at ST5 – full night observations August - October



The results from the combined static and human observer surveys at ST5 indicate the following;

- Although there was no contemporaneous observations during April the number of passes and diversity of species then was significantly different from subsequent months which likely supports the bat experts view that it coincided with northward bat migration.
- Subsequent surveys saw a steady and substantial decline each month in activity levels recorded by the static at ST5.
- Both static and human observations were dominated by *P.nathusii/kuhlii.*
- With the exception of August only *P.kuhlii* was seen by human observers, despite small amounts of activity by other species.
- There was no obvious evidence of autumn migration, although it is acknowledged that if this was confined to a narrow window it may not have been detected by the field campaigns.
- A relatively small number of bats appear to be driving the activity recorded on the static detector, particularly when they are feeding in the vicinity of the static detector. Feeding was the dominant behaviour observed.

4.6 Other fauna species

4.6.1 Mammals

Species on Annex II and IV of Habitat Directive (which requires member states to establish Sites of Community Importance for their conservation) and/or included as threatened species on the IUCN/ Romanian Red Lists are marked in blue in table no. 4-10). In summary:

- Habitats Directive lists in its Annex II and IV two mammal species recorded in the Project site *Spermophilus citellus* (European souslik) and *Lutra lutra* (Eurasian otter),
- IUCN Red List assesses *Spermophilus citellus* (European souslik) both globally and at European level as Endangered and *Lutra lutra* (Eurasian otter) both globally and at European level as Near Threatened. One species is Globally Data Deficient but Least Concern at the European level (*Nannospalax leucodon* – Lesser mole rat),
- Red Book of Vertebrates from Romania assesses one species as Endangered (*Neomys anomalus* – Southern water shrew) and four species as Vulnerable (*Canis aureus*- Golden jackal, *Capreolus capreolus* –European roe deer, *Lutra lutra* – Eurasian otter and *Spermophilus citellus* –European souslik),
- No endemic species was recorded.

Table 4-10 Conservation Status and location of the recordings for *Spermophilus citellus* and *Lutra lutra*

No	Scientific Name	Common Name	Number of individuals	Location
	Lutra lutra	Eurasian Otter	Only faeces identified	Faeces recorded around the crossings over Călmățui river S. area of WTG15, WTG48; access road from Smeeni settlement to WTG22 and WTG23; access road from Albești settlement to WTG 27
	Spermophilus citellus	European Souslik	Over 10 individuals and many active burrows	Numerous individuals near the canal embankment. Near turbine WTG15; the canal embankment intersecting WTG22-WTG23 access road; the canal embankment with the access road to WTG27.

Figure 4-20 Recordings of *Spermophilus citellus* within the project area

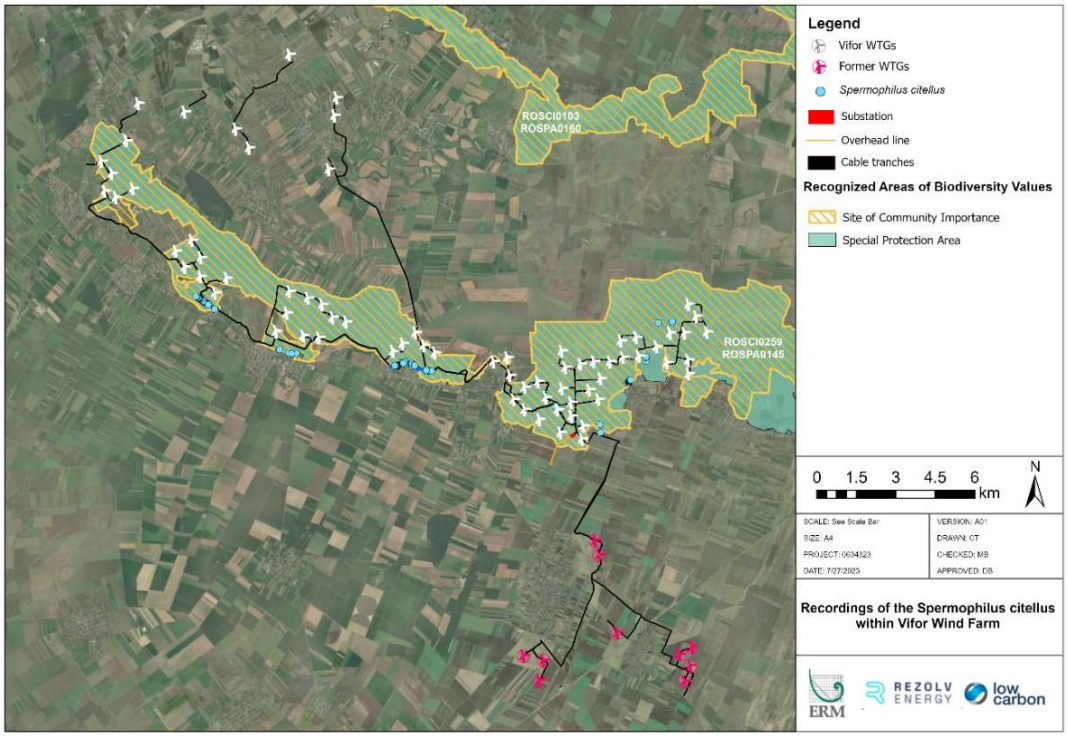
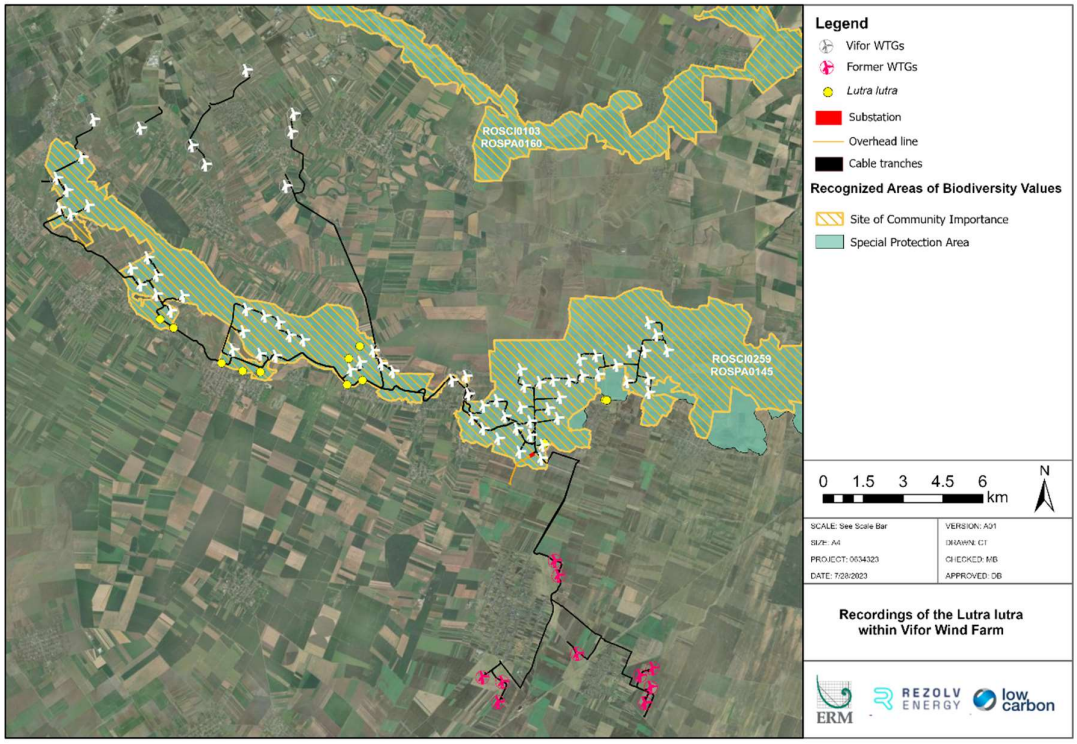


Figure 4-21 Recordings of *Lutra lutra* within the project area



Besides the species of conservation value, surveys also confirmed the presence of common species such as: *Erinaceus roumanicus, Lepus europaeus, Meles meles, Microtus sp., Mus spicilegus, Mustela nivalis, Mustela putorius, Rattus norvegicus, Sus scrofa, Talpa europaea, Vulpes vulpes.* The 2010 surveys identified an additional species, *Cricetus cricetus*, which was not confirmed during the 2022 monitoring campaign.

