LIFE Nature and Biodiversity

TECHNICAL APPLICATION FORMS

Part A – administrative information

LIFE 2020

FOR ADMINISTRATION USE ONLY

LIFE20 NAT/AT/000049

LIFE Nature and Biodiversity project application

Language of the proposal:

English (en)

Project title:

LIFE Northern Bald Ibis

Project acronym:

LIFE NBI

The project will be implemented in the following Member State(s) and Region(s) or other countries:

Austria	Salzburg
	Oberösterreich
	Kärnten
Germany	Bayern
	Baden-Württemberg
Italy	Toscana
	Veneto
Switzerland	All regions

Expected start date: 01/01/2022 **Expected end date:** 31/12/2028

LIST OF BENEFICIARIES

Name of the **coordinating** beneficiary: Schönbrunner Tiergarten GmbH

Name of the associated beneficiary: Fondazione A.R.C.A. Animal Research Conservation in Action
Name of the associated beneficiary: Förderverein Waldrappteam
Name of the associated beneficiary: Kärnten Netz GmbH
Name of the associated beneficiary: Land Salzburg; Abteilung 5 - Natur- und Umweltschutz, Gewerbe
Name of the associated beneficiary: Netz Oberösterreich GmbH
Name of the associated beneficiary: Parco Natura Viva - Garda Zoological Park s.r.l.
Name of the associated beneficiary: Natur- und Tierpark Goldau
Name of the associated beneficiary: Tierpark Rosegg GmbH
Name of the associated beneficiary: World Wide Fund for Nature Germany

LIST OF CO-FINANCERS

Name of the co-financer: AJS Förderstiftung
Baryon AG
Name of the co-financer: Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK)
Name of the co-financer: Bund Naturschutz in Bayern e.V. - Kreisgruppe Altötting
Name of the co-financer: Stadt Burghausen
Name of the co-financer: HIT Umwelt- und Naturschutz Stiftungs-GmbH
Name of the co-financer: Münchner Tierpark Hellabrunn AG
Name of the co-financer: Artenschutzstiftung Zoo Karlsruhe
Name of the co-financer: zooschweiz

PROJECT BUDGET AND REQUESTED EU FUNDING

Total project budget:	6,725,548 Euro	
Total eligible project budget:	6,725,548 Euro	
EU financial contribution requested:	4,035,328 Euro	(= 60.00% of total eligible budget)

SECTOR

Biodiversity

LIFE20 NAT/AT/000049

TECHNICAL APPLICATION FORMS

Part B - technical summary and overall context of the project

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)

Project title:

LIFE Northern Bald Ibis

Description of the conservation issue targeted and the pre-operational context

Our target species is the Northern Bald Ibis (NBI, *Geronticus eremita*), classified as endangered in the IUCN Red List. The migratory bird species was originally distributed over Northern Africa, the Arabian Peninsula and a large part of Europe. According to Fritz & Janák (2020; for a citation list see ATT_02), the first documented disappearance of a NBI population happened in ancient Egypt, where the species attained greatest mythological significance despite its extinction. In Europe, the NBI went extinct in the Middle Ages. The remaining migratory populations outside Europe disappeared in the recent past, and the last known migratory individual, that lived in the Middle East, died in 2013. In the wild, only two sedentary colonies persisted on the Atlantic coast of Morocco within a limited geographical range.

In 2015, the *AEWA NBI International Single Species Action Plan* (ISSAP) was published, with the purpose to increase the NBI's population size and breeding range within the next decade. Eight countries with major responsibility for the implementation of the actions were identified, all of them located beyond the European boundaries. However, five years after the publication of the ISSAP, no significant conservation or translocation measures were taken, except in Morocco. Fritz & Janák (2020) assume that this situation will hardly improve within the timeframe of the ISSAP, for political and socio-economic reasons. Additionally, the ISSAP did not consider climate change effects, which critically affected the NBI in the past. Together with human influences such as hunting, it presumably caused the disappearance of the Egyptian and European NBI populations. In the present, Morocco is expected to face severe climate change effects with threatening consequences for the world's last wild NBI population. Indeed, all eight countries listed in the ISSAP are assumed to be disproportionally affected by climate change, which questions the sustainability of conservation measures within these countries.

In the past, the NBI bred along the northern foothills of the Alps, and presumably in southern Spain, in the Upper Adriatic Region and in Bulgaria. Historic and genetic findings suggest a long-lasting presence of the NBI in Europe throughout the Holocene. Based on this historic evidence, a feasibility study on the reintroduction of the species was initiated in 2002. After 12 years of ecological, behavioural, and methodological research, in accordance with the IUCN Guidelines for Reintroductions and Other Conservation Translocations, the reintroduction started with the LIFE+ NBI project (LIFE+12-BIO_AT_000143).

The European migratory NBI population established during the LIFE+12 project is the first promising attempt to reintroduce a continentally extinct migratory species. In 2019, the population consisted of 142 successfully rewildered individuals, which exceeded the defined conservation goals of LIFE+12 by 20%. In contrast to all other remaining NBI populations, the reintroduced individuals have the characteristic migratory lifestyle of the species. Out of the four breeding colonies established in LIFE+12, two are self-sustaining considering their net population growth (growth rate lambda > 1). All colonies utilize the same common wintering site in southern Tuscany to ensure genetic exchange.

According to Boehm et al. (2020), fecundity of the migratory population (on av. 2.24 fledglings per nest) is considerably higher than in the Moroccan population (on av. 1.23) or the Spanish sedentary release population *Proyecto Eremita* (on av. 0.97). First-year survival (62%) is almost twice as high as in the Spanish population (32%). These outstanding demographic values indicate utilisation of high-quality feeding habitats, since the migratory lifestyle enables the birds to explore temporarily available feeding sites. These facts confirm the validity of the choices made during the preparation and the implementation of LIFE+12.

The European migratory NBI population of the LIFE+12 project is the first NBI population to be part of a systematic Population Viability Analysis (PVA) on the future population development (see ATT_13), carried out by the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin. The analysis determined 314 migratory individuals as the Minimum Viable Population (MVP) size. From this stage on, no further management and translocation measures will be needed for a self-sustaining population (lambda > 1) with an extinction probability of close to zero after 50 years.

The PVA clearly demonstrates that the NBI faces favourable conditions to become part of the European fauna again. The proposed project aims to top the MVP threshold and to make sure that it becomes self-sustaining on a population level. To reach this objective, most of the partners of the LIFE+12

project will also participate in the new project and will therefore take advantage of their experience for the success of this new project.

Project objectives

Obj. 1 Establishing a self-sustaining population

- increasing the population size to ≥357 migratory individuals, exceeding the MVP threshold (N=314);
- establishing three new breeding colonies and one satellite colony, located both north and south of the Alps, all migrating to a common wintering site in Tuscany;
- enhancing the population's resilience to climate change effects.

Obj. 2 Reducing mortality through illegal hunting in Italy

- reducing the loss rate due to illegal hunting in Italy from currently 31% of all casualties to below 25%;
- optimizing and expanding preventive and post-poaching measures;
- launching a comprehensive flagship campaign with positive side-effects for other endangered migratory species;
- complementing measures in objective (IV).

Obj. 3 Reducing mortality through electrocution

- reducing the loss rate due to electrocution on medium voltage power poles from currently 45% of all casualties to below 38%;
- retrofitting about 160 power poles at three main feeding sites in Austria;
- launching a comprehensive flagship campaign;
- complementing measures in objective (IV).

Obj. 4 Creating synergies with policy areas regarding biodiversity threats

- using the NBI as flagship species for topic-specific PR and related lobbying measures against illegal hunting in Italy and electrocution in Austria;
- driving the implementation of the *Italian National Plan against Illegal Threats to Wild Bird*s and the inclusion of a region along the Tyrrhenian Coast as new target area (black spot);
- driving the implementation of a systemic solution against electrocution as a specific measure into the *Austrian Biodiversity Strategy 2030*, which also benefits other bird species.

Obj. 5 Creating synergies with policy areas regarding habitat protection

- driving the reassessment of the NBI status in the *European Red List* (currently listed as regionally extinct);
- driving the inclusion into Annex I of the *Birds Directive* for the designation of NBI-specific SPAs and/or the modification of existing relevant SPAs; though this process is a precedential case and difficult to assess;
- increasing knowledge of local farmers in breeding areas on management-related needs and benefits of the NBI and topic-related incentives for sustainable and organic farming through the rural development measures of the *Common Agricultural Policy* (CAP).

Obj. 6 Performing transfer and replication measures

- hosting three replication workshops regarding innovative methods on the project.

Actions and means involved

66% of the eligible costs are dedicatd to concrete conservation actions (CCAs). These *Concrete Conservation Actions* (CCAs) are listed below, with the mainly responsible partner in square brackets.

C.01 [FV-WT]
all management measures at the breeding areas, the migration corridors and the wintering area, to enable population growth towards 357 individuals by the end of 2028.

- translocation measures;
- veterinary treatments;
- management measures and bird monitoring (remote and on-site).

C.02 [FV-WT]
equipment of 555 fledged and released juveniles with GPS devices for remote monitoring;

- purchase of 583 solar-powered GPS devices (555+5% reserve);
- maintenance of an online biologging GPS database, the *Movebank* database and the App *Animal Tracker*.

C.03 [TPG]
establishment of the migratory breeding colony Goldau, Schwyz (CH), with at least 56 individuals at the end of 2028;

- release of at least 112 juveniles by 4 human-led migrations (see action C.07);
- construction of a breeding and management infrastructure (financed entirely outside the LIFE budget);
- continuation and completion of the reintroduction approval process, which was already started before the LIFE application;
- required management measures for the colony.

C.04 [TPR]
establishment of the migratory breeding colony Rosegg, Carinthia (AT), with at least 67 individuals at the end of 2028;

- release of at least 126 juveniles by an innovative translocation approach, using offspring of a temporary free flying sedentary zoo colony at TPR;
- construction of a breeding and management infrastructure;
- required management measures for the colony.

C.05 [PNV]
establishment of the migratory breeding colony Bussolengo, Verona (IT), with at least 55 individuals at the end of 2028;

- innovative approach by use of offspring from northern breeding colonies which failed to learn the entire migration route;
- construction of a breeding and management infrastructure;
- required management measures for the colony.

C.06 [FV-WT]
establishment of the first satellite colony in the eastern breeding area, located in Bavaria (DE) or Salzburg (AT), with at least 55 individuals at the end of 2028;

- innovative approach by translocation of adults from the breeding colonies Burghausen and/or Kuchl;
- establishment of a temporary breeding and management infrastructure;
- required management measures for the colony;

- replacement of the wooden breeding structure of the colony Burghausen by artificial or real rock, to enhance the natural and induced colonization of natural rock faces.

C.07 [FV-WT]
release of juveniles by means of human-led migrations (HLM), the only proven translocation method to establish a breeding colony with a new migration tradition.
Implementing the HLMs will be subcontracted to an expert team.

- 4 HLMs with release of at least 112 juveniles for the establishment of the colony Goldau (CH);
- 1 HLM with release of at least 28 juveniles to support the population growth of the colonies Burghausen and Kuchl as a basis for the establishment of a first satellite colony (action C.06).

C.08 [ZooVIE]
reducing the NBI loss rate due to illegal hunting in Italy from 31% during the LIFE+12 period to a value below 25%;

- developing an action guide for efficient and comprehensive post-poaching measures;
- incident-related implementation of well-coordinated post-poaching measures;
- filing of complaints and representation at the criminal trials against offenders by an experienced Italian lawyer and a public prosecutor;
- cooperation with Italian stakeholders including hunting associations, with support by an Italian hunting expert;

- complementary public relation and policy measures (actions E.01, E.03).

C.09 [ZooVIE]
reduction of the NBI losses due to electrocution at medium voltage power poles in Austrian from 45% during LIFE+12 to a value below 38%;

- retrofitting about 50 high risk power poles in Upper Austria at an 22 km² area at the main feeding area of the colony Burghausen; with involvement of the network operator NetzOÖ (AB);
- retrofitting about 50 high risk power poles in Carinthia at an 19 km² area at the prospected main feeding area of the new established colony Rosegg; with involvement of the network operator KNG (AB);
- retrofitting about 60 high risk power poles in the state of Salzburg at an 23 km²area at the main feeding area for the colony Kuchl, with involvement of LSB (AB) and the local network operator;
- complementary public relation and policy measures towards a comprehensive nationwide solution based on legal regulations (actions E.01, E.03).

Quantified expected results and impacts

Obj. 1 Establishing a self-sustaining population

- self-sustaining NBI population with min. 357 individuals and population growth Lambda >1;
- incident-related field measures in about 280 cases (C.01);
- release of at least 290 individuals at several sites (C.01, C.07);
- establishment of three new migratory breeding colonies: Goldau (CH; N ≥56; C.03), Rosegg (AT; N ≥67; C.04), Bussolengo (IT; N ≥55; C.05);
- establishment of a first satellite colony (Bavaria; N ≥21; C.06);
- attachment of GPS devices to at last 555 juveniles (C.02).

Obj. 2 Reducing mortality through illegal hunting in Italy

- reduction of the loss rate in Italy due to illegal hunting from 31% to below 25%;
- comprehensive post-poaching measures in about 35 cases, including field measures, complaint with the public prosecutor, communication with hunting associations (C.08);
- complementary PR and policy measures: see Obj.4.

Obj. 3 Reducing mortality through electrocution

- reduction of the loss rate in Austria due to electrocution on medium voltage power poles from currently 45% to below 38%;
- retrofitting of about 160 high-risk power poles, covering an area of about 64 km² in the Austrian main feeding areas (C.09);
- complementary PR and policy measures: see Obj.4.

Obj. 4 Creating synergies with policy areas regarding biodiversity threats

- policy measures to drive the implementation of the *Italian National Plan against Illegal Threats to Wild Birds* and expansion the areas of action by a region along the Tyrrhenian coast;
- policy measures to promote the process towards a holistic legal solution against electrocution in Austria;
- signing of a *Memorandum of Understanding* in the frame of an expert workshop and adoption of a *Regional Declaration for the Conservation and Responsible Hunting* in the frame of a hunter's conference (E.03);
- info points at ZooVIE and further Austrian zoos (>3 MIO visitors p.a.) to raise public awareness for the threat of electrocution;
- accompanying incident-related public relation (action E.01).

Obj. 5 Creating synergies with policy areas regarding habitat protection

- habitat assessment to identify relevant areas for the designation of SPAs for the NBI;
- legal opinion for the inclusion of the NBI into Annex I of the *Birds Directive* and for the designation of SPAs;
- policy measures and lobbying to drive the process for the designation of SPAs;
- information initiative targeting farmers and landowners, about 180 visits in total.

Obj. 6 Performing transfer and replication measures

- three workshops during the project period to ensure the transfer and replication of methods and results (E.02);
- participation in min. six international conferences;
- six networking events at ZooVIE;
- scientific research and publication (financed outside the LIFE frame).

Sustainability of the Project Results

With a total of at least 357 individuals at the end of the LIFE project, the population will clearly exceed the Minimum Viability Population estimate of 314 individuals (Drenske et al. subm; see ATT_13). At this stage, further translocation measures and releases will not be mandatory.

