LIFE EUROKITE CRIME REPORT

ILLEGAL PERSECUTION OF TAGGED RED KITES AND OTHER RAPTOR SPECIES IN EUROPE

PART 1 - INTRODUCTION, METHODS, OVERALL RESULTS, DISCUSSION, CONCLUSION & RECOMMENDATION

First interim report on the results of the LIFE EUROKITE (LIFE18 NAT/AT/000048) project 2020-2024 with additional results from 2013 onwards

"Cross-border protection of the red kite in Europe by reducing human-caused mortality"

This company project report was compiled by TB Raab GmbH within the LIFE EUROKITE project (LIFE18 NAT/AT/000048) and was checked by the owners of the loggers and the representatives of the (cooperation) partners responsible for finding the dead birds.

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Deutsch-Wagram, 23.02.2026

Cover photo: Poisoned red kite © LIFE EUROKITE Archive (Ján Svetlik)

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Structure of the Crime Report

Due to the size of the report, it is divided in the following parts. Please see the other report parts for further information.

Part 1 - Introduction, Methods, Overall Results, Discussion, Conclusion & Recommendation

Part 2 - Country specific results - Austria

Part 3 - Country specific results - Belgium

Part 4 - Country specific results - Croatia

Part 5 - Country specific results - Czech Republic

Part 6 - Country specific results - Denmark

Part 7 - Country specific results - France

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1 Summary

The LIFE EUROKITE project (LIFE18 NAT/AT/000048) is a cross-border protection project for the red kite and other raptor species in Europe. Within the LIFE EUROKITE project the core idea is to use telemetry technology to identify the spatial habitat use of the target raptor species, quantify the key reasons of mortality of bird of prey species in the EU and reduce human-caused mortality, particularly illegal activities such as poisoning.

Between 2013 and 2024, 3,554 individuals of 7 raptor species (3,161 red kites, 97 black kites, 43 booted eagles, 52 honey buzzards, 79 imperial eagles, 22 ospreys and 100 white-tailed eagles) were tagged with solar-powered GPS satellite tags in 19 countries across Europe with the help of many project partners and cooperation partners. From this a total of 1,795 individuals (1,680 red kites, 37 black kites, 18 honey buzzards, 29 imperial eagles and 31 white-tailed eagles) were tagged within the LIFE EUROKITE project.

From the 3,554 tagged birds a total of 1,623 died so far. Of these, a total of 1,594 individuals (1,480 red kites, 13 black kites, 14 booted eagles, 17 honey buzzards, 32 imperial eagles, 8 ospreys, 30 white-tailed eagles) died in the respective country where we also detected bird persecution within our sample. The first results of the LIFE EUROKITE project show, that 320 (20.08 %) of the tagged birds (293; 19.80 % red kites, 3; 23.08 % black kites, 1; 7.14 % booted eagles, 2; 11.76 % honey buzzards, 12; 37.50 % imperial eagles, 1; 12.50 % ospreys, 8; 26.67 % white-tailed eagles) were victims of illegal activities in 24 countries (10/01/2025). Poisoning (n= 238; 74.38 % of illegal activities) was by far the most common illegal act that caused the death of these tagged birds. The most used poison was Carbofuran which is banned in the EU since 2008. The second most common illegal act that caused the death of these tagged birds was shooting (66 individuals; 20.63 % of illegal activities). Of the 320 birds that were tagged and illegally killed, only 8 cases resulted in a conviction for bird persecution.

When extrapolating the data on illegal bird persecution over the past five years (2020–2024), it is estimated that approximately 46.180 red kites have died as a result of persecution. This estimate is derived by scaling up known persecution rates of tagged birds to the entire European red kite population, based on published population size estimates, average annual mortality rates, and the proportion of mortality attributed to illegal killing. It therefore reflects a population-level extrapolation, not a direct count of detected cases.

Due to varying numbers of tagged individuals and differing red kite population densities across countries, the results may vary considerably. Consequently, these findings do not allow for conclusions regarding the statistical frequency of illegal activities relative to red kite density in any given country.

Bird persecution in Europe persists all over Europe. Effective conservation requires stronger law enforcement, public education, international cooperation, and better tools like GPS tracking to detect and prosecute offenders. Political commitment across countries is crucial, along with harmonized laws, stricter penalties, and national action plans with clear goals. Raising awareness through initiatives like the “European Day Against Criminal Poisoning of Wildlife” and systematic data collection can help inform both the public and policymakers. Finally, stronger cross-border collaboration and support for monitoring and reporting systems are essential to address bird persecution at a European level.

2 Introduction

The LIFE EUROKITE project (LIFE18 NAT/AT/000048) is a cross-border protection project for the red kite and other raptor species in Europe. Within the LIFE EUROKITE project the core idea is to use telemetry technology to identify the spatial habitat use of the target raptor species, quantify the key reasons of mortality of bird of prey species in the EU and reduce human-caused mortality, particularly from illegal activities such as poisoning.

Specifically, the red kite (*Milvus milvus*) can act as an indicator of anthropogenic mortality across broad extents (Donázar et al. 2016; Natsukawa and Sergio, 2022) due to its high individual variability in migration strategies (García-Macía et al. 2022) and its condition of good sentinel species for main threats to raptors (Mattson et al. 2022). As migratory behaviour is associated with different exposure and risk levels, understanding the causes of cross-border mortality in red kites can provide important warning signs regarding wider impacts of human activities on wildlife populations in Europe (Donázar et al. 2016; Natsukawa and Sergio, 2022).