The recordings on mammals and their conservation status is summarized in Table 4-11-12:

Table 4-11-12 Mammals Recorded within the Project site in 2022

No	Scientific Name	Common name	Annex II/IV of Habitats Directive	Red Book of Vertebrates from Romania	IUCN Red List Status Global/ European
1	*Canis aureus*	Golden Jackal	No	VU	LC/LC
2	*Capreolus capreolus*	European Roe Deer	No	VU	LC/LC
3	*Erinaceus roumanicus*	Northern White-breasted Hedgehog	No	No	LC/LC
4	*Lepus europaeus*	European Hare	No	No	LC/LC
5	*Lutra lutra*	Eurasian Otter	II & IV	VU	NT/ NT
6	*Meles meles*	Eurasian Badger	No	No	LC/LC
7	*Microtus sp.*		No	No	-
8	*Mus spicilegus*	Steppe mouse	No	No	LC/LC
9	*Mustela nivalis*	Least weasel	No	No	LC/LC
10	*Mustela putorius*	Western polecat	No	No	LC/LC
11	*Nannospalax leucodon*	Lesser mole rat	No	No	DD / LC
12	*Neomys anomalus*	Southern water shrew	No	EN	LC/LC
13	*Rattus norvegicus*	Brown rat	No	No	LC/LC
14	*Spermophilus citellus*	European souslik	II & IV	VU	EN/ EN
15	*Sus scrofa*	Wild boar	No	No	LC/LC
16	*Talpa europaea*	European mole	No	No	LC/LC
17	*Vulpes vulpes*	Red fox	No	No	LC/LC

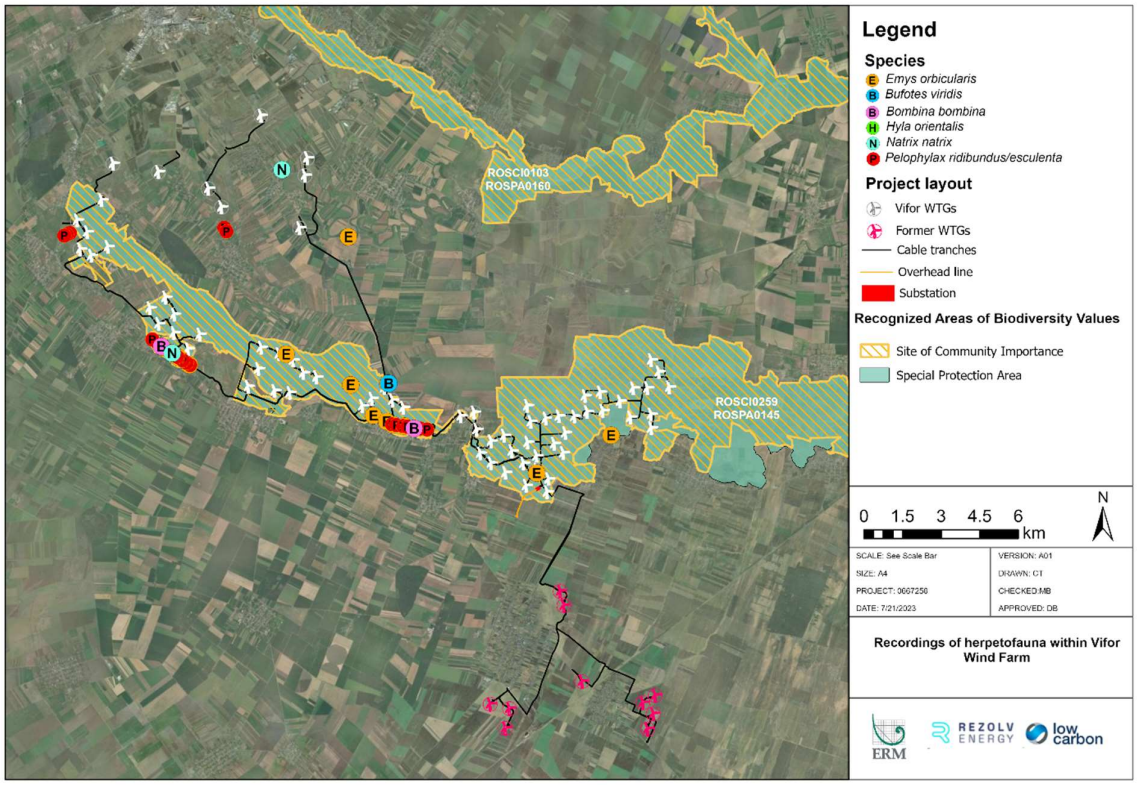
4.6.2 Reptiles and Amphibians

2010 surveys confirmed the following species: *Bufo viridis*- green toad, *Hyla arborea* – European tree frog, *Lacerta agillis* - sand lizard, *Pelobates fuscus* – common spadefoot, *Pelophylax ridibundus* - marsh frog, *Rana temporaria* - European common frog.

During April – May 2022 field surveys, four species of amphibian (*Pelophylax ridibundus/esculenta* – the marsh/edible frog; *Hyla orientalis*[16] – Eastern tree frog, *Bufotes viridis* – green toad –and *Bombina bombina – fire-bellied toad)* and two reptile species (*Natrix natrix* – grass snake and *Emys orbicularis* – European pond turtle) were recorded within the Project area (see Figure 4-22).

16 Amphibian taxonomy is particularly fluid. Common tree frog has now been split into four species, with eastern tree frog present in most of Romania.

Figure 4-22 Recordings of herpetofauna within the Vifor Wind Farm



According to various documents, five of these species have different protection statuses, therefore:

- Four species are listed in the Annex II/IV of Habitats Directive (the fire bellied toad, the eastern tree frog, the green toad, the European pond turtle;
- Five species are listed on Annex III/IV/IV of GEO 57/2007 (the fire bellied toad, the marsh frog, the eastern tree frog, the green toad, the European pond turtle);
- One species is assessed by IUCN Red List as Near Threatened (the European pond turtle), the other species are assessed as Least Concern,
- The Red Book of Vertebrates from Romania assessed as Near Threatened two species (the green toad and the fire-bellied toad), and two species as Vulnerable (the European tree frog and the European pond turtle),
- No endemic species were recorded.

The recordings on herpetofauna and their conservation status is summarized in Table 4-13:

Table 4-13 Herpetofauna Recorded within the Project site in 2022

No	Scientific Name	Common Name	Annex II/IV of Habitats Directive	Red Book of Vertebrates from Romania	IUCN Red List Status Global/ European	OUG 57/2007[17]
1.	*Bombina bombina*	Fire-bellied toad	II, IV	Near Threatened	LC/LC	III, IV

[17] Habitat and Bird Directive were transposed into OUG 57/2007 at national level.

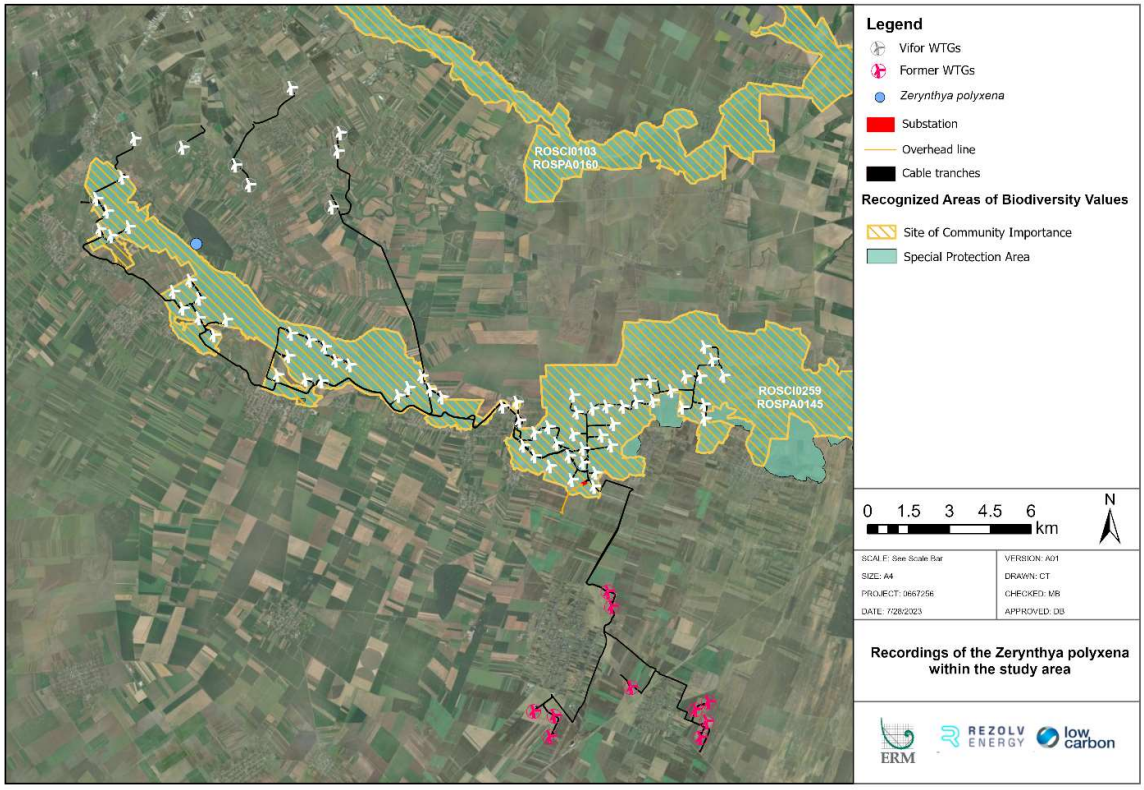
No	Scientific Name	Common Name	Annex II/IV of Habitats Directive	Red Book of Vertebrates from Romania	IUCN Red List Status Global/ European	OUG 57/2007[17]
2.	*Pelophylax ridibundus syn. Rana ridibunda*	Marsh frog	No	No	LC/LC	V
3.	*Hyla orientalis syn. Hyla arborea*	Eastern tree frog	IV	Vulnerable	LC/LC	IV
4.	*Bufo (Bufotes) viridis*	Green toad	IV	Near Threatened	LC/LC	IV
5.	*Natrix natrix*	Grass snake	No	No	LC/LC	No
6.	*Emys orbicularis*	European pond turtle	II, IV	Vulnerable	Near Threatened / Near Threatened	III, IV