The project leadership by ZooVIE (CB), the involvement of TPG (AB; C.03), TPR (AB; C.04) or PNV (AB; C.05) and the support by various other zoos and zoo associations (WAZA A8_04; EAZA A8_13; OZO A8_12; *zooschweiz* A6) ensure an overall after-LIFE management of the NBI population including the required funding, according to the zoos' commitment for species conservation. ZooVIE and FV-WT (AB) overtake the continued overall monitoring and management, funded through own resources.

After-LIFE monitoring and management at three breeding sites, established during the LIFE project, will be in the responsibility of the involved partner zoo institutions, on their own expense and with their own staff: colony Goldau – TPG (C.03), colony Rosegg – TPR (C.04), colony Bussolengo – PNV (C.05). FV-WT overtakes the responsibility for the satellite colony (C.06). The sustainable monitoring and management at the breeding sites established in LIFE+12 is also ensured: colony Kuchl - State Government of Salzburg, colony Burghausen - City Government of Burghausen, colony Überlingen - City Government of Überlingen. Sustainable monitoring and management at the wintering site is in the responsibility of WWF Oasi Italy (see A8_09). At all sites, further support comes from NGOs and voluntary groups.

To ensure permanent protection of the relevant habitats, we strive to include the species in Annex I of the *Birds Directive* and to designate NBI-specific SPAs and/or to modify existing relevant SPAs for the NBI. Additionally, we intend to educate local farmers about the benefits of organic and sustainable farming for the NBI.

To ensure sustainability of the measures against illegal hunting and post poaching measures, criminal proceedings and the collaboration with CUFAA of the Arma dei Carabinieri (A8_14) will be continued. Furthermore, ZooVIE and FV-WT continue the policy measures toward the implementation of the *Italian National Plan against Illegal Threats to Wild Birds* as well as the policy measures towards a holistic legal solution against the threat of electrocution in Austria.

Initiatives for the transfer and replication of project results will already be prepared or started during the LIFE period (action E.02). Scientific analysis, publication and dissemination of project outcomes will be carried out and funded in the frame of separately financed scientific projects. A research project funded by the Austrian Science Fund (P 30620-BBL) is currently ongoing, further projects are in preparation.

Is your project significantly climate-related? Yes ☐ No ☒

We regard the project as climate-related in three ways.

1) Operational and mitigation strategies

There is an increasing evidence of the impact of climate change effects on our NBI population. In particular, the autumn migration is exacerbated by longer and warmer autumns which come to a sudden end through cold spells. In consequence, the most crucial step of the migration, crossing the Alpine mountain chain, is in danger of becoming progressively mistimed.

So far, mistimed migration onset due to climate change got less scientific attention than shifts in spring migration of birds (see Gallinat et al. 2015; https://doi.org/10.1016/j.tree.2015.01.004). However, the adverse effects are expected to vary greatly between species. For the European NBI population, a Population Viability Analysis (Drenske et al. subm; see ATT_13) indicates low effects on the population development by stochastic events as caused by climate change.

Nonetheless, the LIFE application contains a series of climate related mitigation strategies, like (1) the expansion of the breeding area to Switzerland; (2) in this context the establishment of a second

migration corridor across the Alps and the potential for this western part of the population to bypass the Alps in the West; (3) the implementation of an new translocation method to include wild-born birds, which failed to learn the entire migration route, into a newly established breeding colony Bussolengo (action C.05).

2) Reduction of climate & environment impact

We aim to contribute to the *European Green Deal* in all areas of the project. This is also corresponding to the commitment of ZooVie and zoos in general for climate protection.

Concrete measures to reduce the climate & environment impact of the project are outlined in the various actions (C/D/E/F). A climate & environment monitoring group annually monitors and reports the measures and defined new goals (see action D.01).

3) Fire prevention as a secondary effect of electrocution

Bird electrocution is known to cause wildfires as a secondary effect, which might become seriously dangerous due to the increasing drought through climate change. Our planned measures to protect birds against electrocution will reduce this risk at same time.

The proposal addresses the following project topic(s)

- Targeting threatened species or habitats that are not included in the annexes of the Habitats Directive but have a status of 'endangered' or worse in the European species or habitats Red Lists or, for those species not covered by the European Red Lists, in the IUCN Red List.

Reasons why the proposal falls under the selected project topic(s)

In the global *IUCN Red List*, the NBI was listed as critically endangered for 24 years. In 2018, it was downgraded to endangered due to successful international conservation measures, with significant contribution by LIFE+12. In the *European IUCN Red List*, the species is still listed as regionally extinct, despite an increasing number of wild populations and colonies in Europe.

The species is not listed in Annex I of the European *Birds Directive* (2009/147/EEC). However, Article 4 states that member states shall take similar measures for regularly occurring migratory species not listed. This is applicable to the migratory population.

In the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), the NBI is listed in both appendices, since it is a migratory species (1) assessed as in danger of extinction throughout all or in a significant portion of its range (Appendix I), as well as (2) having an unfavourable conservation status and requiring international agreements for its conservation and management (Appendix II).

Therefore, this project falls in the frame of Topic 3 of the *LIFE Multiannual Work Programme* for 2018-2020.

Expected risks and constraints related to project implementation and mitigation strategy

1) Failure to reach the intended demographic objectives

Risk is assumed to be **low** due to:
(+) extensive experience in population management;
(+) exceeding the demographic objectives during the LIFE+12 project;
(+) applied conservative model assumptions to define target numbers.

2) Denial of approval for the reintroduction in Switzerland

Risk is assumed to be **low** due to:
(+) current development of the ongoing process and great popularity of the NBI in Switzerland;
(+) Mitigation strategy: promote growth of the established breeding colonies and consider establishing a further satellite colony within the EU.

3) Inbreeding or other genetic effects

Risk is assumed to be **low** due to:
(+) the encouraging outcome of a genetic study (carried out in LIFE+12);
(+) the genetic variability will be promoted by supplementing zoo offspring from underrepresented genetic lines.

4) Increased loss rate due to illegal hunting

Risk is assumed to be **medium** due to:
(-) possible temporary increases of the rate due to the COVID-19;
(+) the success in fighting this crime during LIFE+12;
(+) the planned expansion of the measures into a more comprehensive campaign.

5) Failure to designate SPAs for the NBI

Risk is assumed to be **high** due to:
(-) designation depends on formal requirements, which are not under our control;
(+) several relevant sites are already designated as SPAs for other species and we aim for inclusion of the NBI in the species lists of these sites.

6) Effects of climate change

Risk is assumed to be **medium** due to:
(-) increasing likelihood of temporal mismatches arising from climatically induced phenological shifts, e.g. late start of the autumn migration increasing the rate of failure for juveniles to cross the alpine barrier and reach the wintering area;
(+) the Population Viability Analysis indicated low effects on the population development by stochastic events caused by climate change;
(+) Mitigation strategies: establishment of the colony Bussolengo (action C.05) south of the Alps, extension of the breeding range to Switzerland (action C.03) with a second migration corridor and potential migration bypass around the Alps.

7) Further epidemic waves of COVID-19

Risk is assumed to be **medium** due to:
(-) further waves of infections might take place in 2022+;
(+) successful mitigation strategies applied during the season 2020, which ensured a positive development of the population despite the pandemic.

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Rosegg

Surface area (ha):	2,800.000
Surface description:	

EU protection status:

SPA ☐ **NATURA 2000 Code**

pSCI ☒ **NATURA 2000 Code** AT2164000

Other protection status according to national or regional legislation:

The NBI range of the breeding area Rosegg overlaps with a Natura2000 site (AT2164000) and is in close vicinity to a second one (AT2171000; see B2a_5_1). Additionally, the natural monument Linden-Alle in Rosegg ("Naturdenkmal"; NDM VL 08; protected by the Carinthian Nature Protection Law 2002), an old avenue with about 200 lime trees (Tilia cordata, Tilia platyphyllos) which is protected since 1942, encompasses an area of 2.4 ha (see B2a_5_2).

Main land uses and ownership status of the project area:

The majority of the NBI range at the breeding area Rosegg is covered by agricultural areas (48.82%), followed by forests (34.84%), artificial land (10.23%), water bodies (5.18%) and pastures (0.9%; see B2a_5_3). Ownership in percentages is not applicable.

The breeding site of sedentary NBI colony, which will provide offspring for the migratory breeding colony, is located on the premises of TPR (AB). Also the planned breeding infrastructure and aviary for the migratory breeding colony will be on located on the properties of TPR.

Scientific description of project area:

The breeding area Rosegg is located in the Rosental valley along the river Drau, which is situated in Carinthia, Austria. Rosegg is located between the cities Villach (13 km linear distance) and Klagenfurt (22 km), and about 3.5 km from lake Wörther See. Within the NBI range and around Rosegg, the Drau meander is declared as Special Area of Conservation for protection of the hermit beetle (*Osmoderma eremita*) and the Kessler's gudgeon (*Romanogobio kesslerii*).

Rosegg has about 1,800 inhabitants.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

The well-managed temporary freeflying NBI zoo-colony at TPR provides ideal conditions to develop and evaluate the innovative translocation approach to turn a sedentary into a migratory NBI breeding colony. Rosegg is located along the eastern MNI migration corridor, what is an essential prerequisite for the development of a migratory colony with the new translocation approach (see action C.04).

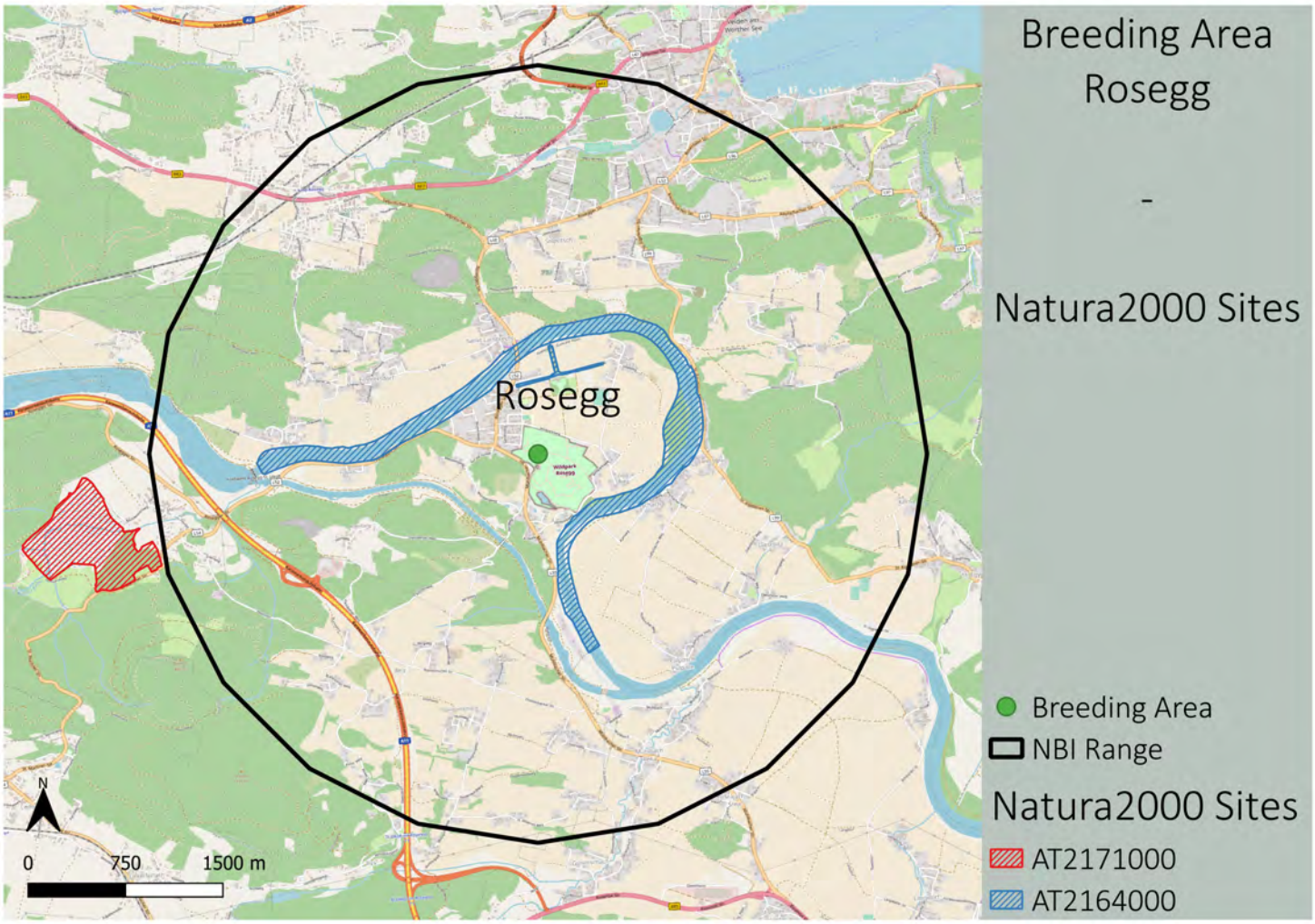
Two surrounding regions provide potential natural breeding sites for the expansion of the colony and establishment of satellite colonies: West of the colony, the Natura2000 sites Dobratsch (AT2112000) and
Schütt Gaschelitzen (AT2120000) and in the south-east the cliffs along the river Drau, particularly in the region from Ferlach to St. Margarete im Rosental.

The area of Rosegg and the surrounding offers plenty of meadows and pastures as suitable foraging habitats. This is clearly demonstrated by the sedentary zoo colony at TPR. These birds are free-flying and self-sufficient during the breeding season, and the fecundity of this colony is outstanding (see Drenske et al. subm.; ATT_13).