In response to ongoing illegal threats to migratory birds, international conservation bodies have taken major steps toward unified action. Under the leadership of the Convention on Migratory Species (CMS) and the Bern Convention, and with the involvement of numerous states, observers, and expert groups, a comprehensive framework was adopted: the *Rome Strategic Plan 2020–2030*. This plan outlines a joint commitment to halving illegal bird killings in Europe and the Mediterranean by 2030, using 2020 as a baseline (Council of Europe, 2019). By generating large-scale, cross-border evidence on mortality causes, the LIFE EUROKITE Crime Report plays a key role in tracking progress toward this ambitious objective.

The Article 12 of the Habitats Directive clearly defines that member states shall take requisite measures to establish a system of strict protection for the animal species listed in Annex IV(a) in their natural range, prohibiting, among others, all forms of deliberate capture or killing and shall establish a system to monitor the incidental capture and killing of specimens of these species in the wild (European Commission, 2021; Panter et al. under review).

This report will give an overview of tagged birds which were victims of illegal activities in Europe and will give a detailed insight of the status of investigations and legal procedures, as well as an overview of problems and recommendations to combat these crimes.

3 Methods

3.1 Data collection

Data for this report originated from the LIFE EUROKITE project (LIFE18 NAT/AT/000048, www.life-eurokite.eu) and various cooperation partners who shared their data with the project. Between 2013 and 2024, 3,554 individuals of 7 raptor species (3,161 red kites, 97 black kites, 43 booted eagles, 52 honey buzzards, 79 imperial eagles, 22 ospreys and 100 white-tailed eagles) were tagged with solar-powered GPS satellite tags in 19 countries across Europe with the help of many project partners and cooperation partners. From this a total of 1,795 individuals (1,680 red kites, 37 black kites, 18 honey buzzards, 29 imperial eagles and 31 white-tailed eagles) were tagged within the LIFE EUROKITE project (Figure 2 to Figure 8).

To determine the cause of death the LIFE EUROKITE Assessment Process (LEAP), a framework for determining timing, locations and causes of mortality in GPS-tagged birds was conducted during the project. LEAP is a multifaceted approach that integrates: (1) GPS tracking data, (2) evidence from the mortality location (site investigation) and (3) necropsy results to derive the mortality cause (Panter et al. 2025).

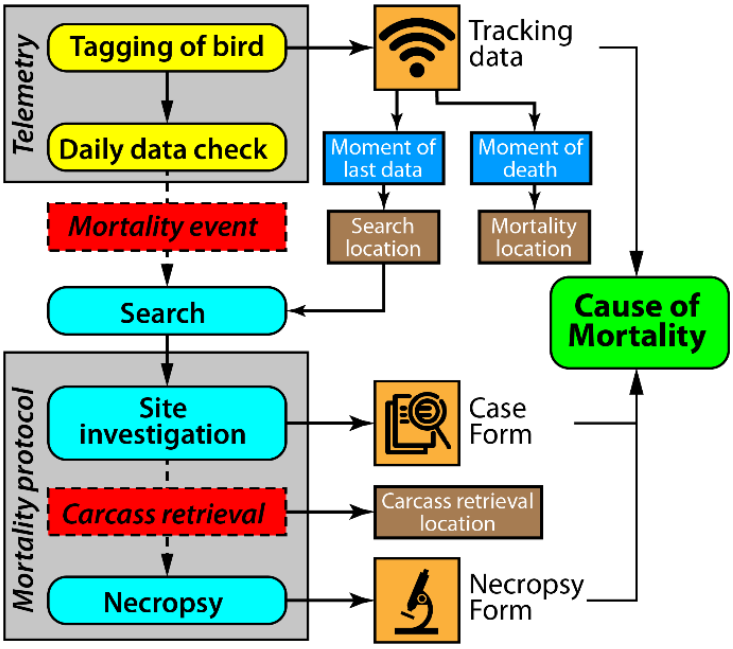

Figure 1: Schematic representation of the process to determine the cause of mortality of GPS-tagged red kites as part of the LIFE EUROKITE assessment process (LEAP) (Panter et al. 2025).

Data collection starts with tagging the bird, followed by daily data checks for signs of mortality. If a mortality event occurs, tracking data provides an accurate moment and location of death. This allows to initiate search for a fresh carcass quickly, with the search location determined from the last tracking data. A fresh carcass provides a better chance of carrying out a successful necropsy evaluation. The cause of mortality is determined based on three sources: (1) tracking data, (2) observations during the site investigation (documented in the Case Form) and (3) necropsy results (documented in the Necropsy Form). The colouring reflects different categories: yellow – telemetry tracking; red – event; cyan – performed actions during the investigation; orange – information sources for the assessment; blue – point in time; brown – location; green – result of assessment (Figure 1) (Panter et al. 2025).