4.6.3 Invertebrates

2010 and 2022 baseline studies confirm the target species *Lycaena dispar* - the Large copper was not recorded during monitoring visits. The larval food plant, *Rumex sp.* taxa is very scarce due to overgrazing.

The only species of conservation value was recorded near Maxenu settlement, within the 200m buffer area, around the Project site, is *Zerynthya polyxena,* the southern festoon butterfly, which is listed on Annex IV of the Habitats Directive Figure 4-23 illustrates the point location where the species was recorded.

Figure 4-23 Recordings of *Zerynthya polyxena* within the project area



Besides the species of conservation value, the surveys confirmed also the presence of common species such as: *Erynnis tages, Pontia edusa, Colias erate, Pieris rapi, Lycaena thersamon, Aricia agestis, Plebejus argus, Issoria lathonia, Coenonympha pamphilus.*

5. Impact Assessment

5.1 Introduction

The objectives of the biodiversity impact assessment are to identify and quantify the potential Project impacts; design measures to avoid, minimise or mitigate potential adverse impacts; and identify likely residual impacts. The baseline studies to inform this assessment and identify relevant ecological receptors have been reported in Chapters 3 and 4.

Important ecological features were recorded, such as priority habitat listed under Annex I of Habitat Directive, and fauna species that are subject to protection or strict protection in Romanian Law and/or are listed in Annex II or IV of the Habitats Directive, Annex I of the Birds Directive or listed as Near Threatened or higher by IUCN either within Europe or globally and species of high conservation value.

A summary of the important ecological features identified during baseline surveys and desk study is provided in Table 5-1.

Table 5-1 Important ecological features within Vifor Wind Farm

Feature		Annex I Habitat Directive	Annex II and/or IV Habitat Directive	Birds (Annex I, IUCN >NT, Qualifying species of Valea Călmățuiului SPA)[18]
Habitats	1530* Pannonic salt steppes and salt marshes	Yes	-	-
Birds	*Burhinus oedicnemus*	-	-	Yes
	Ciconia ciconia	-	-	Yes
	Circus macrourus	-	-	Yes
	Falco columbarius	-	-	Yes
	Falco vespertinus	-	-	Yes
	Himantopus himantopus	-	-	Yes
	Philomachus pugnax	-	-	Yes
Bats	*Barbastella barbastellus*	-	Yes	-
	Eptesicus serotinus	-	Yes	-
	Hypsugo savii	-	Yes	-
	Myotis daubentonii	-	Yes	-

[18] For full list of Annex 1 species see sections 4.4.2.1 and 4.4.2.2

Feature		Annex I Habitat Directive	Annex II and/or IV Habitat Directive	Birds (Annex I, IUCN >NT, Qualifying species of Valea Călmățuiului SPA)[18]
	Nyctalus lasiopterus	-	Yes	-
	Nyctalus leisleri	-	Yes	-
	Nyctalus noctula	-	Yes	-
	Pipistrellus nathusii/kuhlii	-	Yes	-
	Pipistrellus pipistrellus	-	Yes	-
	Pipistrellus pygmaeus	-	Yes	-
	Plecotus auritus	-	Yes	-
	Plecotus austriacus	-	Yes	-
	Vespertilio murinus	-	Yes	-
Mammals	*Spermophilus citellus*	-	Yes	-
	Lutra lutra	-	Yes	-
Herpetofauna	*Emys orbicularis*	-	Yes	-
Invertebrates	*Zerynthia polyxena*	-	Yes	-

5.2 Alternatives assessment

Two Protected Areas are overlapped by the project footprint: ROSCI0259 Valea Călmățuiului (Site of Community Importance) and ROSPA0145 Valea Călmățuiului (Special Protection Area) and thirteen protected or designated sites are located within the defined 20km radius.The European Commission guidance on[19] the development of projects, including wind farms, in designated areas recognizes the need to balance environmental protection and sustainable development. While designated areas often hold significant ecological value and biodiversity, the policy acknowledges that with appropriate assessment and mitigation measures, it may be reasonable to proceed with projects in these areas.

This approach stems from the European Union`s commitment to transitioning to a low-carbon economy reducing greenhouse gas emissions, as well as its recognition of the importance of renewable energy sources like wind power. It is understood that expanding renewable energy infrastructure, such as wind farms, plays a crucial role in achieving the EU`s climate and energy objectives.

However, the policy emphasizes the requirement for comprehensive biodiversity impact assessment to be conducted prior to project development in designated areas which involve a robust evaluation of

[19] European Commission (2020). Guidance Document on wind energy developments and EU nature legislation. https://op.europa.eu/en/publication-detail/-/publication/2b08de80-5ad4-11eb-b59f-01aa75ed71a1 .

the potential ecological effects and impacts on biodiversity, including the identification of vulnerable species, habitats, and ecosystems.

Furthermore, the policy mandates the implementation of appropriate mitigation measures to minimize any potential negative impacts on biodiversity. These measures can include habitat restoration, species protection plans, and the incorporation of environmental safeguards into project design and operation.

By allowing projects to proceed in designated areas when supported by rigorous assessment process and effective mitigation strategies, the European policy seeks to strike a balance between environmental conservation and the imperative for sustainable development. This approach ensures that renewable energy projects, such as wind farms, can contribute to the EU`s energy transition while safeguarding the natural heritage and biodiversity that the designated areas hold.

Given that 17% of the country`s territory is designated under Natura 2000, EU guidance on development of renewables is particularly relevant to Romania. The difficulty of meeting the renewables challenge without developing within Natura 2000 sites in Romania is therefore high and makes the need for proper assessment and mitigation all the more important.

As part of that process, the project has previously been subject to a Strategical Environmental Assessment (SEA), an Appropriate Assessment Study and an Environmental Impact Assessment (EIA). On the basis of these the Environmental Authority have concluded that the project is compatible with EU biodiversity legislation and any potential impacts can be effectively mitigated.

The alternatives assessment undertaken by Rezolv and Low Carbon acknowledged the extent of overlap with the Natura 2000 sites but was guided by previous findings of the Environmental Authority, the highly modified nature of the habitat within the Natura 2000 sites, and the mobile nature of many of the qualifying features indicating that effects could occur over a wider area. The location of much of the project within the designated sites was principally based on wind yield and land agreements and informed by a range of biodiversity studies to identify important receptors, habitat condition, and capacity to mitigate project impacts.

5.3 Impact Assessment Methodology

The approach to the assessment of biodiversity impacts is:

Step 1: Defining the AoI

The Area of Influence (AoI) for the project was defined to include the development footprint and any temporary works infrastructure, operational activities and infrastructure, any offsite facilities (borrow areas for example) as well as areas beyond the immediate area of effect that could be subjected to indirect impacts (e.g. emissions, noise, water quality issues, etc.).

Step 2: Identification of important ecological features and description of biodiversity values

Once the AoI had been defined, the biodiversity ‘values’ (*also termed biodiversity ‘features’ or ‘attributes’*) and ecological sensitivity of the various environmental receptors were identified (i.e. relates back to important habitats and species identified in the baseline biodiversity assessment).

Step 3: Identification of impacts to biodiversity

Potential project impacts to the important ecological receptors and biodiversity values were identified, including site-specific direct, indirect and induced impacts to biodiversity. The following guidelines were also referred to in identifying and describing biodiversity impacts:

"Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning" (Hardner et al., 2015[20]); and

"Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers" (Bennun et al., 2021[21]).