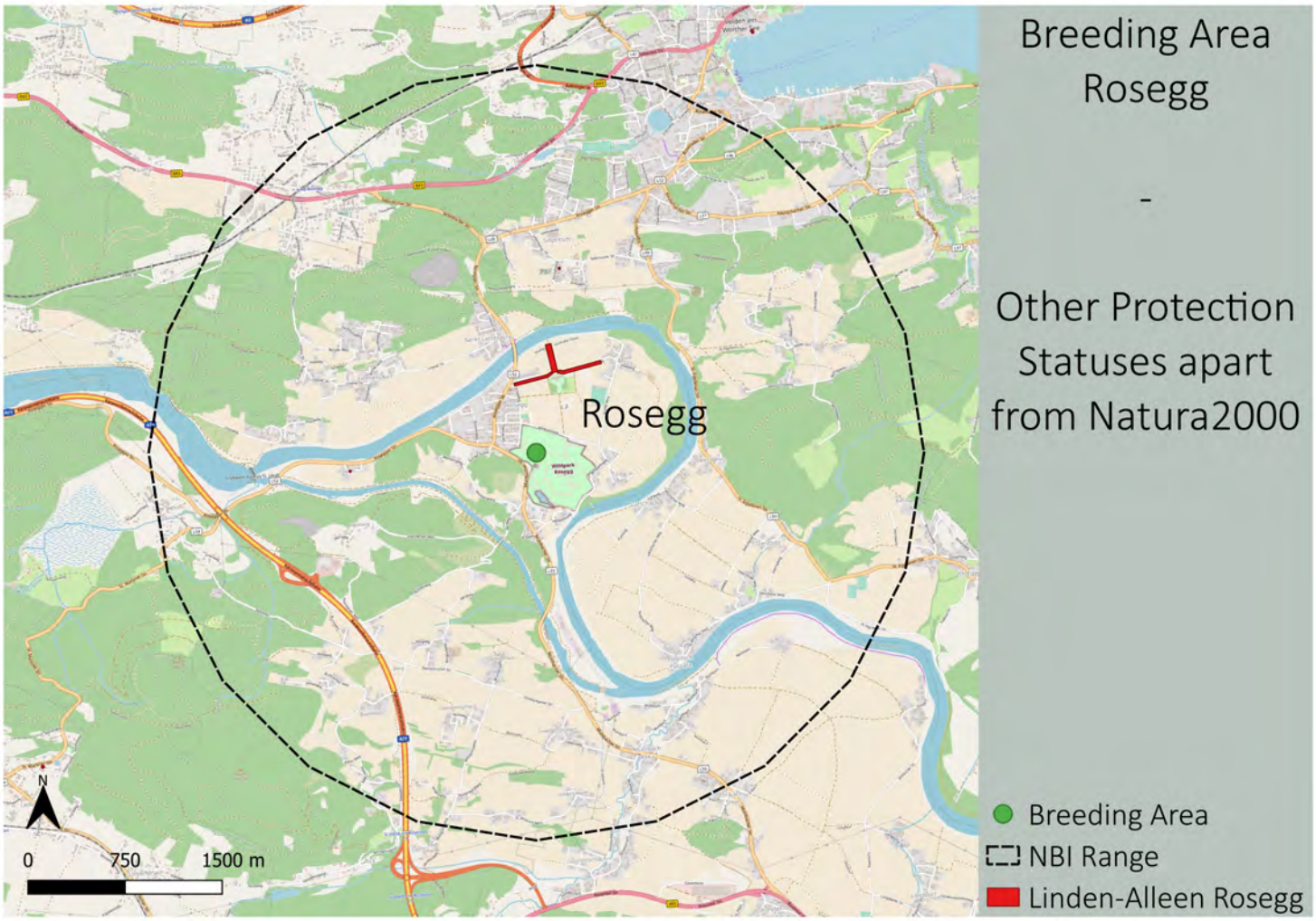
These birds habitat use of the individuals of to the sedentary NBI colony of TPR.

A declarations by the competent authority in Carinthia states that the regional nature conservation law does not foresee the necessity of a particular approval for the reintroduction of NBIs in Carinthia as the species is considered as native species in Austria (see ATT_16).

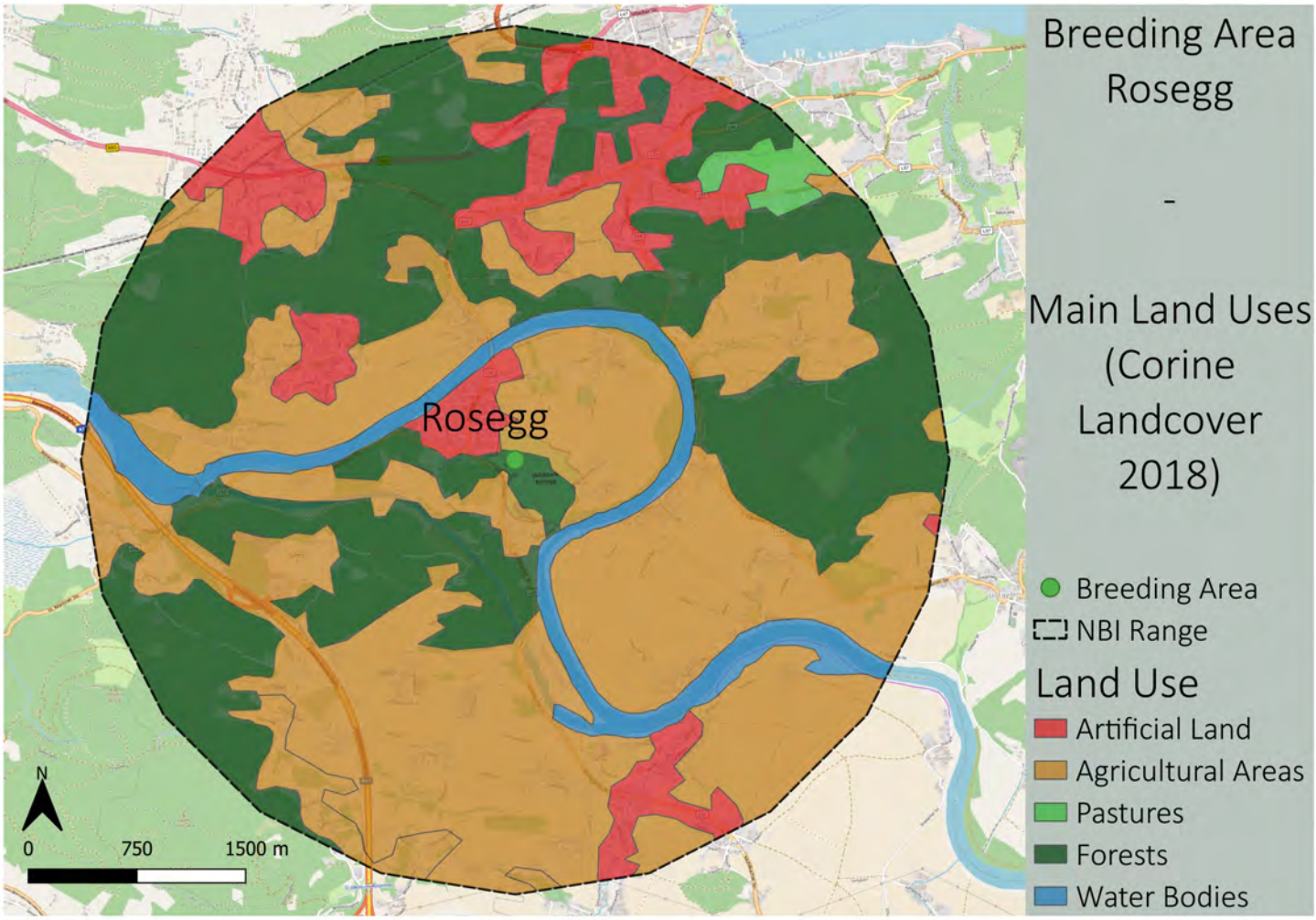
Name of the picture: B2a_5_1 Natura2000 Rosegg



Name of the picture: B2a_5_2 Other Protected Areas Rosegg



Name of the picture: B2a_5_3 Landuse Rosegg



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Wintering area WWF Oasi Laguna di Orbetello

Surface area (ha): 12,000.000

Surface description:

EU protection status:

SPA [X] **NATURA 2000 Code** IT51A0025, IT51A0026, IT51A0028

pSCI [X] **NATURA 2000 Code** IT51A0025, IT51A0026

Other protection status according to national or regional legislation:

Apart from the Natura2000 sites (see B2a_7_1), the NBI wintering area is also designated as Ramsar site since 1976 (887 ha; see B2a_7_2). Additionally, it feaures two WWF Oasis (WWF Oasi Laguna di Orbetello (protected since 1988) and the associated WWF Oasi Bosco di Patanella), and WWF Oasis is involved in managing the protected areas.

Main land uses and ownership status of the project area:

The NBI range of the wintering site Laguna di Orbetello contains agricultural areas (38.79%), forests (31.31%) and the lagoon itself (22.57%). A smaller part is characterized by artificial surfaces (3.06%), sparsly vegetated and sandy areas (2.47%), sport and leisure facilities (1.22%), water bodies (0.36%) and pastures (0.22%; see B2a_7_3). Ownership in percentages is not applicable.

The NBI wintering site is located around the WWF Oasi Laguna di Orbetello, which is administered by WWF Oasi Italy (see A8_09). No permanent infrastructure for the NBIs is required at the wintering site.

Scientific description of project area:

The wintering site WWF Oasi Laguna di Orbetello is located in the Italian province Grosseto, in southern Tuscany, Italy. For nature conservation, it is the most important lagoon of the Tyrrhenian coast. It's coastal dunes, freshwater ponds, meadows, maquis shrubland, pine woods and the brakish lagoon itself provide suitable habitats for various plant and animal species, but most importantly, it is a stopover and wintering site for several thousand birds, especially during winter. This includes, next to the NBI, species such the critically endangered slender-billed curlew (*Numenius tenuirostris*), the black-winged stilt (*Himantopus himantopus*), the pied avoecet (*Recurvirostra avosetta*), the Mongatu's harrier (*Circus pygargus*) and the European bee-eater (*Merops apiaster*). During the breeding season, it is a nesting site of the common shelduck (*Tadorna tadorna*) and the American flamingo (*Phoenicopterus ruber*).

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

Since 2003, WWF L.d.O. is the common wintering site for all birds of the population. It is designated and protected as Natura2000, Ramsar, WWF, and state nature reserve.

Historical reports (C. Gessner and others) indicate that the former European NBI population was migratory, but the historic wintering area remains unknown. During all the years where NBIs winter at WWF L.d.O., the location has been proved to be a suitable wintering site. The choice of the location is also in accordance to the IUCN reintroduction guidelines (2013), as it is within the indigenous range of the species.

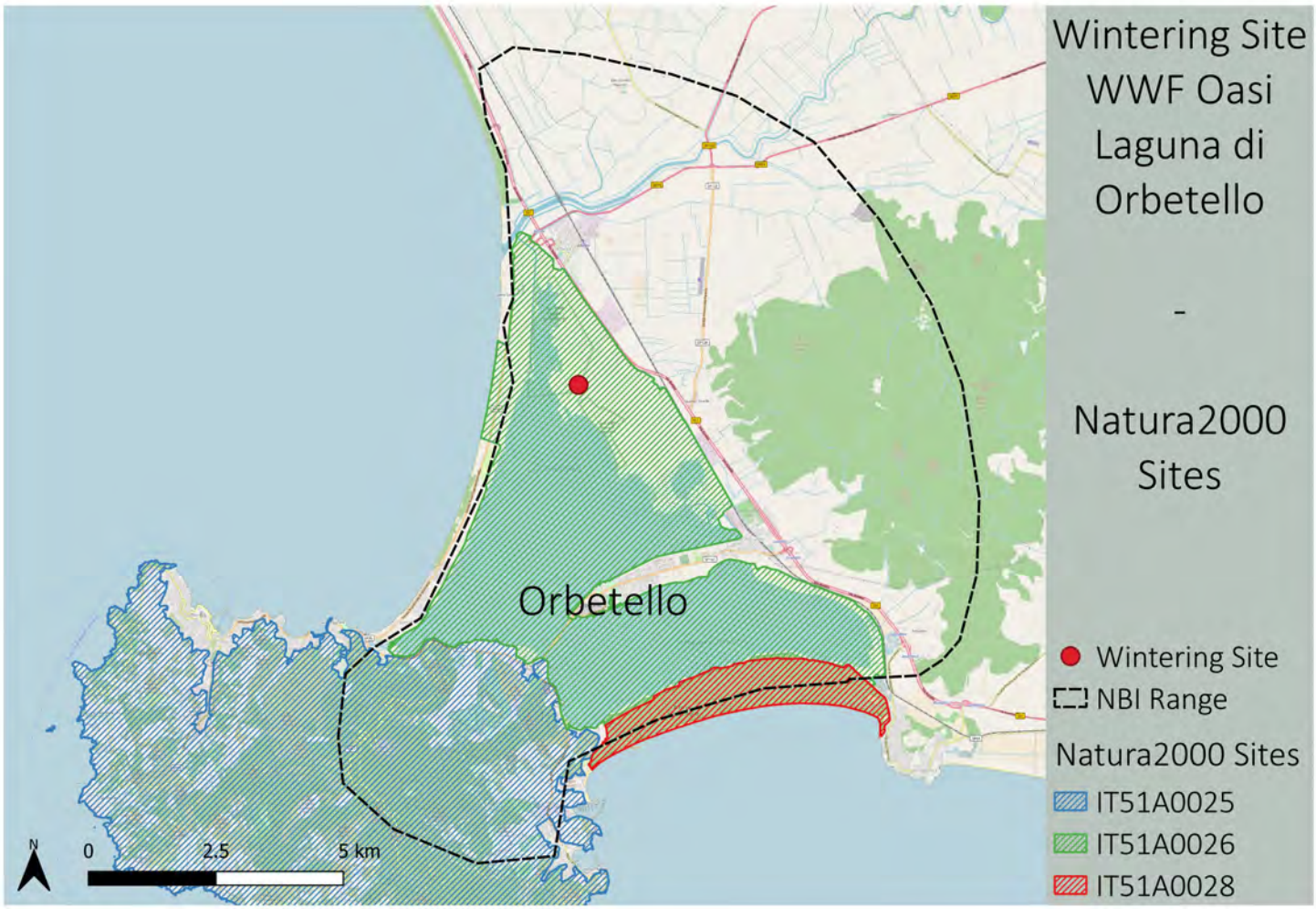
NBIs stay at the wintering site throughout the year. During summer, the group mainly consist of juveniles and subadults, which either don’t migrate or depart later in the season (June/July). With increasing population size, the birds started to split into loose fission-fusion groups, which stay at different sites in an increasing radius around the reserve, at the countryside and the peninsula Monte Argentario.

An independent enlargement of the wintering area is regarded as a natural and immanent effect rather than an indication for limited availability of resources. This corresponds with data from other species (e.g. USWhooping Crane reintroduction project; Teitelbaum et al. 2016). Accordingly, there are no indications of food limitation during winter, when the largest part of the population is on site. Food could rather be a limiting factor during summer due to heat or dryness. But this is a common characteristic of wintering sites and the birds on site are reacting by temporarily moving to other areas.