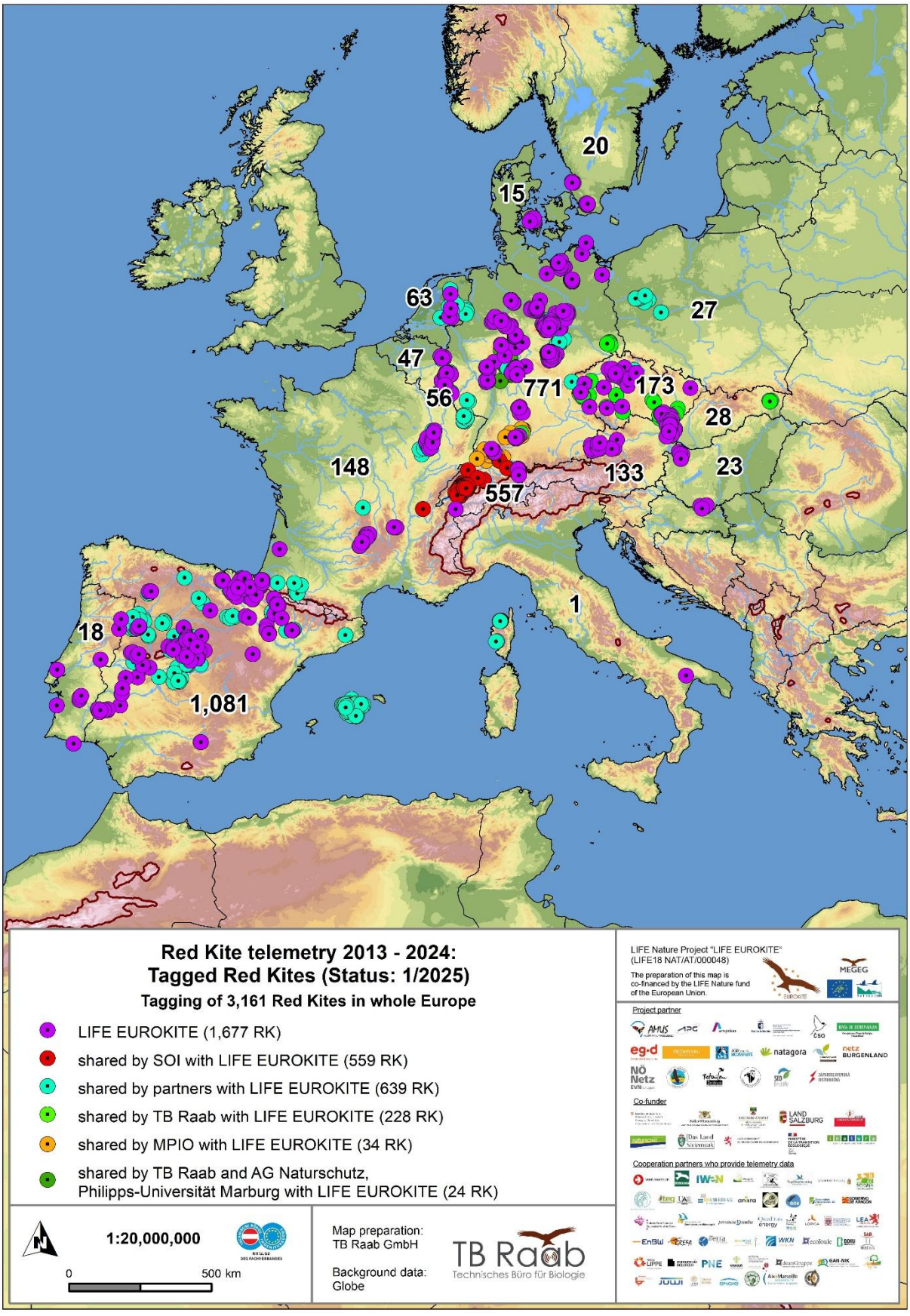

Figure 2: Tagging of 3,161 red kites by the LIFE EUROKITE project and numerous cooperation and project partners across Europe in the years 2013-2024.