Step 4: Assessment of impact significance

Biodiversity impact significance is the product of the value or importance of the biodiversity components that will be impacted and the intensity or magnitude (degree and extent of change) of the impact on those resources, systems and/or components. Some regulators, lenders, or corporate standards will use the term "significant" to refer to a threshold of consequence and/or risk that requires management or may not be acceptable. The approach to impact significance assessment is based on the traditional risk assessment formula which rates the **magnitude of effect** as the realistic 'worst-case' consequence or end-point of a project activity based on the perceived **importance and/or sensitivity** of a particular environmental receptor. Separate assessment matrices for habitat and species have been used for the assessment of impact significance, and these are contained in Table 5-2 and Table 5-3, respectively.

Table 5-2 Matrix used to rate Impact Significance Criteria for Habitat

Habitat Sensitivity/Value		Magnitude of Effect			
		Negligible	Small	Medium	Large
Low	Habitats with no or local designation/ recognition; habitats of significance for species of Least Concern; habitats which are common and widespread within the region.	Negligible	Negligible	Minor	Moderate
Medium	Habitats that are listed on Annex 1 Habitats Directive. Habitats that support IUCN NT or VU species and/or Annex II Habitat directive, Annex 1 Birds Directive species. Areas important for supporting significant concentrations of migratory or congregatory species.	Negligible	Minor	Moderate	Major
High	Habitats within nationally protected or internationally designated or recognised areas. Habitat Directive Annex 1 priority habitats. Habitats supporting Critically Endangered or Endangered species; populations of Annex IV species; habitats of importance to endemic and/or globally restricted-range species; habitats supporting globally significant concentrations of migratory species and/ or congregatory species; highly threatened and/or unique ecosystems, areas associated with key evolutionary processes.	Negligible	Moderate	Major	Critical

Magnitude of Effect Definition	
Negligible	Effect is within the normal range of natural variation
Small	Affects only a small area of habitat, but without the loss of viability/function of the habitat
Medium	Affects a sufficient proportion of the habitat that the viability/function of part of the habitat or the entire habitat is reduced, but does not threaten the long-term viability of the habitat or species dependent on it.

[20] Hardner, J., R.E. Gullison, S. Anstee, M. Meyer. (2015). Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning. Prepared for the Multilateral Financing Institutions Biodiversity Working Group. Available online at: https://publications.iadb.org/publications/english/document/Good-Practices-for-Biodiversity-Inclusive-Impact-Assessment-and-Management-Planning.pdf

[21] Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G. (2021). Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers. Gland, Switzerland: IUCN and Cambridge, UK: The Biodiversity Consultancy. Available online at: https://portals.iucn.org/library/sites/library/files/documents/2021-004-En.pdf

Large	Affects the entire habitat or a significant proportion of the habitat to the extent that the viability/function of the entire habitat is reduced and the long-term viability of the habitat and the species dependent on it are threatened.

Table 5-3 Matrix used to rate Impact Significance Criteria for Species

Species Sensitivity/Value		Magnitude of Effect			
		Negligible	Small	Medium	Large
Low	Species which are included on the IUCN Red List of Threatened Species as Least Concern (LC).	Negligible	Negligible	Minor	Moderate
Medium	Species included on the IUCN Red List of Threatened Species as Vulnerable (VU), Near Threatened (NT) or Data Deficient (DD). Species protected under national legislation and/or Annex II Habitat directive, Annex 1 Birds Directive. Nationally important numbers of migratory or congregatory species.	Negligible	Minor	Moderate	Major
High	Species included on the IUCN Red List of Threatened Species as Critically Endangered (CR) or Endangered (EN). Populations of annex IV species. Restricted ranges species having a globally Restricted Range (having a distribution range less than 50,000 km^2.) Globally important concentrations of migratory and/or congregatory species.	Negligible	Moderate	Major	Critical

Magnitude of Effect Definition	
Negligible	Effect is within the normal range of variation for the population of the species.
Small	Affects a small proportion of a population, but does not substantially affect other species dependent on it, or the populations of the species itself
Medium	Affects a sufficient proportion of a species population that it may bring about a substantial change in abundance and/or reduction in distribution over one or more generations, but does not threaten the long-term viability of that population or any population dependent on it.
Large	Affects an entire population or species at sufficient scale to cause a substantial decline in abundance and/or change in distribution beyond with natural recruitment (reproduction, immigration from unaffected areas) may not return that population or species, or any population or species dependent upon it, to its former level within several generations, or when there is no possibility of recovery.

Step 5: Impact mitigation and management measures

Appropriate impact mitigation and management measures are recommended to reduce the magnitude (based on aspects that include the scale, probability and intensity of impact) and thereby reduce the significance of the impact consequence to an environmentally acceptable level where possible.

Step 6: Assess residual impacts

The final step is to assess residual impacts, which are those impacts that are likely to persist after taking into account the mitigation and management measures recommended as part of the mitigation strategy for the project, and their likely implementation success.

5.4 Project Area of Influence

The Project AoI (Area of Influence) of the Wind Farm project was considered for the construction, operational and decommissioning phases and is documented in Table 5-4.

Table 5-4 Defining the AoI for Construction and Operational/Maintenance Components of the Project

Project Component	Habitats	Plants	Terrestrial Fauna	Aquatic Ecosystems	Notes
CONSTRUCTION & DECOMMISSIONING PHASES					
Wind turbines	200 m	200 m	1000 m	Călmățui River and associated water courses and drainage channels	Based on dust emissions (200m) and likely disturbance distance of most sensitive species
Central power collection station					
Overhead line					
Underground cable lines					
Access roads					
Culverts and bridges					
Borrow pit					
Laydown areas					
Concrete batching plant					
Crane hardstands					
Parking areas					
Temporary offices					
OPERATIONAL					
Wind turbines	0 m	0 m	250 m	N/A	Assumes negligible increase in traffic associated with operational maintenance. 250m is based on reported displacement
Internal access roads					
Transmission lines					

Project Component	Habitats	Plants	Terrestrial Fauna	Aquatic Ecosystems	Notes
					distances[22] for the most sensitive species and assumes no habituation. Effects of mortality are considered separately.

5.5 Identification of Biodiversity Impacts

Detailed information on the Construction, Operation and Decommissioning Phases of the Project were referred to specifically identifying and assessing biodiversity impacts. Maintenance has been included in the operational phase, noting that onshore wind farms typically have low maintenance and servicing requirements (Brennun et al., 2021).

The project concession period will be 35 years, decommissioning phase impacts are anticipated to be similar to those occurring during construction.

Cumulative impacts are addressed separate in Annex G, and includes cumulative impacts on biodiversity.

Biodiversity impacts identified for the Vifor WF project and related activities and infrastructure have been conceptualized and discussed in detail in the sections below. Impacts are defined in terms of construction, operation (including maintenance) and decommissioning project phases, and include direct, indirect and induced impacts. Pathways of effect are used to understand how biodiversity may be impacted (e.g. direct habitat loss, indirect habitat loss due to disturbance, increased hunting pressure, etc.).

[22] Marques, A.T.; Batalha, H.; Bernardino, J. Bird Displacement by Wind Turbines: Assessing Current Knowledge and Recommendations for Future Studies. Birds 2021, 2, 460–475. https://doi.org/10.3390/ birds2040034

5.6 Ecological features screened out to the assessment

A number of ecological features were screened out of the assessment as significant effects were determined to be highly unlikely. These included:

Flora - due to the modified nature of the landscape, field surveys only recorded the presence of common species with no conservation status, therefore impacts on this group were screened out for further assessment;

Mammals – due to their high conservation status the Eurasian Otter *Lutra lutra* and the European Souslik *Spermophilus citellus* were the only mammals assessed. Common and widespread species would not be affected at anything other than the purely local level and were excluded. There is an issue in relation to the exclusion from further assessment of Golden jackal *Canis aureus*, European roe deer *Capreolus capreolus* and the southern water shrew *Neomys anomalus* that are listed as Vulnerable or/and Endangered at national level in the Red Book of Vertebrates from Romania. This approach has been taken based on the outdated nature of the assessment in the red book, the absence of any EU listing under Annex II or IV, and the low likelihood of effects.

Invertebrates: The focal species, Large copper *Lycaena dispar*, was not found by baseline surveys. The southern festoon *Zerynthia polyxena,* was observed in the study area but not within the development footprint, and no direct or indirect pathway of effect exists with the population location. Invertebrates were therefore screened out of further assessment.

Ecosystem services: the land purchased or leased for the wind farm is almost entirely modified agricultural habitat, and the small area used for the wind farm footprint will have no significant effect on crop or livestock production.

6. Impact Assessment Results

Table 6-1, Table 6-2, and Table 6-3 present a summary of biodiversity impacts during construction, operation and decommissioning, respectively. As different ecological receptors differ in their sensitivity, both in terms of conservation status and capacity to respond to the impacts, the table identifies the significant effects for each main receptor.