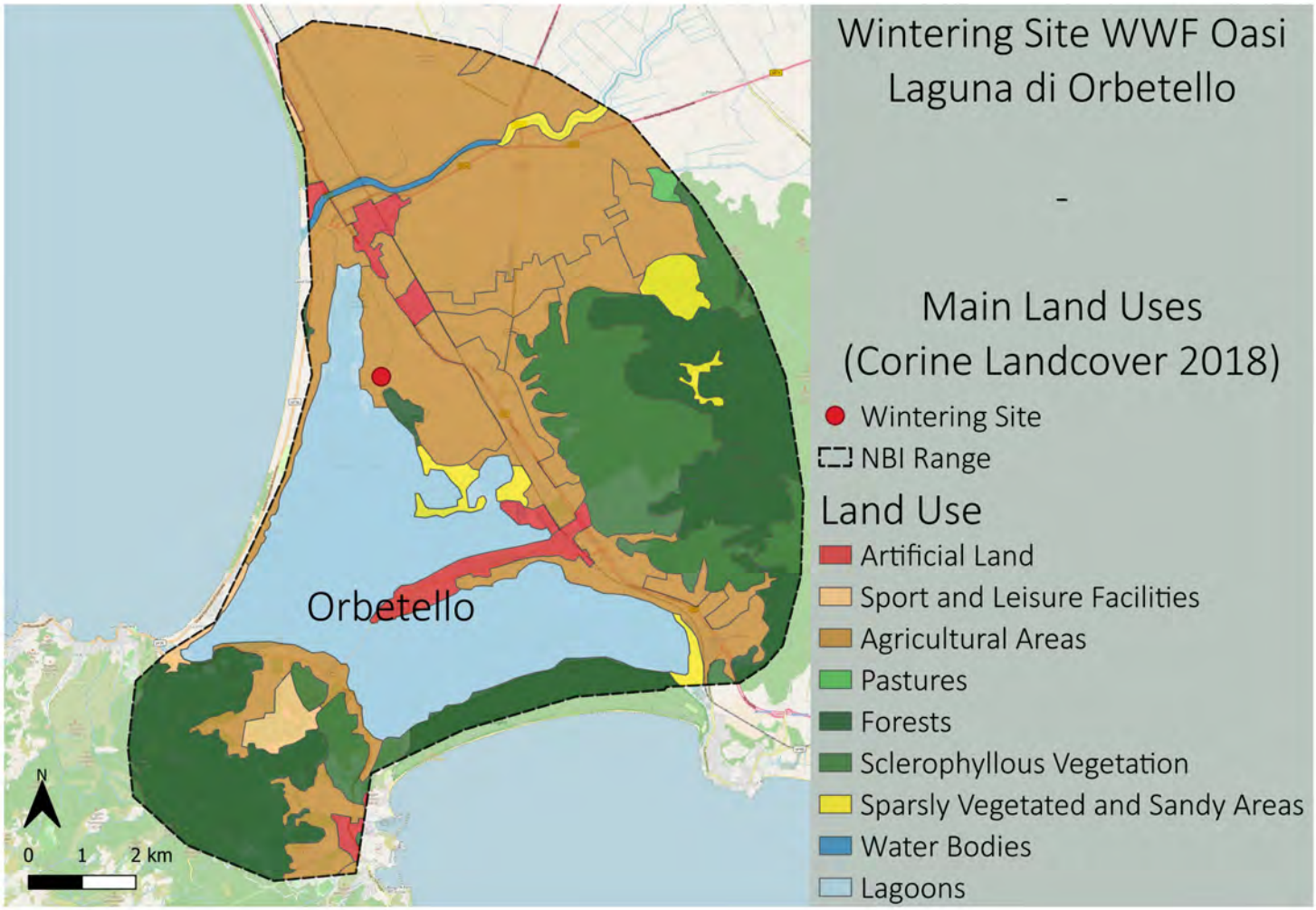
The region offers favourable conditions for a successive enlargement of the wintering site. There are various agricultural areas in the region, partly with organic management (e.g. by LaSelva Azienda Bioagricola, with 743 ha organically farmed land). 25 km north of the area lies Parco della Maremma with large pastures, and 15 km south lies the WWF Oasi Lago di Burano, also surrounded by vast agricultural areas. Thus, we regard the overall carrying capacity of this NBI wintering site as virtually unlimited.

The Italian Ministry for the Environment, Land and Sea approved the reintroduction of NBIs. It also committed to the designation of new and/or to the modification of existing relevant SPAs in case the reintroduction is successful (see ATT_15).

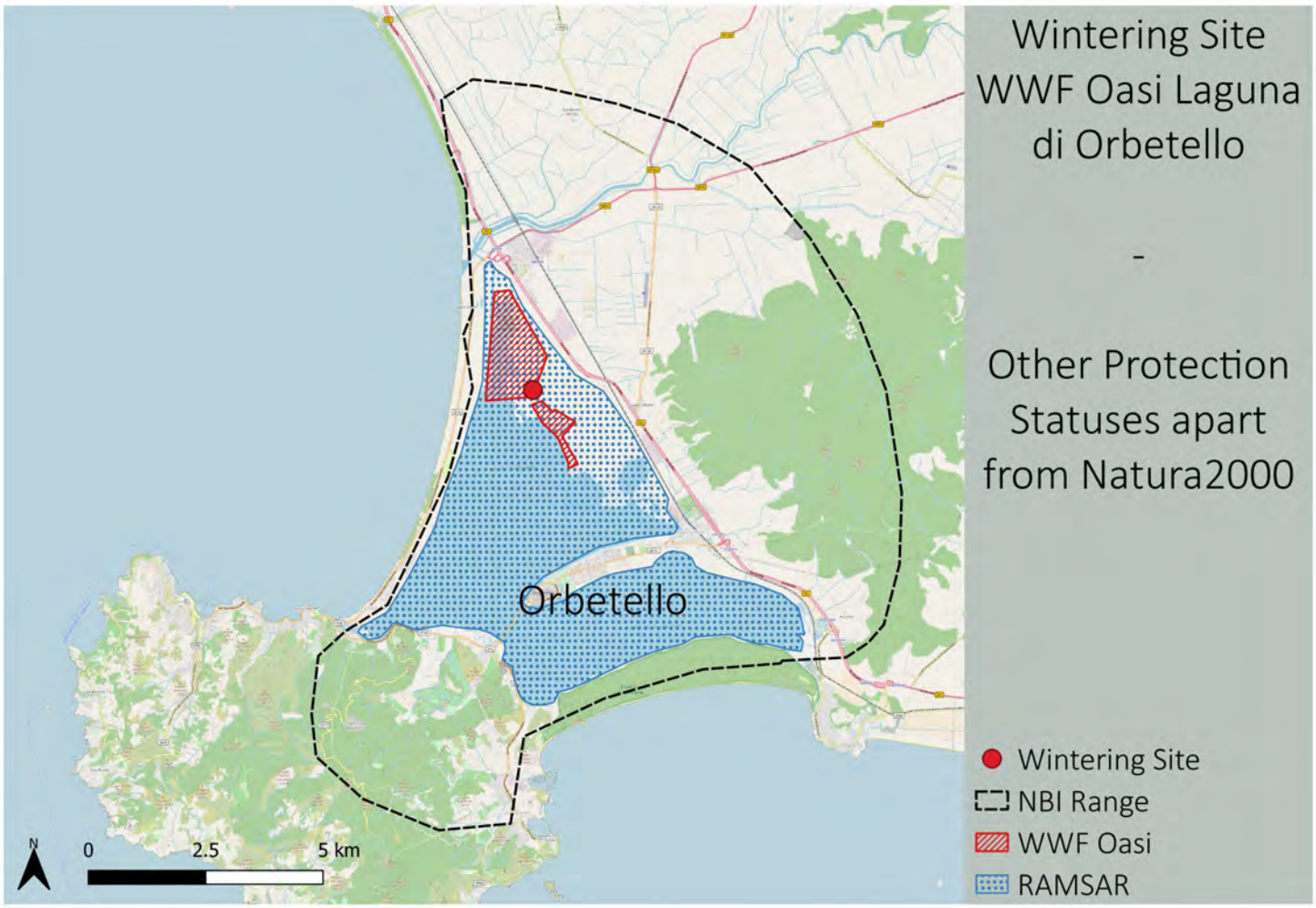
Name of the picture: B2a_7_1 Natura2000 Orbetello



Name of the picture: B2a_7_3 Landuse Orbetello



Name of the picture: B2a_7_2 Other Protected Areas Orbetello



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Überlingen

Surface area (ha):	4,700.000
Surface description:	

EU protection status:

SPA [X] **NATURA 2000 Code** DE8220404

pSCI [X] **NATURA 2000 Code** DE8220342

Other protection status according to national or regional legislation:

Aside from the Natura2000 sites (see B2a_3_1), the breeding area Überlingen overlaps with several conservation areas designated by the German Federal Nature Conservation Act (Hödinger Tobel (NSG 4.054; 28 ha) & Spetzgarter Tobel (NSG 4.055; 13 ha), both since 1938; Katharinenfelsen (NSG 4.154; 4 ha) & Sipplinger Dreieck (NSG 4.153; 15 ha), both since 1989), several natural monuments ("Naturdenkmäler") and the protected landscape Bodenseeufer (LSG-4.35.031; 3765 ha; since 1982; see B2a_3_2).

Main land uses and ownership status of the project area:

The majority of the NBI range of the breeding colony Überlingen contains agricultural areas (38.91%), followed by forests (30.45%), pastures (15.95%), artificial land (13.77%) and water bodies (0.93%; see B2a_3_1). Ownership in Percentages is not applicable.

The land below the sandstone cliffs where the NBIs will breed is administered by the City Government of Überlingen (see A8_08).

Scientific description of project area:

Überlingen (22,475 inhabitans) is located in the south of Baden-Württemberg, Germany, beside Lake Constance and 12 km north of the city Constance.

The area around Überlingen, were the NBI breeding area will be located, is of high conservation value and feaures several protected areas. The landscape is not only characterized by the remarkable Lake Constance but also by a mosaic of forested hills, ravines, rock faces and diverse agricultural areas. The areas are habitat of numerous rare and endangered plant and animal species.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

The sandstone cliffs along the northern shore of Lake Constance, from Überlingen towards NW, is well documented as a historic breeding site. It is one of the few large breeding cliffs that have been preserved unchanged and enable reintroduction in exactly the same place.

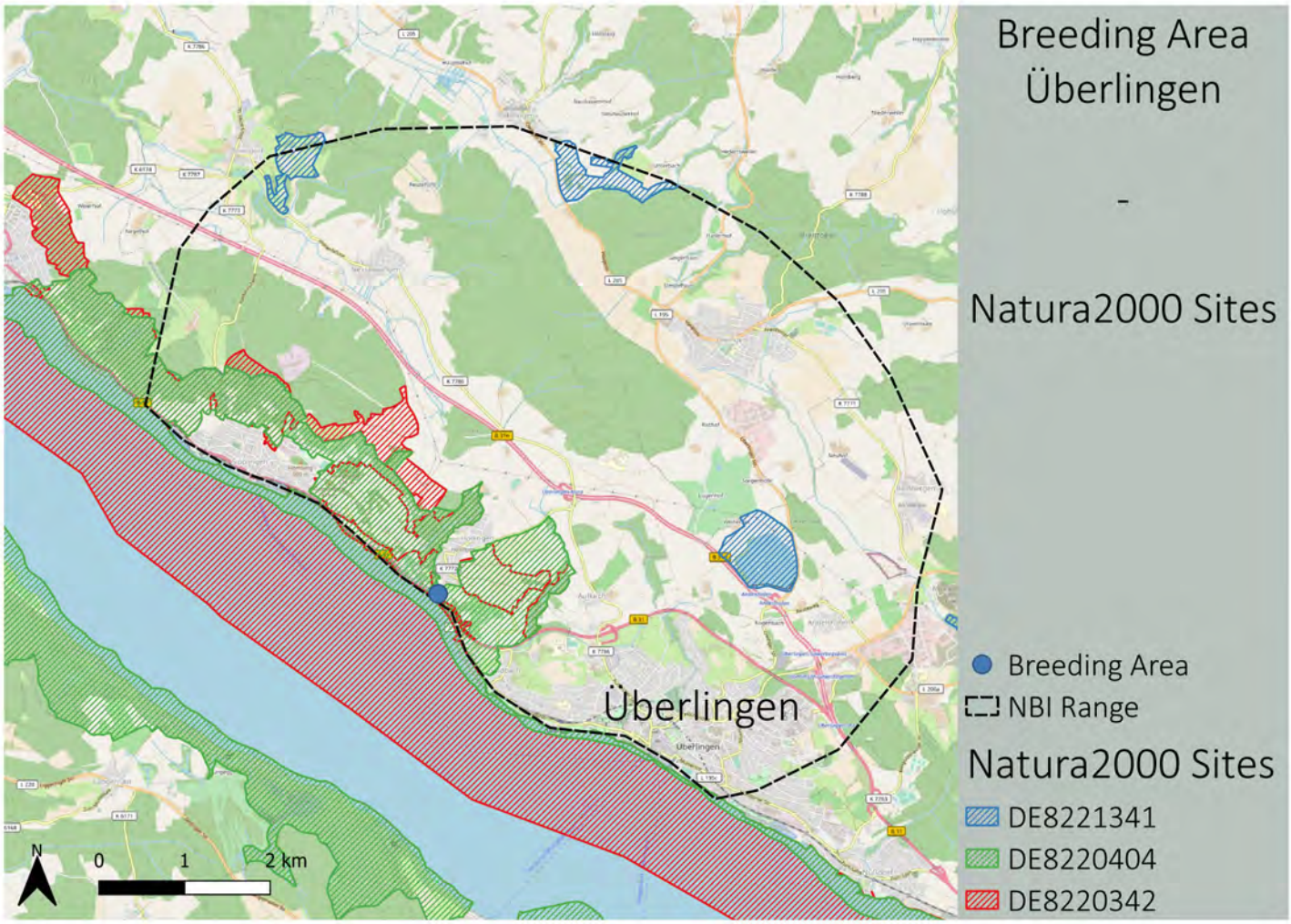
From the current perspective, the surrounding landscape, especially towards the east and northeast, provides plenty of suitable foraging areas, especially meadows and pastures. It is a large and growing area in Baden-Württemberg with ecological agriculture (Demeter). This provides particularly high-quality feeding habitats for the NBI.

Further exposed conglomerate rocks along the shores of Lake Constance as well as limestone rock faces in the nearby Danube Valley provide suitable sites for satellite colonies.