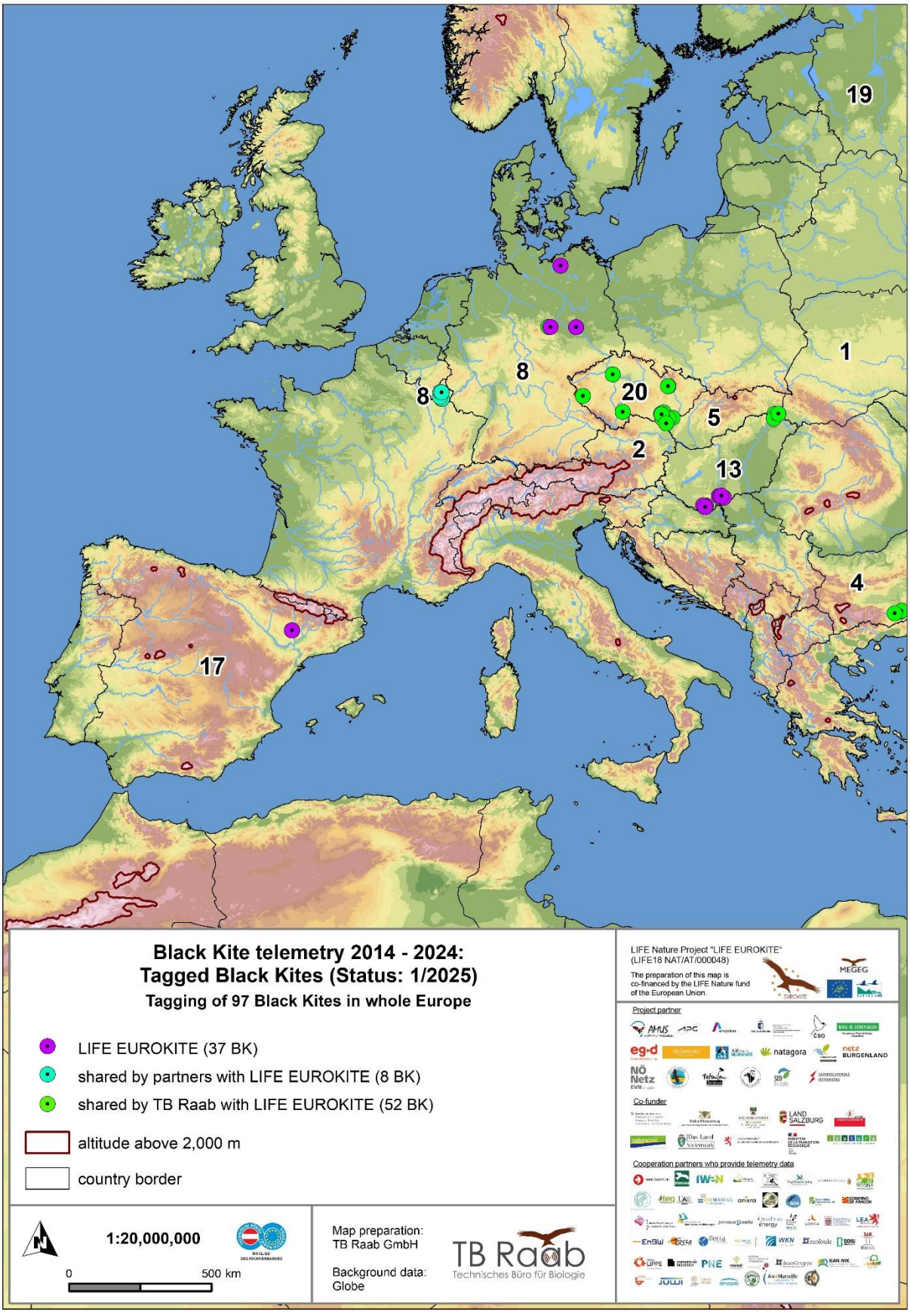

Figure 3: Tagging of 97 black kites by the LIFE EUROKITE project and numerous cooperation and project partners across Europe in the years 2014-2024.

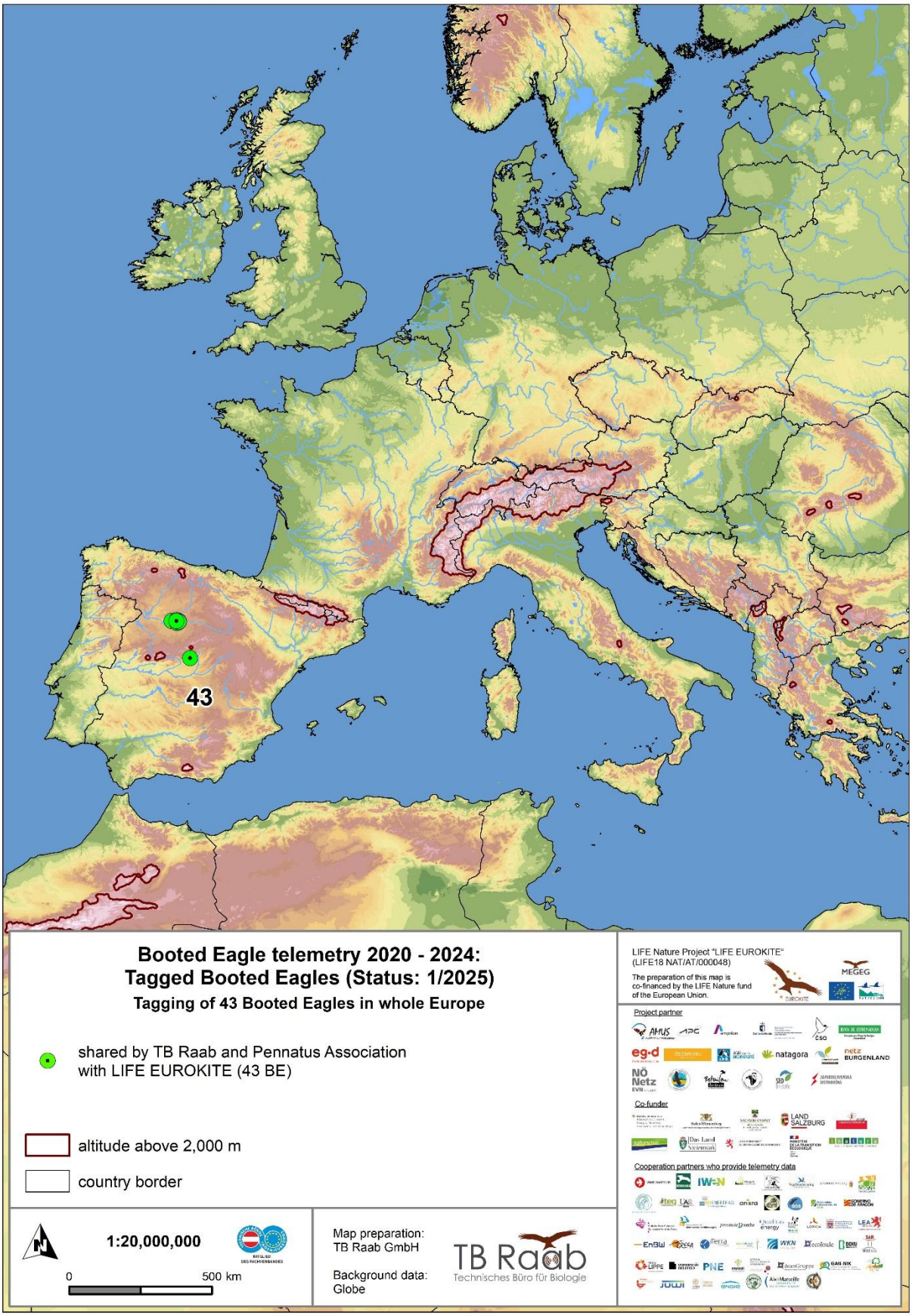

Figure 4: Tagging of 43 booted eagles by the LIFE EUROKITE project and numerous cooperation and project partners across Europe in the years 2020-2024.