Table 6-1: Biodiversity Impacts - Construction

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
Designated and Protected Areas				
C1	Infrastructure elements of Vifor Wind Farm are located within ROSCI0259 Valea Călmățuiului Site of Community Importance and ROSPA0145 Valea Călmățuiului Special Protection Area which will occur in direct habitat loss	**Moderate** Although the project overlaps the designated sites, it occupies only a small percentage of their total area and occupies mainly modified	• Implement relevant construction standards (e.g.'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' – DEFRA, 20096F6F). Demarcate the construction zone or servitude for the TL corridor on a map and on the	**Minor** The impact assessment matrix is designed for habitats or species but not designated sites. Post restoration the permanent

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	and degradation. A total of 82.92ha temporary and 8.37ha permanent land loss will be required by the project. This represents 0.4% temporary and 0.04% permanent from the total area of ROSCI0259 and 0.3 % temporary and 0.04% permanent of the total area of ROSPA0145. Additionally, a total area of 0.8ha will be required for new access roads construction.	agricultural land or very degraded natural habitat.	ground clearly using high visibility tape for instance, to avoid impacting on sensitive areas outside of the permitted construction area; • Reinstate temporary land take to original use after completion of construction. • Avoid locating construction camps and material/equipment laydown areas within or near identified natural or semi-natural habitat; • Utilise existing roads wherever possible.	loss of Natura 2000 sites will be 0.21% (SPA) and 0.24% (SCI) the majority of which will be either modified agricultural land or heavily degraded natural habitat. As a consequence the magnitude of the effects is very small but not negligible. As a consequence an impact significance of minor has been determined.
Habitats				
C2	**Habitat Loss / Degradation / Fragmentation** Habitats at Vifor Wind Farm are likely to be lost during the construction. Temporary habitat loss will be 37.92ha of modified habitat and 109.76ha of natural habitat. Permanent habitat loss will be 10.78ha of modified habitat and 33.67ha natural habitat. Wherever possible modified habitat has been used for temporary land take rather than natural habitat areas. Although generally found in poor condition, the study area contains patches of EU Annex 1 (1530*)	**Moderate** The priority habitat is one of the qualifying features of the designated Site of Community Importance overlapped by the project. Much of it is in poor condition due to drought and continuous intensive grazing with unstainable stocking densities	• Implement relevant construction standards (e.g. 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' – DEFRA, 20096F6F[23]). Demarcate the construction zone or servitude for the TL corridor on a map and on the ground clearly using high visibility tape for instance, to avoid impacting on sensitive areas outside of the permitted construction area; • Avoid locating construction camps and material/equipment laydown areas within or near identified natural or semi-natural habitat; • Compile a suitable post-construction habitat restoration plan for temporary areas used during construction;	**Negligible** This is subject to habitat restoration and creation being successful.