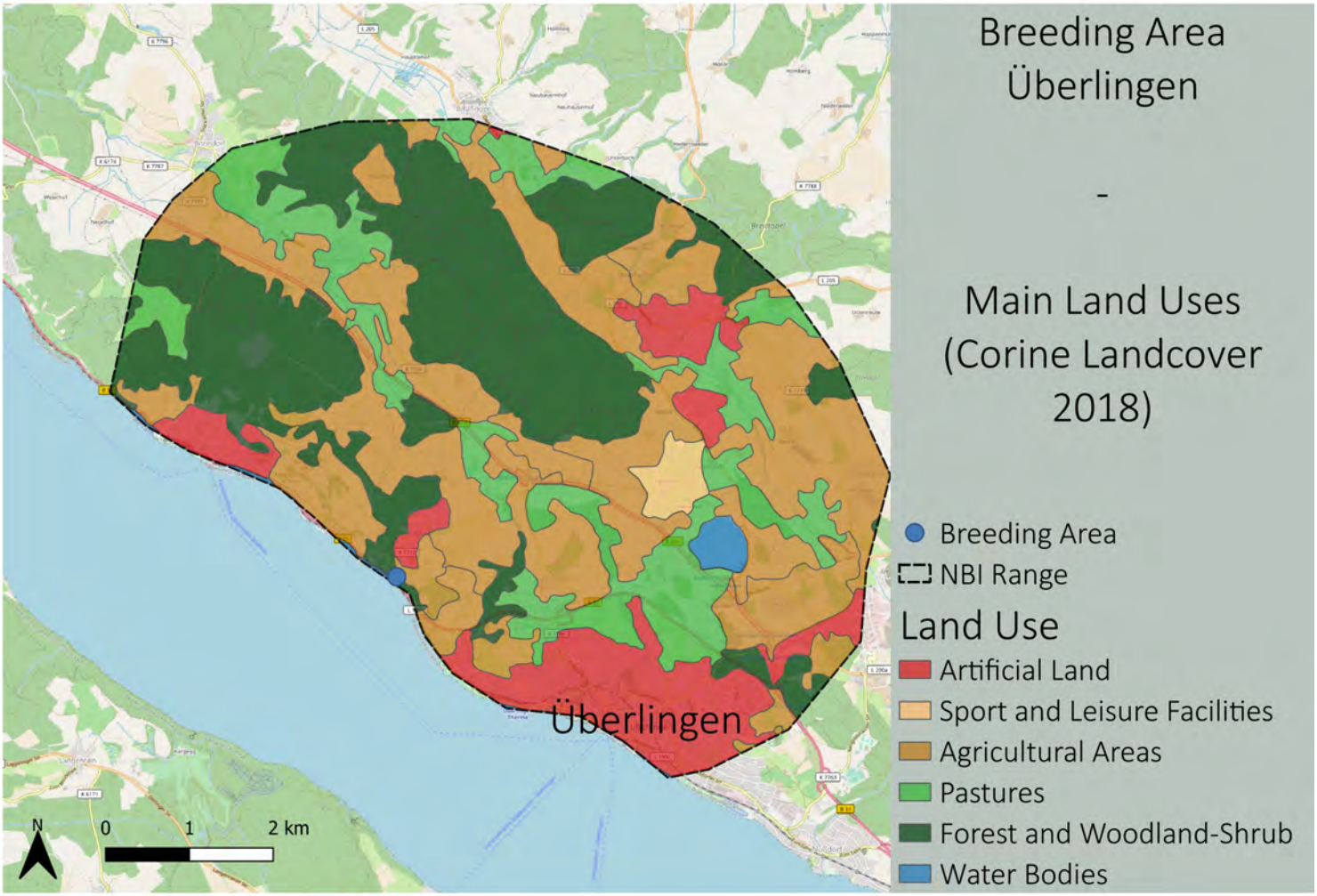
In the present LIFE20 application, no measures are foreseen to be implemented at the colony site Überlingen, as these are LIFE+12 after-LIFE measures.

In January 2019 we obtained the approval for the reintroduction of the Northern Bald Ibis in Baden-Württemberg in terms of Abs.1, Satz 1 BNatSchG (see ATT_18). The approval is limited to Dec. 31, 2026. A permanent approval depends on the result of an evaluation in 2025, which will particularly focus on difficulties and damages caused by the NBIs. Further requirements are the equipment of all released birds (generation F0) with GPS transmitters and a constant monitoring of the population. The evaluation in 2025 and the further requirements are part of the LIFE+12 after-LIFE measures.

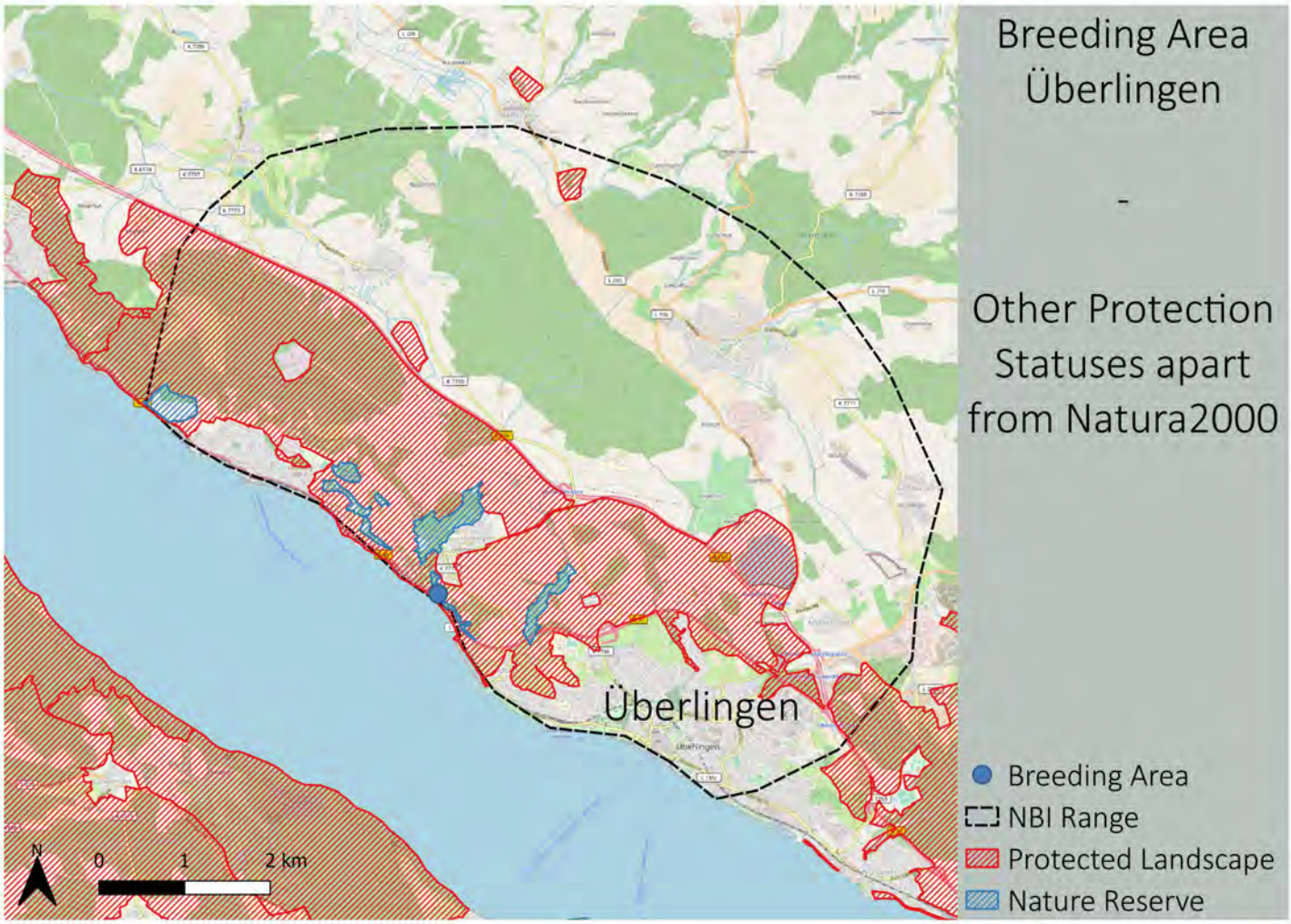
Name of the picture: B2a_3_1 Natura2000 Ueberlingen



Name of the picture: B2a_3_3 Landuse Ueberlingen



Name of the picture: B2a_3_2 Other Protected Areas Ueberlingen



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Kuchl

Surface area (ha):	2,800.000
Surface description:	

EU protection status:

SPA ☐ **NATURA 2000 Code**

pSCI ☒ **NATURA 2000 Code** AT3212111; AT3237000

Other protection status according to national or regional legislation:

Apart from Natura2000 sites within the NBI range of the breeding colony Kuchl (see B2a_1_1), the breeding area itself is located at the Georgenberg bei Kuchl, a conglomerate cliff, which is classified and protected as natural monument since 1960 ("Naturdenkmal", NDM00066; protected by the *Salzburg Nature Conservation Act* 1999) and encompasses an area of 15.09 ha (see B2a_1_2).

Main land uses and ownership status of the project area:

The majority of the NBI range at the breeding area Kuchl contains pastures (57.04%), followed by forests (23.58%), artificial land (17.08%) and agricultural areas (2.30%; see B2a_1_3). Ownership in percentages is not applicable.

All NBIs breed in the conglomerate cliff at Georgenberg, an area which is protected as natural monument.

Scientific description of project area:

The breeding area Kuchl is located in the Austrian state Salzburg, close to the city Salzburg. Geographically it is situated in the broad valley of the Salzach river, being part of Salzburg Tennengau region. The breeding site can be found at the so called Georgenberg, a natural monument formed 400,000 years ago during the Mindel glacial period as glacial debris. Today it is about 910 m long, between 113 m and 281 m broad and 528 m at its highest point. Botanically, the Georgenberg and its steep cliffs and forests are areas of high nature value because of its ferns, sedges and winter heaths.

At the plateau of the Georgenberg, die remains of the Roman settlement Cucullae can be found.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

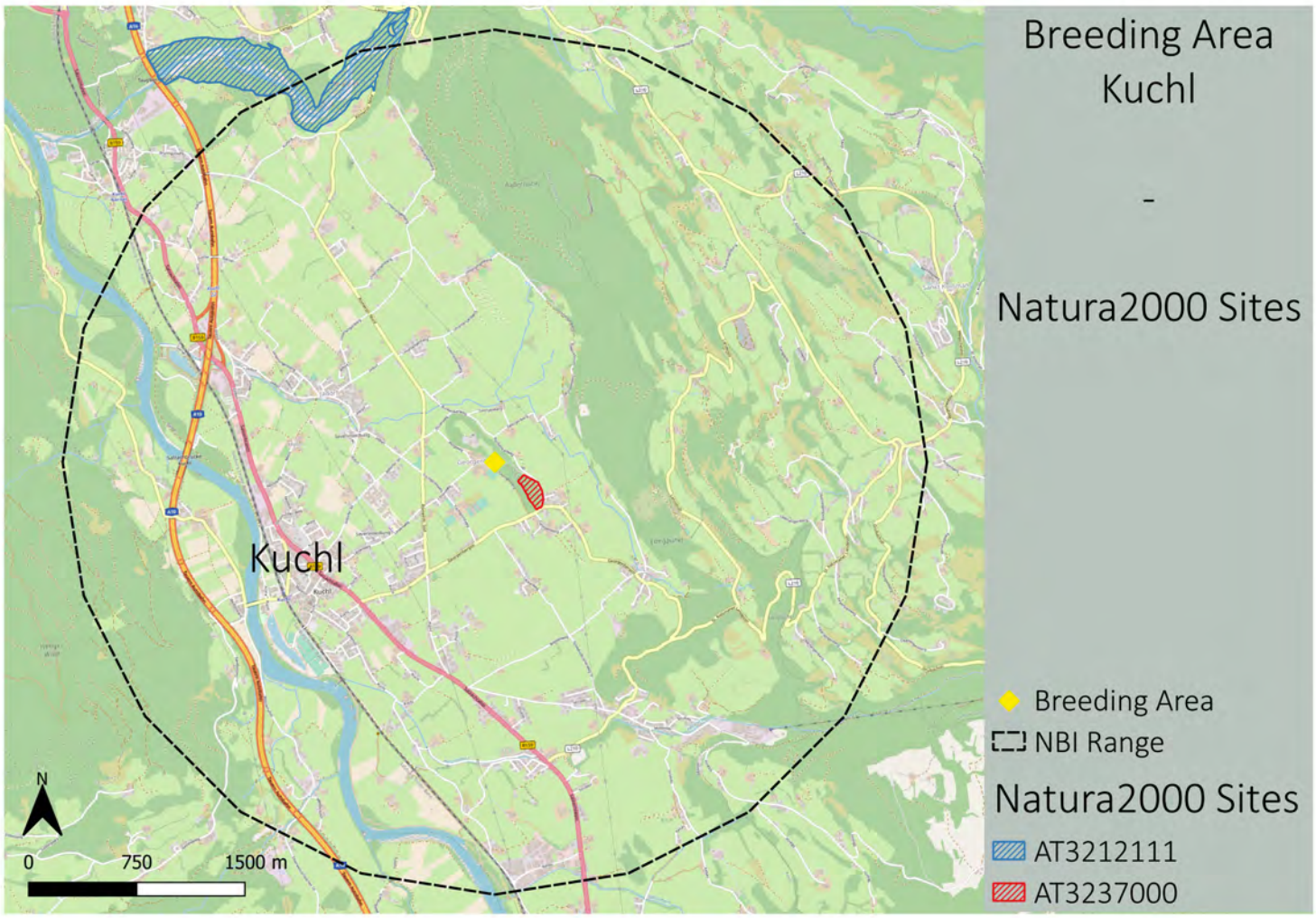
The Salzach Valley is one of the best documented historical European breeding sites of NBIs, with last records by the end of the 17th century. Decrees of the Archbishop of Salzburg from the 16th century prohibiting hunting for Northern Bald Ibises in the conglomerate cliffs of the city of Salzburg are among the most famous records of the occurrence of the this species in Europe.

Especially the interglacial conglomerate cliffs in Salzach Valley with diverse niche structures, like Georgenberg, offer suitable NBI breeding sites. The countryside in Kuchl is dominated by meadows and pastures, thus offering plenty of suitable feeding sites for the NBI. The following actions will be implemented in this project area: C.09.

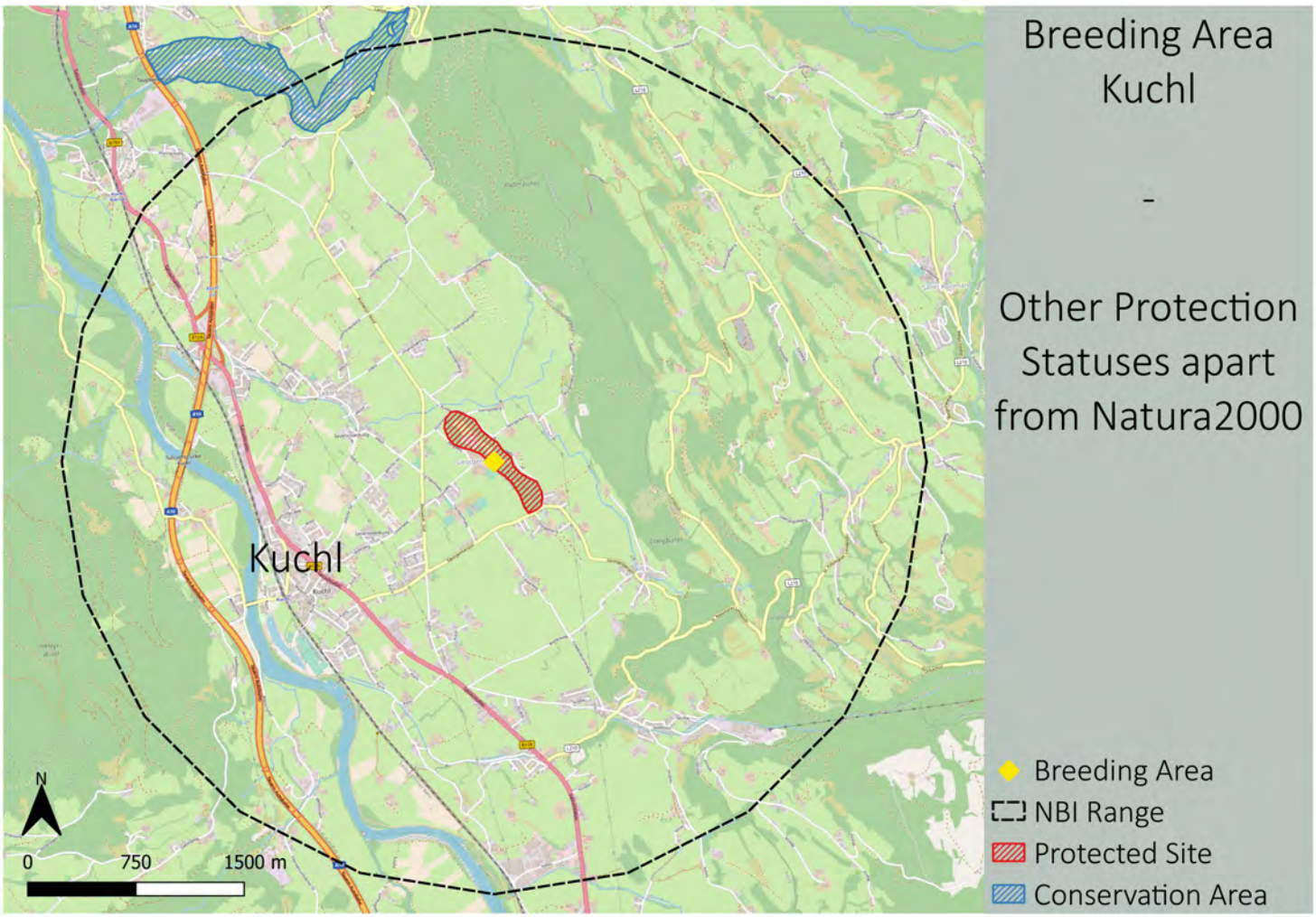
A declarations by the competent authority in Salzburg states that the regional nature conservation law (§ 33 Abs.1 NSchG) does not foresee the necessity of a particular approval for the reintroduction of

NBIs in Salzburg as the species is considered as indigenous in Austria (see ATT_17).