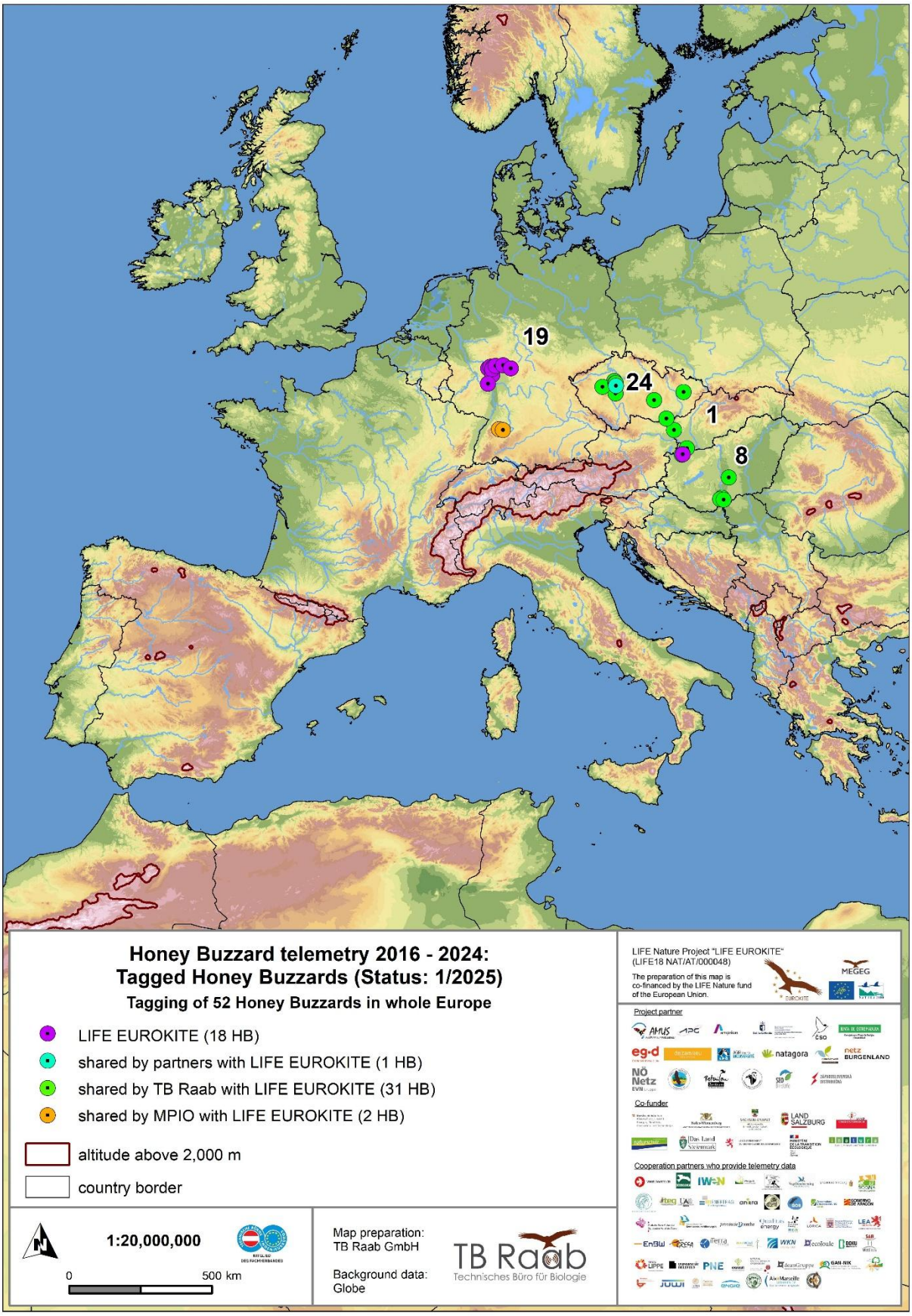

Figure 5: Tagging of 52 honey buzzards by the LIFE EUROKITE project and numerous cooperation and project partners across Europe in the years 2016-2024.