[23] DEFRA: Department of Environmental, Food and Rural Affairs. (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites Available online at: https://www.assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	Pannonic salt steppes and salt marshes. The 1530* habitat varies in terms of vegetation structure in the wind farm area. In areas where the influence of anthropogenic activity is low, there are plant associations typical for primary (natural) grasslands while, in intensely grazed areas, there are plant associations typical for secondary (semi-natural) grasslands. Based on the Standard Data Form the total area of the habitat within the SCI is 13613 ha, of which 0.996 ha will be occupied by the project. This equates to a loss of 0.000073% of the Annex 1 habitat present. The project location overlapping the priority habitat has been carefully planned to avoid or minimise direct loss, minimise fragmentation of the habitat and maintain connectivity between habitats.		• Use existing access roads or upgrade existing roads wherever possible before considered new access road construction; • Place appropriate limits on the number of vehicle movements to and from the wind farm; • Restrict vehicles to the use of only authorized access roads; • For residual permanent natural habitat loss identify areas for restoration and habitat creation, and produce restoration plan identifying where restoration/creation will be undertaken, and how.	
C3	**Introduction/Spread of Invasive Species** The movement of vehicles, people and equipment into and through the project area may facilitate the introduction of Invasive Alien Plants (IAPs) to the area, or contribute to the spread of existing IAP species, primarily through the transport of seed attached to	**Moderate** Given the agricultural nature of most of the site and the widespread occurrence of non-native agricultural weeds the main concern is the potential contamination of areas of natural habitat.	• Compile a suitable Invasive Alien Plant (IAP) species control plan and programme to manage IAP's within the control of the development; • This will include measures to inspect vehicles clothing and boots prior to moving between areas, and measures such as brushes, power hoses and wheel washing with suitable containment to remove any IAP's;	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	machinery, soils, clothing, etc. The disturbance created by vegetation clearing and earthworks may create suitable conditions for IAPs and weeds to become established and possibly spread into adjacent habitats. Anastasiu et al (2018), confirmed a number of IAP species as being of key concern in Romania and based on the Biodiversity Baseline Surveys conducted for the Project, several of these and other IAPs were recorded in the AoI (e.g. *Robinia pseudoacacia Sorghum halepense, Xanthium spinosum*).		• Implement IAP species surveillance and control plan within areas in the projects control, focusing particularly on areas of natural habitat; • Monitor IAPs to inform further management intervention.	
Birds				
C4	**Habitat Loss / Degradation / Fragmentation** Construction activities will lead to the temporary and permanent loss of small areas of supporting habitat. Construction may also cause some temporary functional loss of habitat due to noise and visual disturbance although such effects will be highly localised given the progressive nature of the work through the landscape. Fragmentation effects in such an open and agricultural effects are highly unlikely, and the incremental and localised nature of the construction works.	**Moderate** A precautionary assessment based mainly on potential habitat loss and disturbance effects on high value bird species.	• Implement buffer zones or exclusion areas around important nesting or foraging sites to minimize disturbance; • Where possible avoid site clearance during the breeding season. Where not, use Ecological Clerks of Works to identify nests and avoid till young have fledged.	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
C5	**Noise and Vibration Disturbance** Loud noises and constant vibrations can cause stress, interfere with communication and breeding behaviours and affect the overall well-being of bird population in the area.	**Moderate**	• Implement construction practices that minimize noise and vibration disturbance, such as scheduling activities outside sensitive bird breeding periods or using noise barriers; • Where possible avoid site clearance during the breeding season. Where not, use Ecological Clerks of Works to identify nests and avoid till young have fledged;	**Negligible**
C6	**Direct Mortality** Construction activities, such as clearing land and building infrastructure, can disturb or destroy nesting sites for birds. This disturbance can lead to abandonment of nests, reduced reproductive success, or displacement of breeding individuals.	**Moderate**	• Where possible avoid site clearance during the breeding season. Where not, use “Ecological Clerk of Works” (ECoW) which will prepare the environmental documentation on delivery of ecological requirements on site before construction activities commence in order for contractors to meet key development milestones; The ECoW will monitor that site based construction activities are delivered in accordance to relevant laws and Project commitments; • Fence and mark work areas to minimise effects of vegetation clearance on birds.	**Negligible**
C7	**Installation of overhead transmission line and pylons** (400 kV Overhead Line (OHL) with a length of 1.2 km, supported by 8 pylons) Construction activities near nesting sites can lead to nest abandonment, decreased reproductive success, and disrupted breeding behaviour;	**Moderate**	• Conduct thorough surveys to identify and protect nesting sites before construction begins. Implement buffer zones around active nests and restrict construction activities within these areas during breeding season; • Fit suitable bird diverters at 5m intervals; • Install insulation, covers, and other avian protection devices on electrical equipment to prevent perching and contact. Regularly inspect and maintain the electrical infrastructure	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	Birds can land on pylons resulting in injury or mortality; Birds can be electrocuted if they perch or come into contact improperly designed electrical equipment;		to ensure its effectiveness in mitigating electrocution risks.	
Bats				
C8	**Habitat Loss / Degradation / Fragmentation** Construction phase can lead to habitat disturbance of species listed under Annex II and /or IV. This phase involves land clearing and infrastructure development which results in limited destruction or alteration of foraging areas on an incremental basis and localised basis. Significant noise and vibrations generated can have adverse effects on roosting bats although roost searches indicated most confirmed and potential roost features were associated with urban fabric and woodland away from the main construction areas. The presence of construction equipment can create barriers that bats may be reluctant to cross. This can lead to fragmentation of their foraging habitats, forcing bats to travel longer distances or seek alternatives, potentially less suitable foraging grounds. These effects are more likely where temporary lighting is used.	**Moderate**	• Pre-construction checks for presence of bat roosts near construction sites; • Implement noise reduction measures to minimize noise-related disturbance near bat roosts; • Control of lighting to prevent light spill outside of construction areas through use of directional cowls.	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
C9	**Direct mortality** During the construction phase there is a potential risk to direct harm to bats. Heavy machinery, such as cranes and vehicles, may inadvertently harm bats.	**Moderate**	• Establishing buffer zones around bat roosts; • Adjusting construction schedules to avoid sensitive periods; • Implement proper lighting protocols to minimize disturbance.	**Negligible**
Mammals				
Spermophilus citellus				
C10	**Habitat Loss / Degradation / Fragmentation/ Direct loss of species.** The construction phase involves intense activities including installation of the wind turbines, infrastructure development and transmission line construction. These can have an impact on *Spermophilus citellus* and its habitat. The heavy machinery, increased noise levels and ground disturbance may harm the species by causing habitat loss and increased mortality due to direct collision or accidental damage to inhabitated burrows. Baseline surveys indicate that the species is confined mainly to canal embankments, two of which are in proximity to WTG 15 & 48. In addition access roads to WTG 22, 23 & 27 pass canal embankments occupied by *S.citellus*,	**Major**	• Conduct pre-construction surveys where *Spermophilus citellus* habitats were identified within 100m of turbines during the baseline studies; • Establish temporary exclusion zones around sensitive *Spermophilus citellus* habitats to prevent destruction of burrows. Create buffer areas around key habitat zones to reduce noise levels, limit human activity; • If road widening is required then this should be on the opposite side to the river embankments; • Implement vehicle speed limits through signage and awareness training procedures specifically for steppe habitats where S. citellus has been observed in numbers Implement strict construction protocols to minimize disturbance to the species, including complying to specified working hours to minimize noise, implementing dust control measures to maintain air quality and utilize appropriate barriers to prevent unintentional access to construction areas; • Implement a robust monitoring program during the construction phase to assess the impact on *Spermophilus citellus* and their habitat. This includes regular surveys, population monitoring and tracking of individuals. If unexpected	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
			impacts are observed, use adaptive management strategies to modify construction practices and mitigate any negative effects on the population; • Where precautionary working methods cannot prevent disturbance or destruction of animals or burrows undertake licenced translocation programme involving suitably qualified and experience experts.	
C11	**Noise and vibration** Noise and vibration can be disruptive for the souslik. Excessive noise and vibration may cause stress, affect communication and influence their behavior.	**Moderate**	• Establish exclusion zones or limiting construction activities in close proximity to active burrows; • Use noise barriers and muffers on construction equipment; • Schedule noisy activities during periods of low activity or avoid sensitive breeding season	**Negligible**
Lutra lutra				
C12	**Habitat Loss / Degradation / Fragmentation / Direct Loss of Species.** Otter spraints near proposed wind farm infrastructure were associated with the Călmățui River and its crossings. No evidence of breeding was recorded but spraints indicate probable foraging and passage. The construction phase may lead to habitat disturbance, alteration of the aquatic ecosystem and increased human activity, which can have adverse effects on otter population, including disruptions in forging behaviour, habitat displacement and potential mortality risks.	**Moderate**	• Undertake pre-construction surveys for otters 200m up and downstream of waterway crossings to identify any breeding or resting areas; • Implement measures to avoid disturbance of holts or resting places such as set back distances or timing of works; • Designate and protect riparian buffer zones along Călmățui riverbanks while consolidating the crossing over it. These zones will act as a protective buffer, maintaining the integrity of the otter`s habitat and minimizing the risk of disturbance; • Controls over speed where *Lutra lutra* have been identified; • Use awareness signes for drivers during the construction phase; • Implement best practice for river crossings to prevent deterioration of water quality (e.g. Scottish Environmental	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
			Protection Agency (2010). Engineering in the water environment: good practice guide River Crossings); • Implement strict noise and disturbance control measures during the construction phase of the wind farm. This includes limiting construction activities during sensitive periods.	
C13	**Water Quality** Construction activities can introduce sediment, polluants and other contaminants into Călmățui River which can affect the otter`s food sources and overall habitat quality	**Moderate**	• Monitor water quality parameters regularly to identify any potential impacts and take corrective actions if necessary.	**Negligible**
C14	**Noise and Vibration** Noise and vibration can be disruptive for otters. Excessive noise and vibration may cause stress, affect communication and influence their behaviour.	**Moderate**	• Establish exclusion zones or limiting construction activities in close proximity to active otter dens or habitats; • Use noise barriers and muffers on construction equipment; Monitoring noise and vibration levels regularly to ensure compliance with regulatory standards; • Schedule noisy activities during periods of low otter activity or avoid sensitive breeding season.	**Negligible**
Herpetofauna				
C15	**Habitat Loss/ Degradation / Fragmentation** Degradation or destruction of supporting habitats due to the construction of planned facilities and infrastructure. Annex II/IV species were regularly encountered during baseline surveys but were largely associated with waterways and waterbodies, and the main	**Major**	• Conduct thorough surveys and assessments to identify the presence of herpetofauna species and their habitats before construction activities; • Implement best management for river crossings (SEPA 2010).	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	construction effects would arise from unmitigated effects on aquatic and neary supporting terrestrial habitat.			
C16	**Noise and Vibration Disturbance** The disturbance caused by noise, vibrations and human presence can result in the displacement of herpetofauna from their optimum habitats. This displacement can disturb their normal behaviour, breeding patterns.	**Moderate**	• Establish buffer zones and construction exclusion zones around sensitive herpetofauna habitats to minimize disturbance; • Implement noise and vibration mitigation measures such as limiting noisy activities during sensitive periods (e.g., breeding season) and use equipment with noise reduction technologies.	**Negligible**
C17	**Water pollution** Construction activities can introduce sediment runoff and polluants into Călmățui River, associated water courses and drainage channels, potentially affecting amphibians that rely on aquatic habitats.	**Moderate**	• Implement pollution control practice including appropriate storage and containement, refuelling stations away from water bodies, availability and training in use of spill kits; • Conduct regular water quality testing at strategic locations; • Monitor key parameters such as pH, dissolved oxygen levels, turbidity and presence of specific polluants; • Establish clear protocols for reporting and responding to any water pollution incidents, including immediate corrective actions.	**Negligible**
C18	**Direct loss of species** Reptiles can be vulnerable to being crushed by heavy equipment or vehicles during the clearing.	**Moderate**	• Establish avoidance and exclusion zones around known reptile habitats to minimise risk of direct impacts. Clearly mark and communicate these zones to construction personnel to ensure compliance; • If reptiles are found in construction area, consider implementing a relocation plan. This involves capturing and translocating reptiles to suitable habitats away from the construction zone, ensuring their safety; • Provide comprehensive training to construction workers and equipment operators on reptile conservation and the	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
			importance of implementing mitigation measures;	

Table 6-2: Biodiversity Impacts – Operation

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
Designated and Protected Areas				
O1	The operational impacts on the protected areas relate to potential effects on the numbers and distribution of the qualifying features for which the site is designated, including the risk of collision for some bird species with the wind turbines. Species may also be affected by displacement by turbines. The operation of infrastructure affects the ability of these species to move through the area and maintain their natural behaviours. *The baseline surveys observed various bird species including birds of prey/raptors (harriers, falcons, buzzards), and larger bodied water birds (swans, cranes for example) that are known to be typically at risk from renewable energy projects such as wind farms due to their elevated collision risk potential. Given that there are several bird species potentially at risk that are qualifying biodiversity features of the Natura 2000 site, receptor sensitivity is regarded as moderately high. The findings of the Collision Risk Model (CRM) based on bird VP surveys covering relevant seasons determined that collision risk over the life-time of the wind project will be low. Therefore, inherent risk based on*	**Moderate**	• Implement post construction fatality monitoring based on carcass searches aligned with GIIP to estimate annual fatality rate; • Develop adaptive management plan that uses operational monitoring data to inform adaptive management measures (measures may typically include: investigating and responding to carcass finds, turbine risk heat mapping, review of high risk turbines, supplementary deterrents, additional habitat management measures, initiating shut down on demand protocol based on exceeding fatality thresholds (which would need to be determined), additional detailed surveys/monitoring as needed), ; • Implement ongoing monitoring programs to assess the effectiveness of mitigation measures and make necessary adjustments; • Implement appropriate lighting systems that reduce the attraction of birds to turbines during low-light conditions. Utilize lighting designs that minimize disorientation and provide adequate illumination for safe bird passage; • Monitor effects of displacement of breeding qualifying bird species through repeat transect surveys years 1-3, 5, 10 & 15	**Minor** This is based on the assumption that mitigation is successful, and casualties remain within the natural variability of the populations.