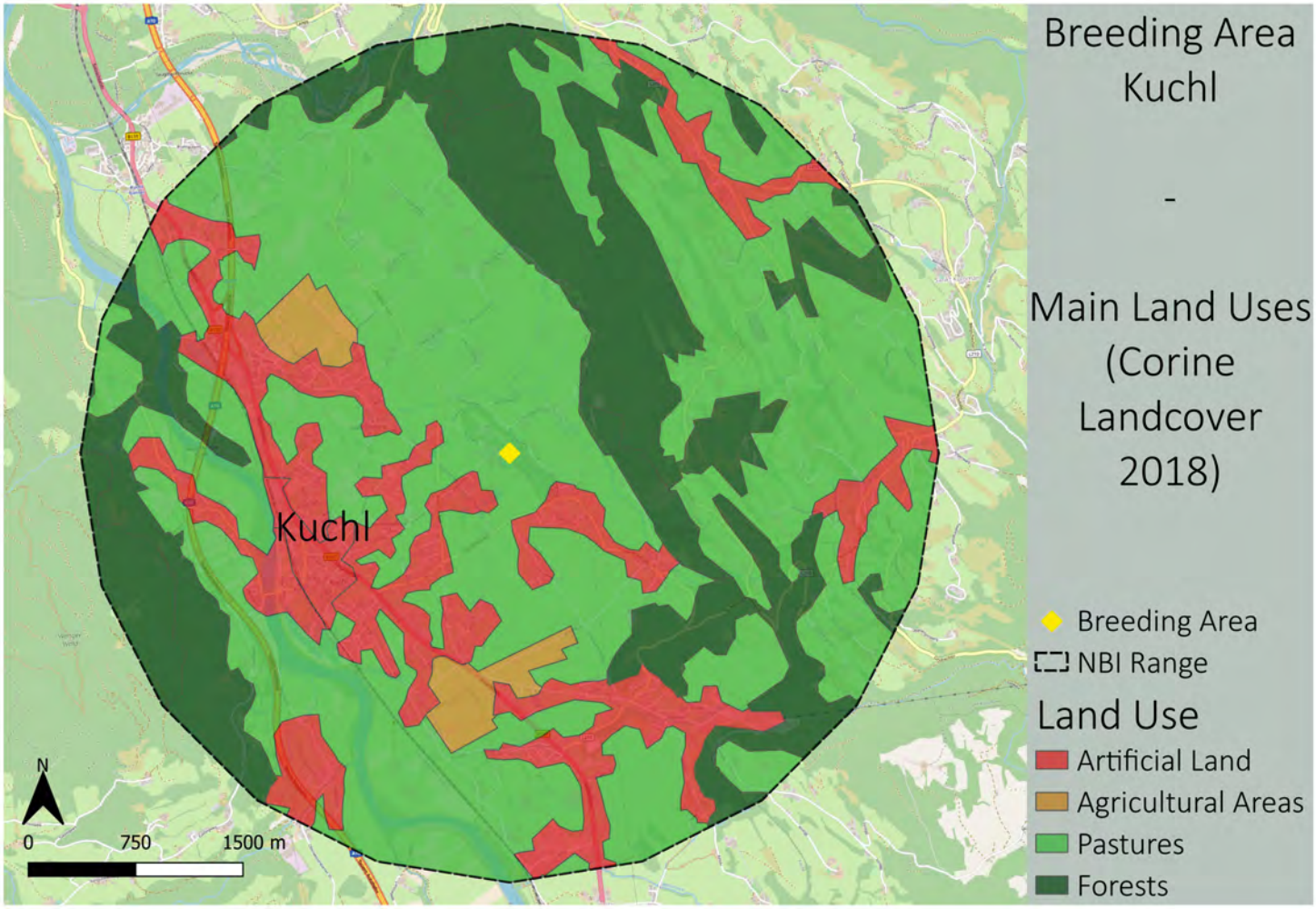
Name of the picture: B2a_1_1 Natura2000 Kuchl



Name of the picture: B2a_1_2 Other Protected Areas Kuchl



Name of the picture: B2a_1_3 Landuse Kuchl



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Bussolengo

Surface area (ha):	2,800.000
Surface description:	

EU protection status:

SPA ☐ **NATURA 2000 Code** IT3210018, IT3210041

pSCI ☒ **NATURA 2000 Code** IT3210043

Other protection status according to national or regional legislation:

Apart from the Natura200 site intersecting the NBI range of the colony Bussolengo (IT3210043), several other Natura2000 sites are in close distance (see B2a_6_1): the SPAs IT3210018 and IT3210041, and the SACs IT3210018, IT3210021 and IT3210041. According to the information provided by the Italian Environmental Ministry (https://www.naturaitalia.it), the region around Bussolengo contains no other protected areas like national parks or nature reserves.

Main land uses and ownership status of the project area:

The expected NBI range of the breeding colony Bussolengo is characterized by agricultural areas (84.36%), followed by artificial land (8.94%), forest (4.18%) and leisure facilities (1.91%; primarily PNV (AB)) and water bodies (0.61%; see B2a_6_2). Ownership in percentages is not applicable.

The breeding infrastructure will be constructed on the premises of PNV.

Scientific description of project area:

Bussolengo is an Italian municipal with 19,574 inhabitants, situated between Lake Garda in the west and the city Verona (259,610 inhabitants) in the southeast. The colony will be established at the proerties of Parco Natura Viva, 3 km from the centre of Bussolengo. The area is primarily characterized by small-scale agriculture.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

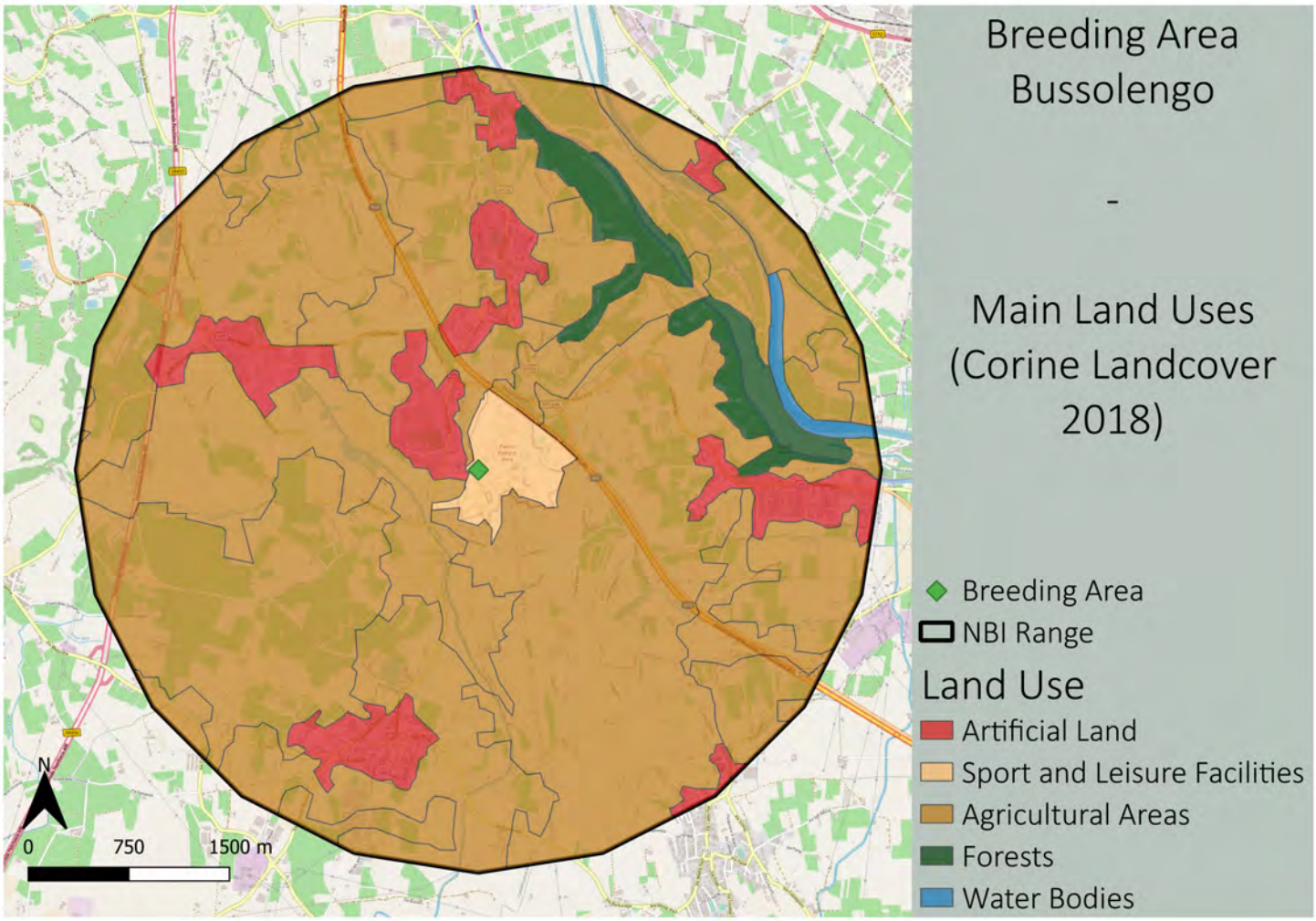
This breeding area south of the Alps is of high general importance for the NBI reintroduction project. Birds of all breeding colonies north of the Alps pass by directly or nearby this region. This allows to build up a breeding colony with individuals from these northern colonies, which fail to cross the alps on their way back to the northern breeding areas as adults. This is mainly caused by stochastic events due to climate change. Thus, establishment of the colony Bussolengo is part of a mitigation strategy, as it allows birds that do not reach their primary breeding area to breed in Bussolengo as a secondary breeding area. This increases the proportion of reproducing adults in the colony and with it also the growth rate Lambda.

Parco Natura Viva, a vital partner of the project, is situated in the municipality Bussolengo. The colo0ny will be established at an artificial breeding cliff at the 64-ha area owned by PNV, with a large proportion of meadows and pastures as suitable foraging habitats. The surrounding areas, particularly towards Lake Garda, offer further feeding sites. This is indicated by the regular presence of subadult semi-migrant NBIs which stay in this region during summer.

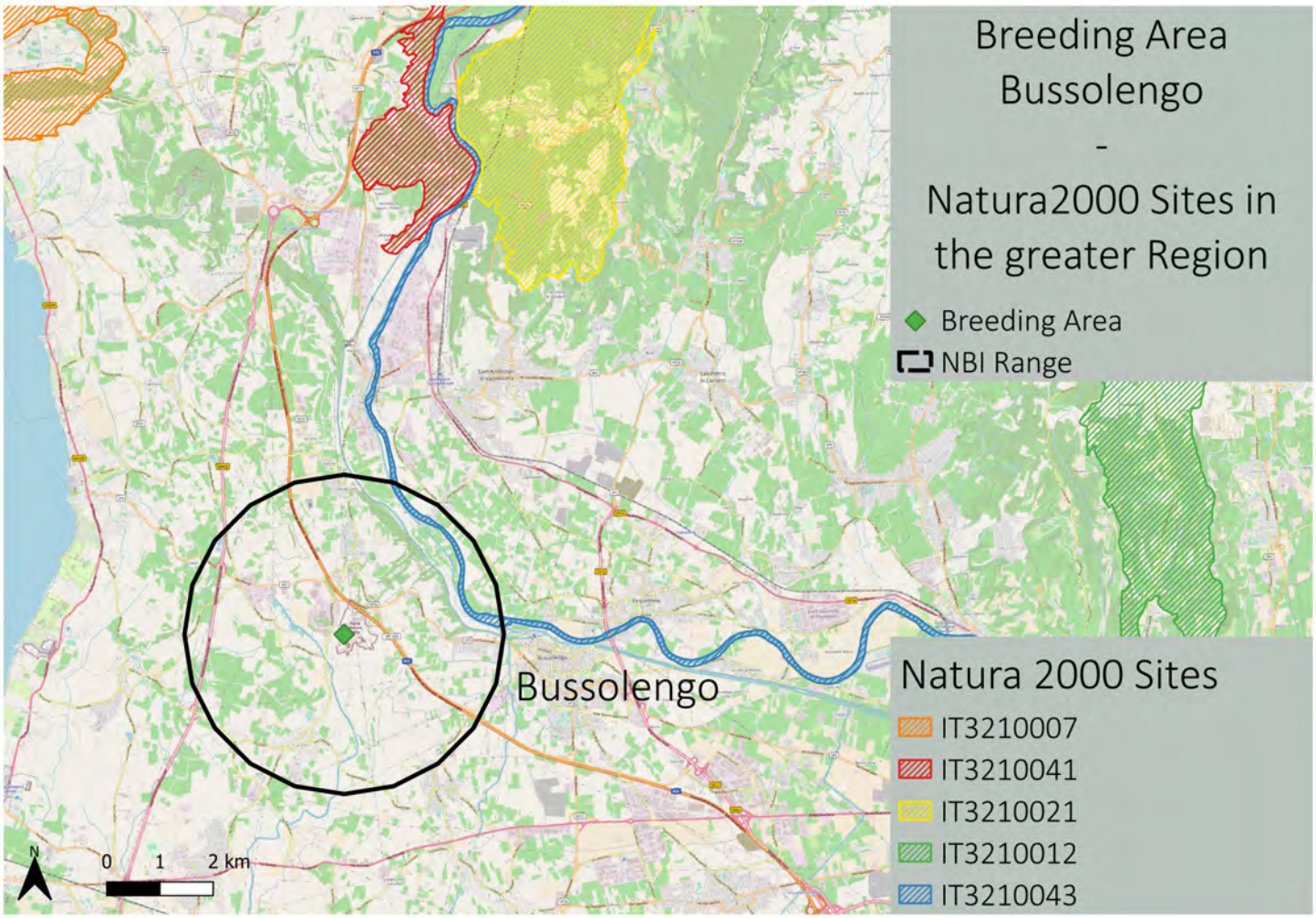
Furthermore, several Natura2000 sites, especially IT3210041 and IT3210021, are located in short

distances, offering the opportunity for the later establishment of satellite colonies, breeding in natural cliffs, for example at Monte Pastello.