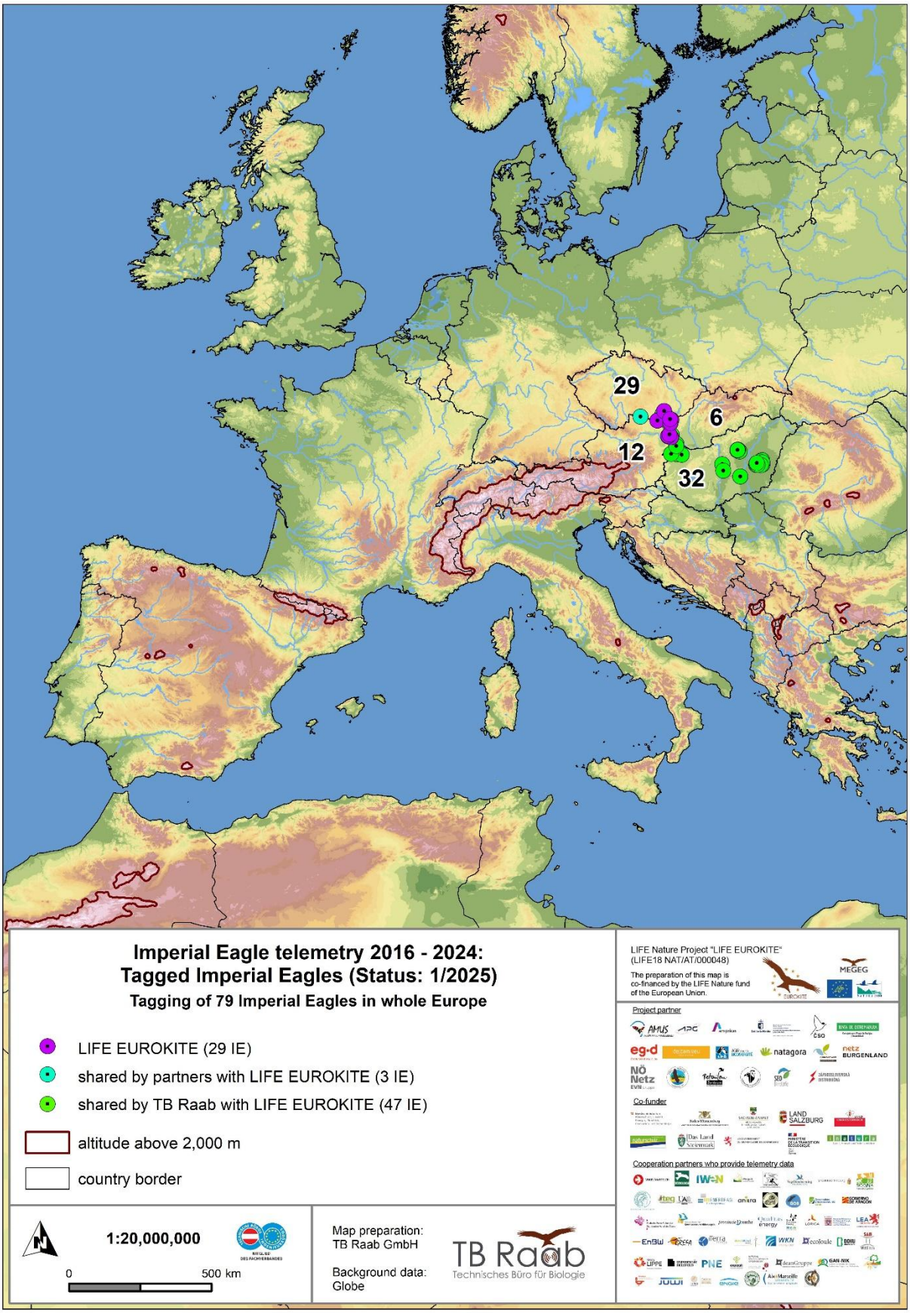

Figure 6: Tagging of 79 imperial eagles by the LIFE EUROKITE project and numerous cooperation and project partners across Europe the years 2016-2024.

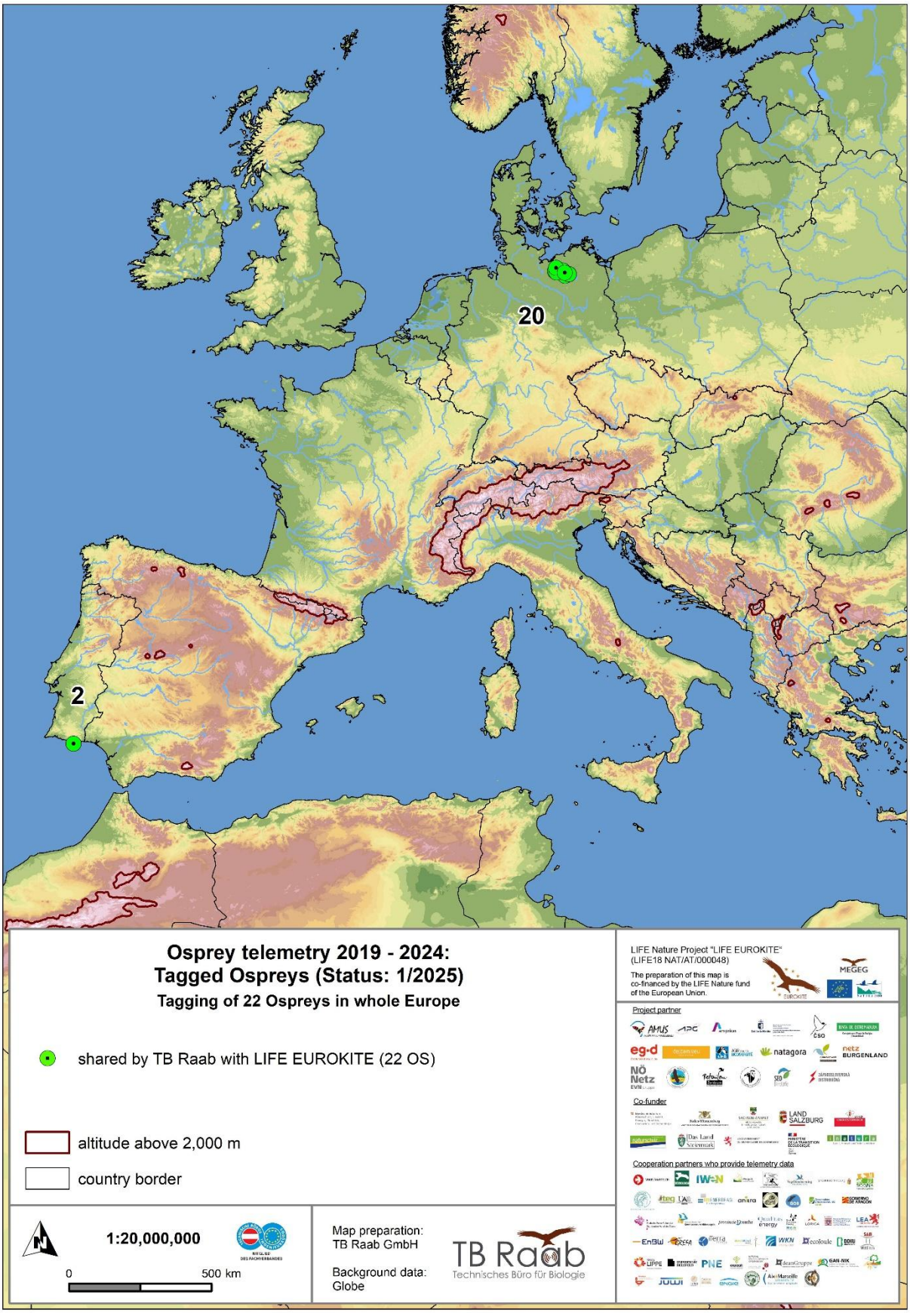

Figure 7: Tagging of 22 ospreys by the LIFE EUROKITE project and numerous cooperation and project partners across Europe the years 2019-2024.