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	probability of collisions leading to bird fatalities is likely to be relatively low for the target threatened bird species such as Red-Footed Falcon and Northern Lapwing, with the CRM concluding that the Project is unlikely to result in any population level effects for the target bird species assessed. Taking into consideration the low probability of significant impacts on birds at the population level, magnitude of effect is likely to be regarded as relatively small/low (i.e the effect does not cause a substantial change in the population of the species, or other species dependent on it). The joint consideration of a medium-high receptor sensitivity and small magnitude of effect, results in an overall 'Moderate' impact significance under a pre-mitigation scenario".			
Habitat				
O2	**Habitat Degradation / Fragmentation** Most of the direct habitat loss occurs during construction. Operational habitat effects are likely to be negligible with only a few additional vehicle movements and unplanned events unlikely and localised.	**Negligible**	• N/A	**Negligible**
O3	**Invasive Alien Species** A small risk of IAP's being transported during routine maintenance operation over or through natural habitat exists	**Moderate** Retained as moderate on a precautionary basis due to the	• Implement a monitoring program to identify and detect invasive alien species as early as possible. This allows for timely effective response measures to prevent their establishment and spread.	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	The additional movements associated with maintenance will be low and on roads or hard standing. As the habitats stabilise post construction the ability of IAP's to establish will be reduced.	sensitivity of the 1530* priority habitat.	• Establish protocols to minimize the introduction of invasive alien species. This can include measures such as controlling the movement of vehicles, equipment, and personnel.	
Mammals				
Spermophilus citellus				
O4	**Habitat Degradation / Fragmentation/ / Direct loss of species.** The infrastructure corridor and roads will pose continued risks of direct collision mortality, and fragmentation of populations and opportunities to complete life cycles. However, vehicle movements associated with maintenance will be low and such effects will be small.	**Moderate**	• Implement vehicle speed limits through signage and awareness training procedures specifically for steppe habitats where *S. citellus* has been observed in numbers; • Implement crossings strategy ahead of construction to provide suitable crossing points over or under infrastructure; • Implement a habitat restoration or enhancement plan to provide alternative habitat or improve existing habitat for the species.	**Negligible**
O5	**Noise and Vibration** Wind turbines can generate noise during their operation, which may cause disturbance to *Spermophilus citellus*, potentially affecting their behaviour and breeding success.	**Moderate**	• Use noise-reducing technologies and insulation materials to minimize noise propagation; • Monitor populations post construction, set thresholds for adaptive management; • Include habitat creation and enhancement options within adaptive management plan.	**Negligible**
O6	**Electrocution Risks** Cables and associated electrical infrastructure within or near the wind farm can pose electrocution risk to *Spermophilus citellus.*	**Moderate**	• Implement insulated covers on power lines to reduce the risk of electrocution; • Conduct regular inspections and maintenance to identify and address any potential hazard.	**Negligible**
Lutra lutra				
O7	**Habitat Degradation / Fragmentation /**	**Moderate**	• Implement a habitat restoration or	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	Direct loss of species The operation of a wind farm can result in habitat loss and fragmentation, affecting the availability of suitable foraging areas. The infrastructure corridor and roads will pose continued risks of direct collision mortality, and fragmentation of populations and opportunities to complete life cycles. However, vehicle movements associated with maintenance will be low and such effects will be small.		enhancement plan to create or improve optimum habitats near the wind farm area; • Controls over the speed of the vechicles where *L. lutra* has been identified;	
O8	**Disturbance and Stress** Wind turbines can generate noise during their operation, which may cause disturbance and stress to *Lutra lutra*, potentially affecting their behaviour, feeding patterns and reproductive success.	**Moderate**	• Use noise-reducing technologies and insulation materials to minimize noise propagation; • Develop protocols to minimize human presence and vehicle near otter habitats, especially during sensitive periods such as breeding and pup rearing.	**Negligible**
Birds				
O9	**Species Collision with Wind Turbines** One of the most well-known impacts of wind farms on birds is the risk of collision with wind turbine blades. Birds may not perceive the fast-moving blades as barriers and can inadvertently collide with them, resulting in injury or mortality. The risk is especially high for birds that fly at similar heights as the rotating blades or during migration when large numbers of birds pass through wind	**Moderate**	• Implement post construction fatality monitoring in accordance with the recently released IFC Good Practice Handbook; • Develop adaptive management plan that uses operational monitoring data to inform adaptive management measures (measures may typically include: investigating and responding to carcass finds, turbine risk heat mapping, review of high risk turbines, supplementary deterrents, additional habitat management measures, initiating shut down on demand protocol based on	**Minor** This is based on the assumption that mitigation is successful, and casualties remain within the natural variability of the populations.

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	farm areas. The baseline surveys observed various bird species including birds of prey/raptors (harriers, falcons, buzzards), and larger bodied water birds (swans, cranes for example) that are known to be typically at risk from renewable energy projects such as wind farms due to their elevated collision risk potential. Given that there are several bird species potentially at risk that fare of conservation importance (i.e. globally threatened species and this that form part of the qualifying biodiversity features of the Natura 2000 site, receptor sensitivity is regarded as relatively high. The findings of the Collision Risk Model (CRM) based on bird VP surveys covering relevant seasons determined that collision risk over the life-time of the wind project will be low. Therefore, inherent risk based on probability of collisions leading to bird fatalities is likely to be relatively low for the target threatened bird species such as Red-Footed Falcon and Northern Lapwing, with the CRM concluding that the Project is unlikely to result in any population level effects for the target bird species assessed. Taking into consideration the low probability of significant impacts on birds at the population level, magnitude of effect is		exceeding fatality thresholds (which would need to be determined), additional detailed surveys/monitoring as needed), Implement ongoing monitoring programs to assess the effectiveness of mitigation measures and make necessary adjustments; • Implement appropriate lighting systems that reduce the attraction of birds to turbines during low-light conditions. Utilize lighting designs that minimize disorientation and provide adequate illumination for safe bird passage; • Clear vegetation around wind turbines and maintain short cover during operational phase (to avoid creating bird perching points and attracting prey animals for raptors);	

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	likely to be regarded as relatively small/low (i.e the effect does not cause a substantial change in the population of the species, or other species dependent on it). The joint consideration of a medium-high receptor sensitivity and small magnitude of effect, results in an overall 'Moderate' impact significance under a pre-mitigation scenario			
O10	**Displacement** The noise, vibrations and visual disturbance caused by wind turbines can impact the behaviour of birds. The disturbance caused by wind turbines can also disrupt communication and affect reproductive success.	**Moderate** Unlikely to have a significant impact on target species	• Utilize low-noise wind turbine designs that minimize operational noise emissions, especially during periods of peak bird activity; • Employ noise control technologies such as sound barriers, insulation and absorption materials around turbine components to reduce noise propagation; • Implement advanced turbine foundation designs that minimize vibration transmission to the surrounding environment; • Utilize lighting systems that minimize visual disturbance, including the use of low-intensity aviation obstruction lights; • Establish bird monitoring programs to assess the impact of wind turbines on bird behaviour and breeding success; • Adaptive management to include option of habitat enhancement and/or creation to support displaced species	**Negligible**
O11	**Mortality through electrocution on distribution lines** Birds can be attracted to the distribution lines for various reasons, such as using them as perching sites or hunting from them. When they make contact	**Moderate**	• Installing bird flight diverters, which are visual markers that make the lines more visible to birds and deter them from approaching;Monitor effectiveness through post construction fatality monitoring that includes sample of OHL;	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	energized parts they can create a path for electrical current to flow through their bodies. This can result in severe injuries or death. Birds of prey are particularly vulnerable due to their tendency to perch on elevated structure like distribution lines There are several large bodied raptors and waterbirds with fairly large wingspans that could be at risk of colliding and electrocution with overhead powerlines. As several of these species are of conservation importance (globally threatened or linked to the Natura 2000 areas as qualifying features), the receptor sensitivity is likely to be high, and probability of the impact occurring without mitigation could be considered possible, resulting in a 'moderate' impact significance pre-mitigation.		• Include markers such as coloured plastic balls to be attached to conductors to improve visibility for birds where necessary and technically feasible (spacing of bird flight diverters (e.g. 5m intervals) will be according to international good practice guidance) • Ensure bird safe pylon design (Wildlife and power lines: Guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks IUCN / Martin Martin et al. (2022) • Electrocutions & Collisions of Birds in EU Countries: The Negative Impact & Best Practices for Mitigation Raptor Protection of Slovakia (2021) / NABU).	
Bats				

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
O12	**Direct mortality** *a. Collision risk* Bats are susceptible to collision with wind turbines blades. As they navigate their flight paths, they may encounter the rotating blades, leading to direct collisions. Fatality can increase at: a) low wind speeds, b) before and after passage of storm fronts. The majority species killed by turbines are adapted for foraging insects in open spaces, high above the ground and far from vegetation. Mortality is usually the highest during low wind speeds and increased with turbine tower height and rotor diameter. *b. Barotrauma* The rapid changes in air pressure caused by the moving turbine blades can create a pressure drop near the blades. Bats flying through this area can experience internal injuries due to the pressure changes, even if they do not physically collide with the blades.	**Moderate**	• Undertake post construction fatality monitoring to inform adaptive management plans and monitor effectiveness of mitigation; • Adaptive management plans should include thresholds for action; • Actions should include curtailment protocols, which either involve temporarily shutting down or reducing turbine operation during peak bat activity periods (blanket curtailment) or Smart curtailment options that include weather variables and bat activity levels; • Opt for lighting systems that minimize attraction to bats, as certain types of lighting can draw them closer to turbines; • Use light configurations that minimize light pollution and avoid attracting insects, a primary food source for bats; • Bat monitoring using transects and static detectors in years 1-3, 5, 10 & 15 to track changes in wider bat population.	**Negligible** Will remain moderate if adaptive management is unsuccessful.