Name of the picture: B2a_6_2 Landuse Bussolengo



Name of the picture: B2a_6_1 Natura2000 Bussolengo



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Burghausen

Surface area (ha): 2,800.000

Surface description:

EU protection status:

SPA [X] **NATURA 2000 Code** DE7744471

pSCI [X] **NATURA 2000 Code** DE7744371; AT3152000

Other protection status according to national or regional legislation:

Aside from parts of the Natura2000 sites DE7744371 and DE7744471 in Germany and AT3152000 in Austria (see B2a_2_1), the NBI breeding area Burghausen also includes part of the protected landscape "Salzachtal" (LSG-00289.01; WDPA ID 395767), which is protected since 1977 and encompasses an area of 1,092.88 ha (see B2a_2_2).

Main land uses and ownership status of the project area:

The majority of the NBI range at the breeding area Burghausen contains agricultural areas (54.82%), followed by artificial lands (21%), forests (11.85%), pastures (10.02%) and water bodies (2.31%). Ownership in percentages is not applicable.

The breeding site is located at the castle of Burghausen, which is administered by the Bavarian Administration of State-Owned Palaces, Gardens and Lakes ("Bayerische Verwaltung der staatlichen Schlösser, Gärten und Seen").

Scientific description of project area:

The breeding area Burghausen is located in the south of Bavaria, Germany, at the Austrian border and close to the city Salzburg. The NBI range extends across the country border to the municipality of Hochburg-Ach, Upper Austria, where about 70% of the foraging activities of the breeding colony take place.

The protected area Salzachtal along the river is characterized by riparian and hillside forests, steep slopes and cliffs, and pebble shores.

The actual breeding area is part of the wall of the medieval Burghausen Castle, the longest castle complex in the world.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

The main reason for choosing Burghausen as breeding site for the breeding colony established in the LIFE+12 project are historic records about NBIs along the river Salzach. An illustration from the 16th century. shows salt ships on the Salzach in front of Burghausen and above three birds in flight, which experts unanimously classify as Northern Bald Ibises.

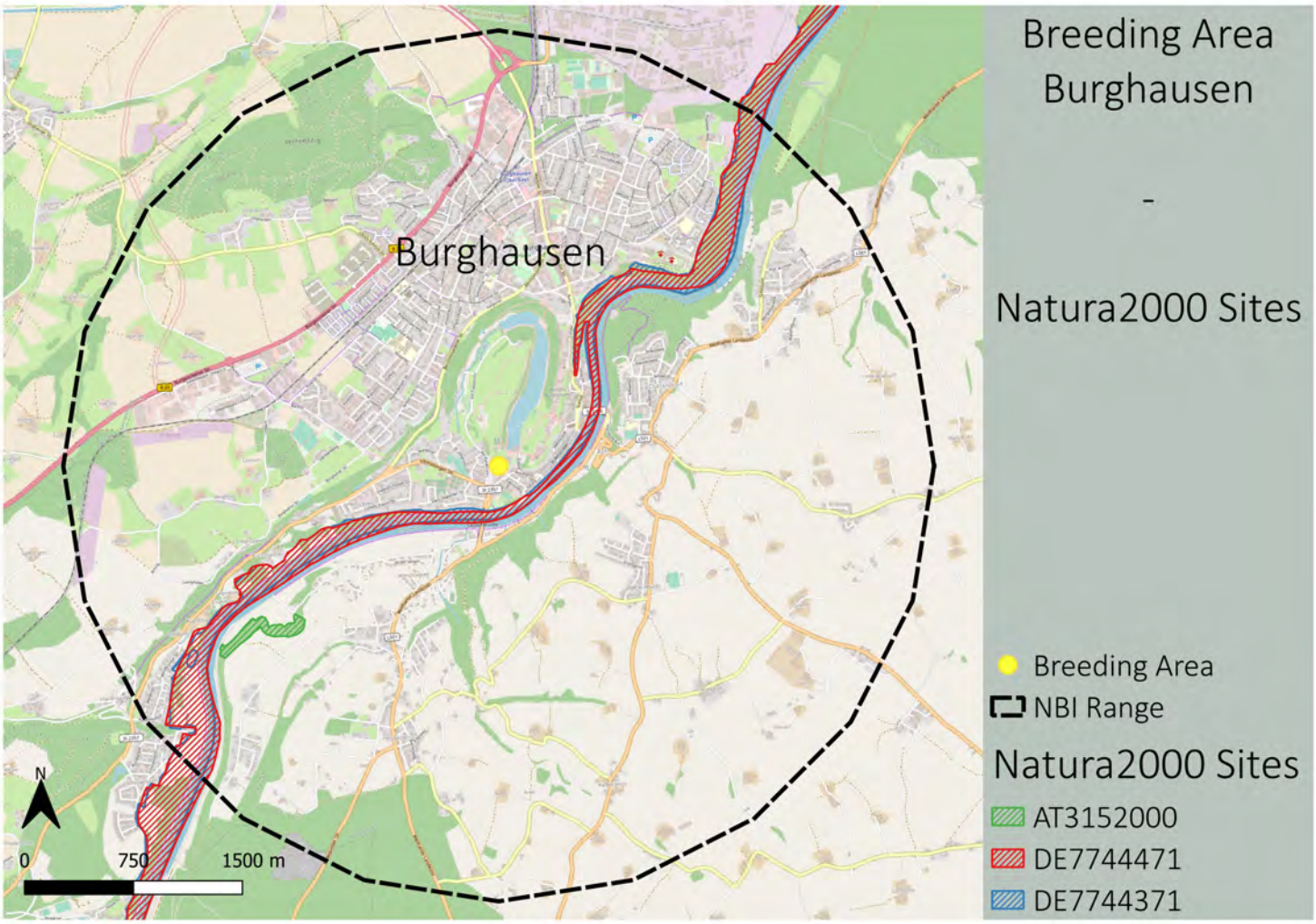
The Burghausen Castle and the surrounding area (especially "Salzachdurchbruch") offer various artificial and natural breeding opportunites, the landscape at this site is providing suitable and sufficient feeding sites like meadows and pastures.

The NBIs breeding in Burghausen forage in close distance to the breeding site, and most foraging activities take place within a 3 km around the breeding site (which was used to extrapolate the NBI range), indicating the high quality of the foraging sites.

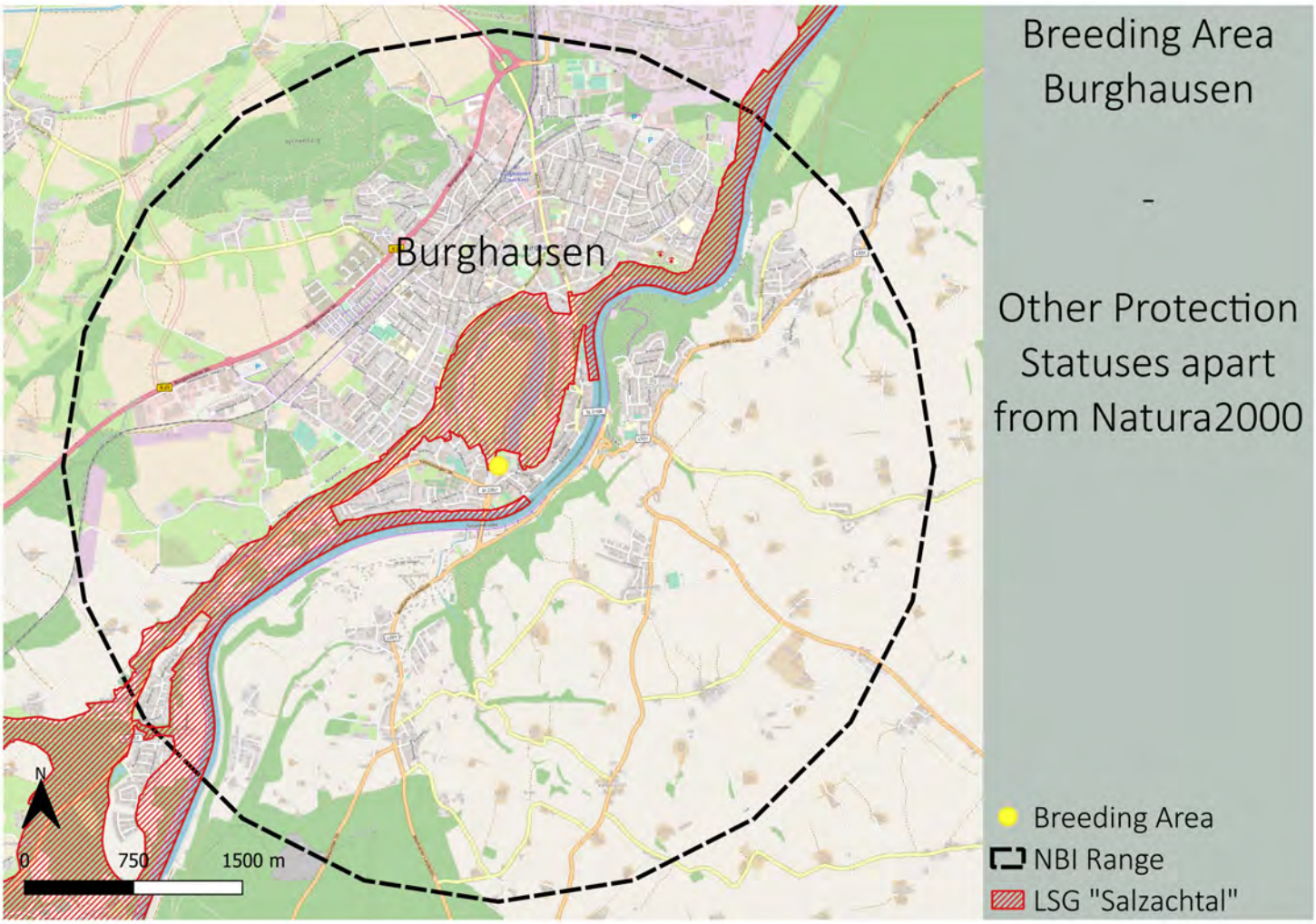
In the present LIFE20 application, no measures are foreseen to be implemented for the colony Burghausen, as these are LIFE+12 after-LIFE measures.

In July 2019 we obtained the approval for the reintroduction of the Northern Bald Ibis in Bavaria (see ATT_19). The approval is limited to Dec. 31, 2026. A renewal depends on the result of an evaluation in 2025, which will particularly focus on difficulties and damages caused by the birds. Further requirements are the equipment of at least all released birds (generation F0) with GPS transmitters and a constant monitoring of the population. The evaluation in 2025 and the further requirements are part of the LIFE+12 after-LIFE measures.

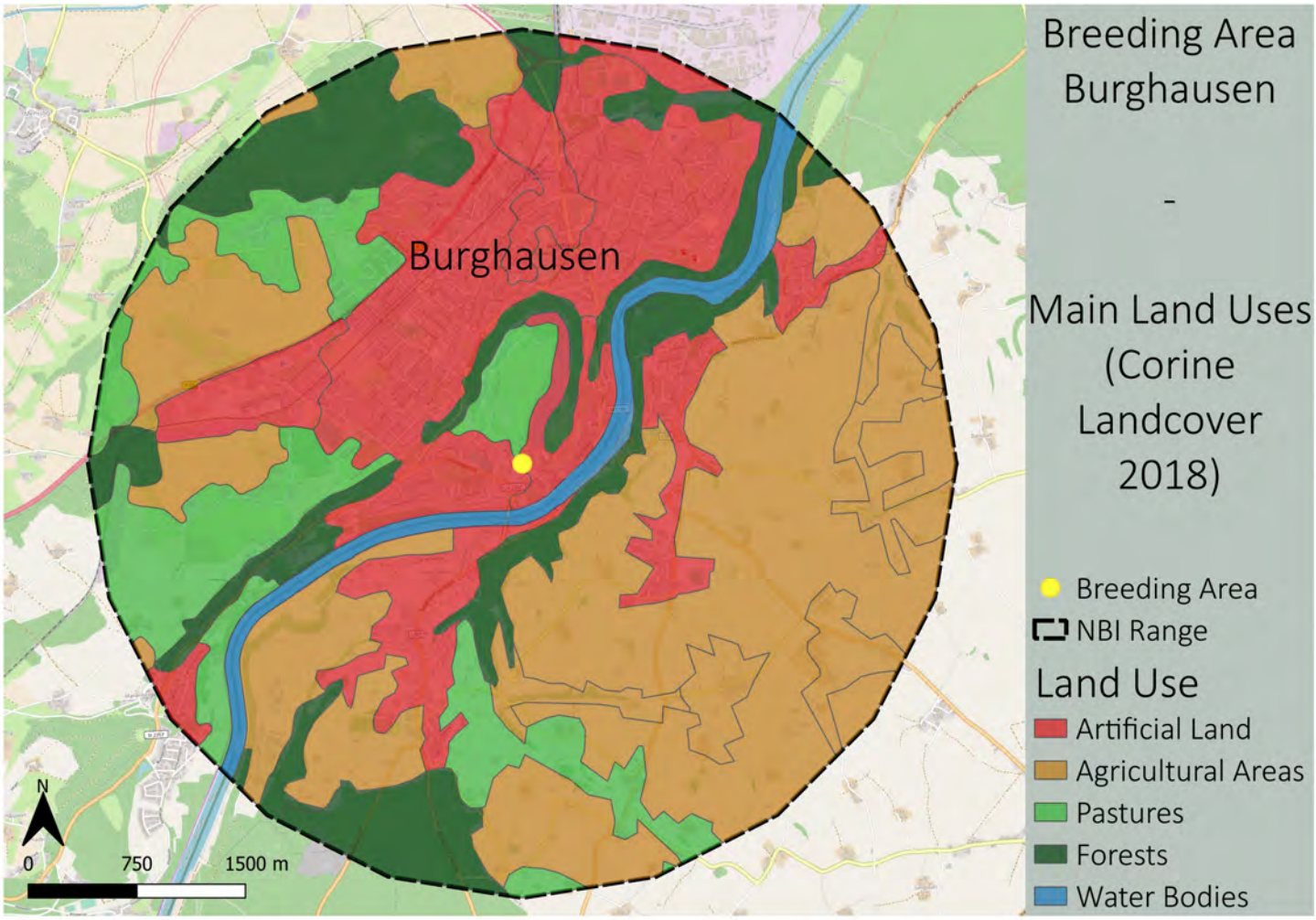
Name of the picture: B2a_2_1 Natura2000 Burghausen



Name of the picture: B2a_2_2 Other Protected Areas Burghausen



Name of the picture: B3a_2_3 Landuse Burghausen



GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Breeding area Goldau

Surface area (ha): 2,800.000

Surface description:

EU protection status:

SPA ☐ **NATURA 2000 Code**

pSCI ☐ **NATURA 2000 Code**

Other protection status according to national or regional legislation:

Switzerland does not designate Natura2000 sites, but major parts of the area are protected as *Federal Inventory of Landscapes and Natural Monuments* ("Bundesinventar der Landschaften und Naturdenkmäler"; BLN), designated for protection of landscapes or natural monuments (see B2a_4_1). The relevant BLNs are the Lauerzersee (BLN #1604; 683.63 ha), the Vierwaldstättersee mit Kernwald, Bürgenstock und Rigi (BLN #1606; 10,100.54 ha) and the Bergsturzgebiet von Goldau (BLN #1607; 1,304.89 ha).