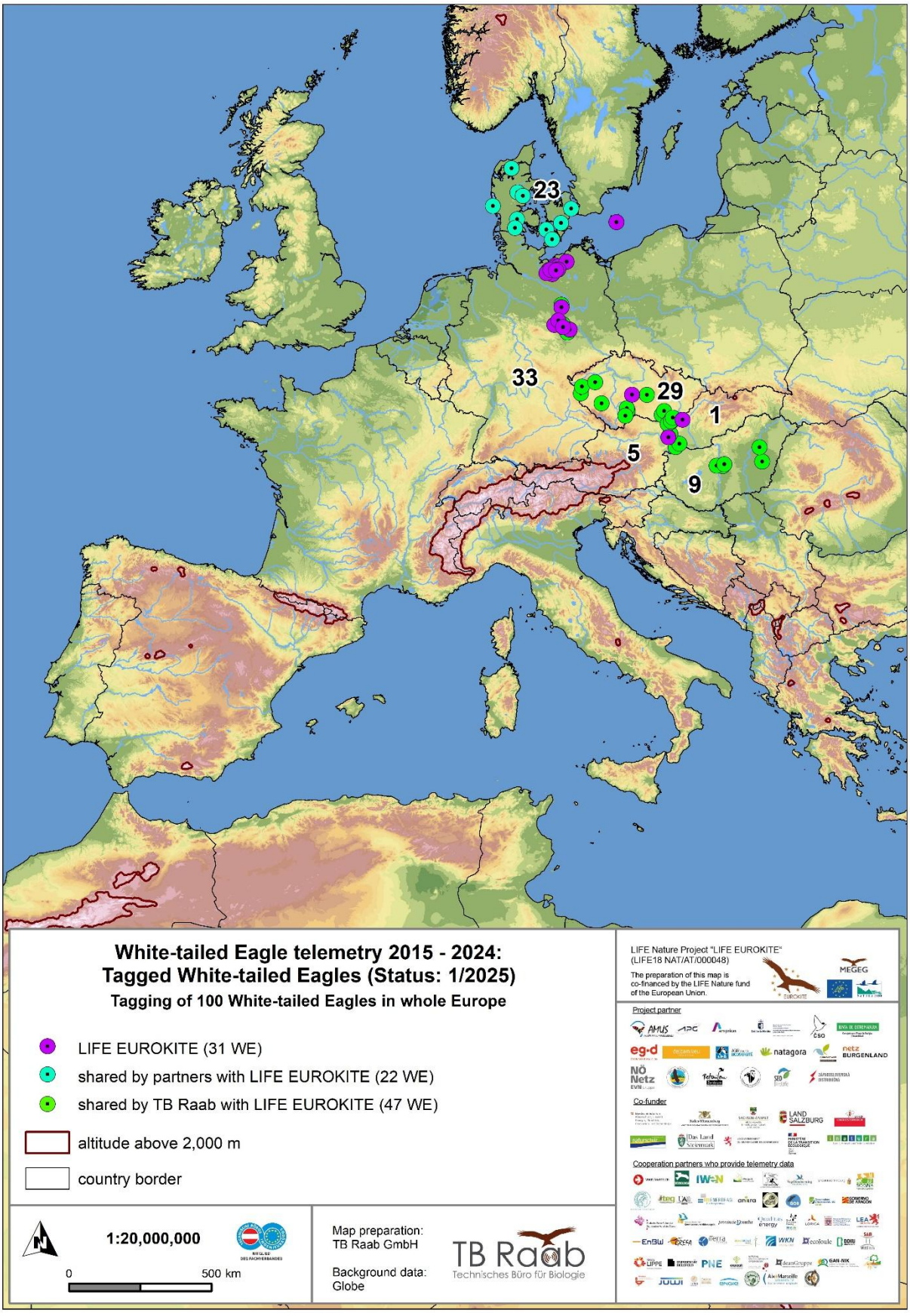

Figure 8: Tagging of 100 white-tailed eagles by the LIFE EUROKITE project and numerous cooperation and project partners across Europe the years 2015-2024.

3.2 Categories of ownership

The data shown for the tagged birds belong to different categories of ownership. The different categories are because the birds were not always tagged by the same organisation and not within the LIFE EUROKITE project. Many of the birds that are in the LIFE EUROKITE database come from cooperation partners and are therefore not original LIFE EUROKITE data. The following list (Table 1) provides an overview of the different data owners.

Table 1: Overview of the data contributors for the birds considered in this report (n = 320).

Abbreviations category of ownership (Data coordinator)	Ownership	Explanation	Country
A1 (MEGEG)	Central European Society for Raptor Protection (MEGEG)	purchased instead of tagged or tagged within the LIFE EUROKITE project	Austria
A2 (MEGEG)	Central European Society for Raptor Protection (MEGEG)	purchased by the LIFE EUROKITE project	Austria
B_MEGEG (AMUS)	Central European Society for Raptor Protection (MEGEG) together with AMUS	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (Anitra)	Central European Society for Raptor Protection (MEGEG) together with ANITRA System s.r.o.	tagged within the LIFE EUROKITE project	Czech Republic
B_MEGEG (Aragon)	Central European Society for Raptor Protection (MEGEG) together with Gobierno de Aragon	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (CSO)	Central European Society for Raptor Protection (MEGEG) together with Czech Society for Ornithology (CSO)	tagged within the LIFE EUROKITE project	Slovakia
B_MEGEG (DGS-JEX)	Central European Society for Raptor Protection (MEGEG) together with Junta de Extremadura, Dirección General de Sostenibilidad	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (ENERTRAG)	Central European Society for Raptor Protection (MEGEG) together with ENERTRAG SE	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (GREFA)	Central European Society for Raptor Protection (MEGEG) together with Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat (GREFA)	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (Hessen)	Central European Society for Raptor Protection (MEGEG) together with Hessisches Ministerium für Wirtschaft,	tagged within the LIFE EUROKITE project	Germany