Table 6-3: Biodiversity Impact Assessment – Decommissioning

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
Designated and Protected Areas				
D1	**Disturbance** During the decommissioning phase, the removal of turbines may result in a certain level of disturbance to the designated areas. It is important to note that no habitat loss will be considered, meaning the primary focus is on minimizing disruption and ensuring the preservation of existing biodiversity qualifying features.	**Moderate**	• Pre-decommissioning Surveys; • Schedule decommissioning activities during periods of low biological sensitivity or when species are less vulnerable, such as avoiding breeding seasons or critical migration periods; • Implement measures to minimize noise and vibration generated during turbine removal, such as using sound barriers, low-noise equipment; • Establish a comprehensive monitoring program to assess the effectiveness of mitigation measures and ensure that any unforeseen impacts are detected and addressed promptly.	**Negligible**
Habitats				
D2	**Habitat expansion and restoration** Removal of turbines can create new opportunities for habitat expansion and restoration. The area perviously occupied by the turbines can be reclaimed. The increased habitat area can provide a wide range of resources, such as food, shelter and nesting sites, attracting a greater diversity of widelife who can benefit from the newly available spaces for foraging, nesting and territorial expansion.	**Minor Positive**	• Develop a comprehensive habitat enhancement plan that outlines the specific restoration goals and targets for decommissioned turbine areas.	**Minor Positive**
D3	**Introduction/Spread of Invasive Species** The decommissioning process involves the disturbance of soil and vegetation , creating opportunities for invasive species to colonize. Moreover,there may be unintentional transport of	**Moderate**	• Implement measures to prevent the spread of invasive species, such as cleaning machinery and equipment before entering and leaving the decommissioned area; • Develop and implement measures to control and manage invasive plant species within the decommissioned areas;	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	invasive species seeds through the movement of machinery, vehicles or even wind dispersal.			
Birds				
D4	**Direct Mortality** The removal of turbines will reduce levels of mortality but construction works involved in decommissioning may disturb of destroy breeding birds or disturb wintering species on a localised and temporary basis.	**Moderate**	• Implement buffer zones or exclusion areas around important nesting or foraging sites to minimize disturbance; • Where possible avoid site clearance during the breeding season. Where not, use Ecological Clerks of Works to identify nests and avoid till young have fledged.	**Negligible**
D5	**Disturbance and displacement** Noise, vibrations and increased human presence in the area can lead to temporary displacement of birds. These can avoid areas undergoing decommissioning.	**Moderate**	• Establish buffer zones around sensitive bird habitats or nesting areas and restrict access to those zones during decommissioning; • Implement exclusion zones for certain activities to minimize disturbance to birds; • Consider using deterrents, such as visual markers or sound devices, to discourage birds from approaching decommissioning area.	**Negligible**
Bats				
D6	**Direct Mortality** Bats may be roosting in proximity to the infrastucture and there is the potential for accidental killing. Longer term the removal of turbines will reduce levels of mortality.	**Moderate**	• Plan decommissioning activities during periods when bats activity is relatively low, such as avoiding peak migration seasons or hibernation periods; • Do pre-decommissioning checks for bat roosts in and adjacent to decommissioning areas; • Schedule activities during daylight hours when bat activity is typically lower.	**Negligible**
D7	**Disturbance and displacement** Noise, vibrations and increased human presence in the area can lead to temporary displacement of bats.Given the localised and temporary nature of decommissioning works impacts on bat populations are likely to be within natural	**Negligible**	• Establish buffer zones around sensitive bat habitats and restrict access to these zones during decommissioning; • Implement exclusion zones for certain activities to minimize disturbance to bats; • Minimize artificial lighting during nighttime operations to reduce attraction of insects, which are a food source for bats;	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	variability.		• Use “bat-friendly” lighting fixtures that emit light in non-UV wavelengths and are directed downward to minimize the disturbance to bats.	
Mammals				
Spermophilus citellus				
D8	**Habitat Loss/ Fragmentation** Decommissioning activities can result in the loss or fragmentation of suitable habitat for *Spermophilus citellus*, affecting their populations and dispersal abilities. Such effects will be limited in extent and timing.	**Moderate**	• Controls over speed of the vehicle where *S. citellus* has been identified; • Use awareness signs for drivers; • Identify and protect important habitat areas, including burrow systems and foraging areas from decommissioning activities; • Develop a habitat restoration plan to provide alternative habitat or enhance existing habitat for *Spermophilus citellus;* • Implement wild-friendly structures, such as tunnels or underpasses, to facilitate safe movement across decommissioned areas.	**Negligible**
D9	**Disturbance and displacement** Noise, vibrations and human presence during decommissioning can cause stress and distrupt the natural behavior of the species;	**Moderate**	• Establish buffer zones around *Spermophilus citellus* colonies and adjust the timing of decommissioning activities to minimize disturbance during sensitive periods (breeding, hibernation); • Use noise barriers, acoustic insulation, or noise – reducing technologies to minimize noise propagation; • Implement protocols to minimize human presence and vehicle traffic near *Spermophilus citellus* during critical times.	**Negligible**
D10	**Direct mortality** Physical contact with decommissioning equipment or vehicles can result in direct injury or mortality of the species.	**Moderate**	• Conduct thorough surveys to identify active burrows and colony locations prior to decommissioning activities; • Mark or flag known burrows or colonies to avoid accidental destruction; • Implement careful site clearance procedures to minimize the risk of injury or mortality during equipment removal.	**Negligible**
Lutra lutra				
D11	**Habitat Loss/ Fragmentation**	**Moderate**	• Implement vehicle speed limits through signage and awareness training procedures	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
	The presence of *Lutra lutra* was recorded in the vicinity of proposed location of the turbines, particularly near the Călmățui River and its crossings. Decommissioning activities can result in the loss or alteration of optimum habitat.		specifically where *L. lutra* has been identified Identify and protect important habitat areas • Implement a habitat restoration plan that includes the creation or enhancement of suitable *Lutra lutra* habitat in the vicinity of the wind farm.	
D12	**Disturbance and displacement** Noise, vibrations and human presence during decommissioning can cause stress and distrupt the natural behavior of the species;	**Moderate**	• Establish buffer zones around the Eurasian Otter habitats and adjust the timing of decommissioning activities to minimize disturbance during sensitive periods (breeding, pup rearing); • Use noise barriers, acoustic insulation, or noise – reducing technologies to minimize noise propagation; • Implement protocols to minimize human presence and vehicle traffic near otter habitat during critical times.	**Negligible**
D13	**Water Quality and Pollution** Decommissioning activities may result in sedimentation,runoff, or pollution of water bodies, affecting the water quality and availability of prey species for *Lutra lutra.*	**Moderate**	• Implement erosion and sediment control measures to minimize the discharge of sediment and polluants into Călmățui River; • Use appropriate containment systems to prevent fuel or chemical spills during decommissioning; • Monitor water quality parameters regularly to identify any impacts and take corrective actions if necessary.	**Negligible**
Herpetofauna				
D14	**Disturbance and displacement** Noise, vibrations and human presence during decommissioning can cause disturbance and stress for herpetofauna, affecting their behaviour, movement and reproductive success.	**Moderate**	• Establish buffer zones around sensitive herpetofauna habitats and adjust the timing of decommissioning activities to minimize disturbance during sensitive periods (breeding, hibernation); • Use noise barriers, acoustic insulation, or noise – reducing technologies to minimize noise propagation; • Implement protocols to minimize human presence and vehicle traffic near herpetofauna habitat during critical times.	**Negligible**

No.	Impact Description	Impact Assessment	Mitigation Measures	Residual Impact
D15	**Migration and Movement** Impeding the movement of herpetofauna, such as migration routes or access to breeding and foraging areas	**Moderate**	• Identify and preserve movement corridors; • Design and install structures, such as underpasses or culverts, to facilitate safe movement across roads or barriers. • Rehabiliate turbine sites to maximise suitability for herptiles.	**Negligible**

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