Main land uses and ownership status of the project area:

The majority of the NBI range at the breeding area Goldau contains forests (32.12%), agricultural areas (26.58%), pastures (21.2%) and artificial land (12.44%; see B2a_4_2). Inland marshes (4.66%), water bodies (2.10) and moors and heathland (0.9%) can be found, especially towards the Lauerzersee. Ownership in percentages is not applicable.

A habitat suitability map of the region, based on the habitat suitability analysis (see ATT_04) predicts high probabilities of high quality feeding grounds around Goldau (see B2a_4_3). Particularly in the area where agricultural land and pastures can be found, between the city and the lakes, the suitability for NBI habitats is very high.

The breeding site of the first breeding colony Goldau is property of the TPG (AB).

Scientific description of project area:

The breeding area Goldau is located in a valley between the lakes Zugersee and Lauerzersee at the foot of the mountains Rossberg (1580 m.a.s.l.) and Rigi (1798 m.a.s.l.) in the canton Schwyz, Switzerland. Mount Rigi features wooded slopes, 200 meter high rock faces and richly structured agricultural land. It is home to other rare species such as the Cirl bunting (Emberiza cirlus) or the Peregrine falcon (Falco peregrinus). Towards the Lauerzersee, several wetland habitats as well as species rich grasslands can be found, as well as meadows and pastures. North of Goldau, the landscape is characterized by peatlands and steep rock faces caused by the landslide of Goldau in 1806. In the middle of the area where de landslide had happened, TPG (AB) owns 34 ha of land where native mammals and birds are kept.

The village of Goldau is part of the municipality of Arth, home of about 12,000 inhabitants.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

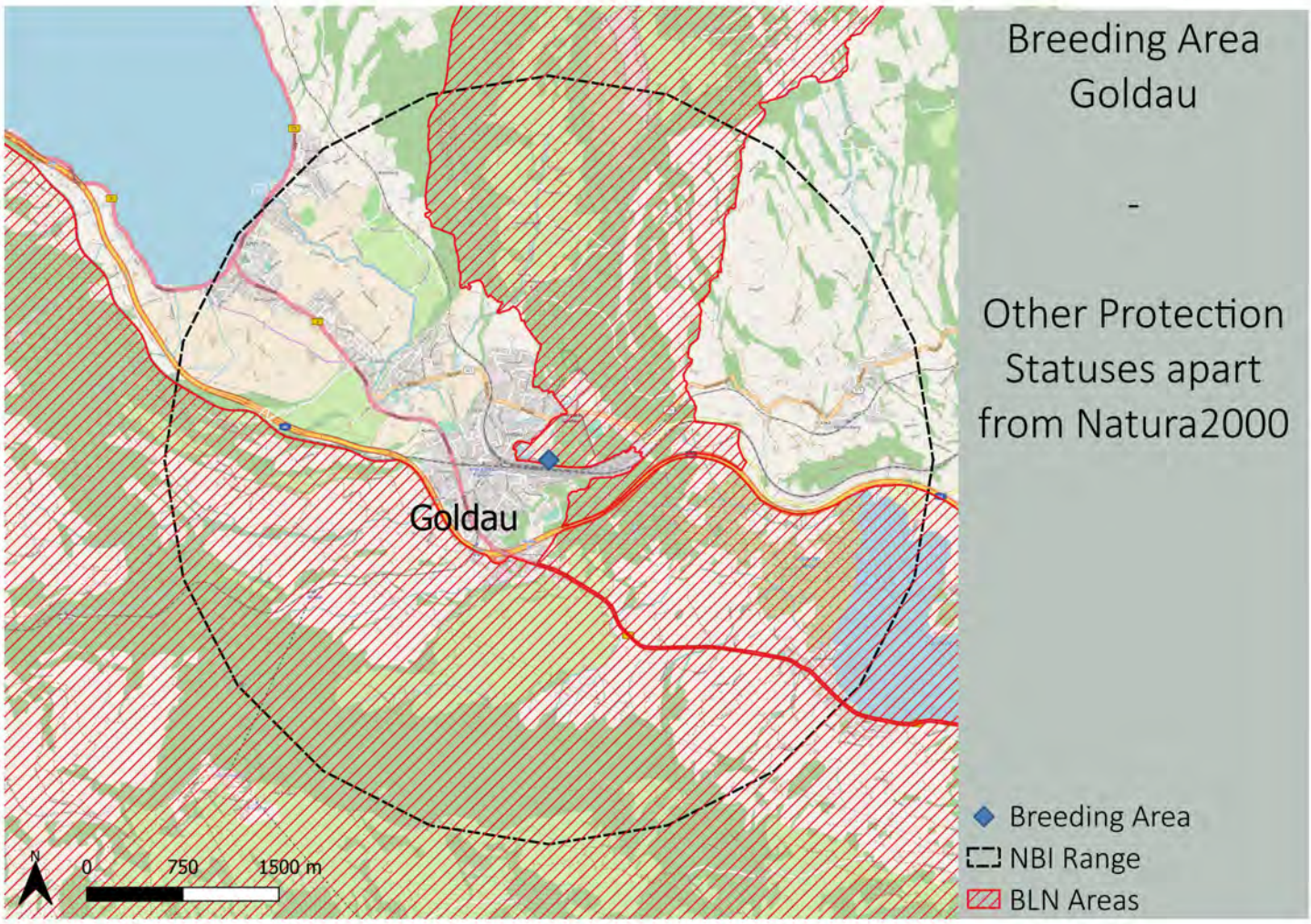
Switzerland is known as the central breeding area of the historic European NBI population.

An ongoing habitat suitability analysis (Wehner et al.; draft see ATT_04) highlights the outstanding importance of the Swiss Plateau as breeding area for the European NBI population with a high availability of high-quality foraging areas in connection with suitable breeding sites.

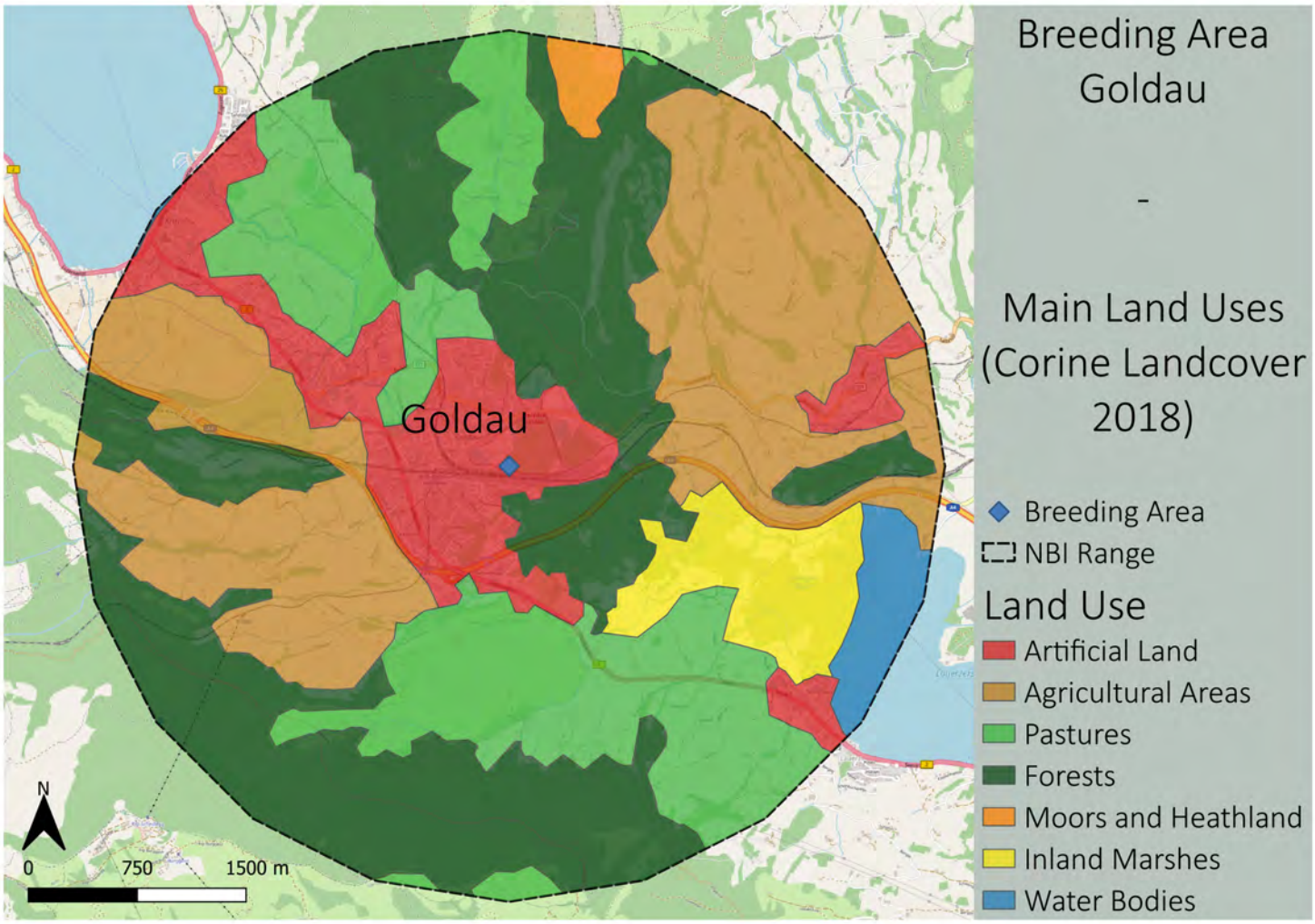
Since 2019, NBIs from the breeding colony Überlingen migrate through Switzerland and non-breeding birds remain in Swiss territories throughout the summer. This confirms the result of the habitat suitability analysis.

The Goldau region is part of the high-quality foraging areas in Switzerland. The colony will be established at artificial cliffs in the area of TPG. However, the inactive rock fall of Goldau provides natural breeding sites for a prospective natural expansion of the colony. Further sites for satellite colonies are in the surrounding, for example in Bad Ragaz-Pfäfers (see ATT_06).

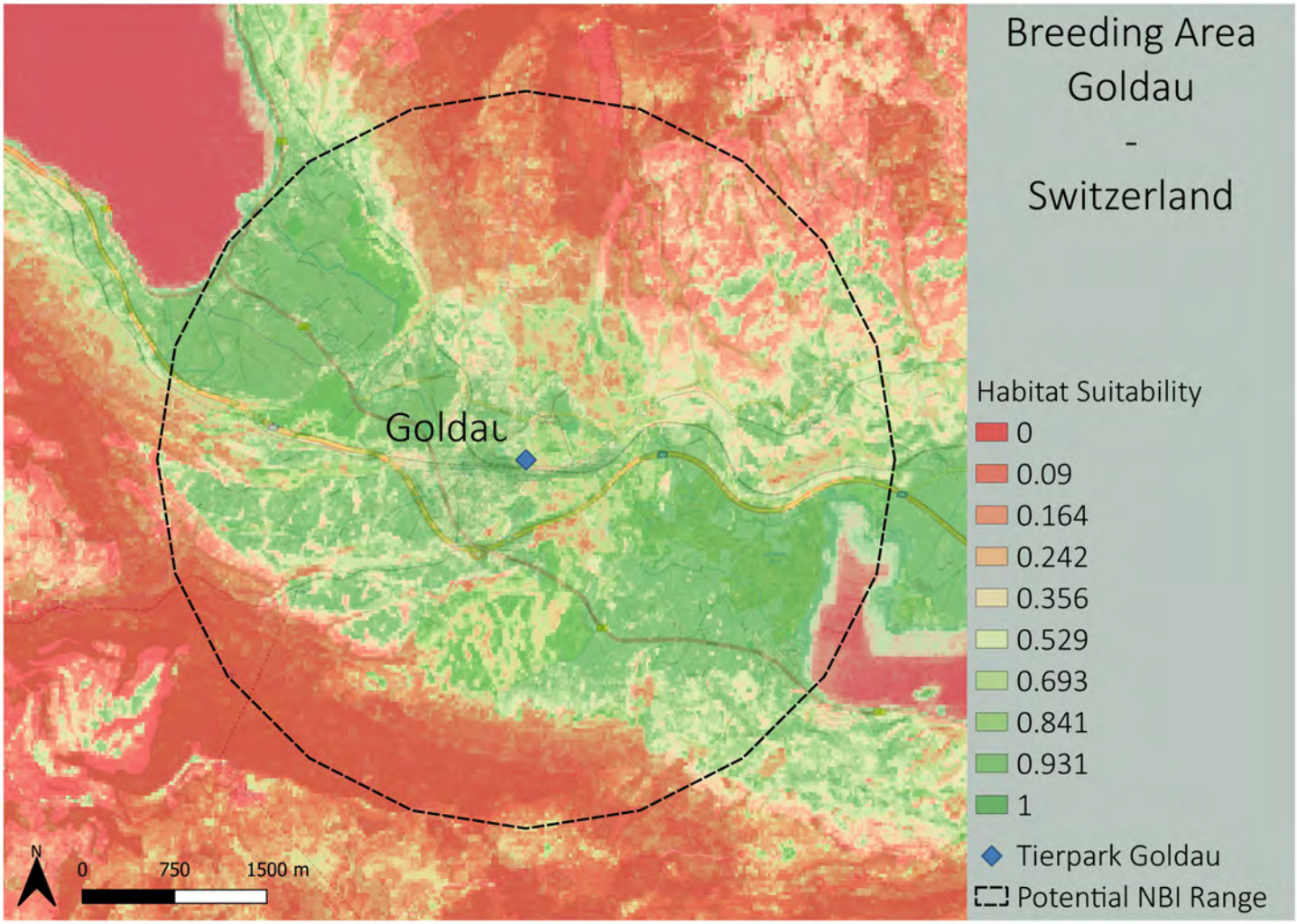
Name of the picture: B2a_4_1 Other Protected Areas Goldau



Name of the picture: B2a_4_2 Landuse Goldau



Name of the picture: B2a_4_3 Habitat Suitability Goldau



MAP OF THE COUNTRY LOCATION OF THE PROJECT AREA

SCALE 1:5000000