	Energie, Verkehr, Wohnen und ländlichen Raum		
B_MEGEG (LEA)	Central European Society for Raptor Protection (MEGEG) together with LandesEnergieAgentur Hessen GmbH	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (LPO)	Central European Society for Raptor Protection (MEGEG) together with Ligue pour la Protection des Oiseaux (LPO)	tagged within the LIFE EUROKITE project	France
B_MEGEG (nat&emwelt)	Central European Society for Raptor Protection (MEGEG) together with natur&ëmwelt a.s.b.l	tagged within the LIFE EUROKITE project	Luxembourg
B_MEGEG (Natagora)	Central European Society for Raptor Protection (MEGEG) together with Natagora asbl	tagged within the LIFE EUROKITE project	Belgium
B_MEGEG (Navarra)	Central European Society for Raptor Protection (MEGEG) together with Navarra Environmental Management (GAN-NIK)	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (Pfeiffer, Thomas)	Central European Society for Raptor Protection (MEGEG) together with Thomas Pfeiffer	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (Qenergy)	Central European Society for Raptor Protection (MEGEG) together with Qualitas Energy Deutschland GmbH	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (RMZ)	Central European Society for Raptor Protection (MEGEG) together with Rotmilanzentrum	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (SAB Projektentwicklung GmbH & Co. KG)	Central European Society for Raptor Protection (MEGEG) together with SAB WindTeam GmbH	tagged within the LIFE EUROKITE project	Germany
B_MEGEG (SEO)	Central European Society for Raptor Protection (MEGEG) together with SEO/BirdLife	tagged within the LIFE EUROKITE project	Spain
B_MEGEG (Uni Bielefeld)	Central European Society for Raptor Protection (MEGEG) together with University Bielefeld, Faculty of Biology	tagged within the LIFE EUROKITE project	Germany
C_Anitra (Dušan Rak)	ANITRA System s.r.o.	data shared by cooperation partner with the LIFE EUROKITE project	Czech Republic
C_CEN (Carole Attie)	CEN Corse -Conservatoire d'Espaces Naturels de Corse	data shared by cooperation partner with the LIFE EUROKITE project	France

C_DFA (Alava) (Marta Olalde Fernández)	Diputación Foral de Álava (DFA)	data shared by cooperation partner with the LIFE EUROKITE project	Spain
C_DOF (Jesper Johannes Madsen, Kasper Thorup & Anders P. Tøttrup)	Dansk Ornitologisk Forening (DOF), BirdLife Denmark	data shared by project partner with the LIFE EUROKITE project	Denmark
C_GOB (Antoni Muñoz)	GOB - Grup Balear d'Ornitologia I Defensa de la Naturalesa	data shared by cooperation partner with the LIFE EUROKITE project	Spain
C_GREFA (Ernesto Alvarez & Juan José Iglesias-Lebrija)	Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat (GREFA)	data shared by cooperation partner with the LIFE EUROKITE project	Spain
C_IMBE (Alexandre Millon & Tonio Schaub)	Institut Méditerranéen de Biodiversité et d'Écologie (IMBE), Aix Marseille University	data shared by cooperation partner with the LIFE EUROKITE project	France
C_nat&emwelt (Katharina Klein)	natur&ëmwelt a.s.b.l	data shared by project partner with the LIFE EUROKITE project	Luxembourg
C_Ökotop (Ubbo Mammen)	ÖKOTOP - Büro für angewandte Landschaftsökologie	data shared by cooperation partner with the LIFE EUROKITE project	Germany
C_Palombar (João Pedro Valente e Santos)	Palombar - Associação de Conservação da Natureza e do Património Rural	data shared by cooperation partner with the LIFE EUROKITE project	Portugal
C_Pfeiffer_Thomas (Thomas Pfeiffer)	Private person Thomas Pfeiffer	data shared by cooperation partner with the LIFE EUROKITE project	Germany
C_PULS (Gzegorz Maciorowski & Piotr Zduniak)	Adam Mickiewicz University in Poznań (PULS)	data shared by cooperation partner with the LIFE EUROKITE project	Poland
C_SEO (Jesús Pinilla Infiesta)	SEO/BirdLife Spain	data shared by project partner with the LIFE EUROKITE project	Spain
C_SOI (Patrick Scherler)	Schweizerische Vogelwarte (SOI)	data shared by cooperation partner with the LIFE EUROKITE project	Switzerland
C_StefVanRijn (Stef van Rijn)	Private person Stef van Rijn	data shared by project partner with the LIFE EUROKITE project	Netherlands
C_TEG_UAM (Juan Traba)	Universidad Autónoma de Madrid	data shared by cooperation partner with the LIFE EUROKITE project	Spain
E_HMWEVW (Bärbel Ullmann)	Hessisches Ministerium für Wirtschaft, Energie, Verkehr, Wohnen und ländlichen Raum (HMWEVW)	data shared by cooperation partner with the LIFE EUROKITE project	Germany
E_TBRAAB_1 (Rainer Raab)	TB Raab GmbH	data shared by TB Raab with the LIFE EUROKITE project	Austria

E_TBRAAB_2 (Rainer Raab)	TB Raab GmbH	data shared by TB Raab with the LIFE EUROKITE project	Austria
E_TBRAAB_Pennatus_Association (Rainer Raab & Ignacio García Dios)	TB Raab GmbH and Pennatus Association	data shared by TB Raab with the LIFE EUROKITE project	Spain
E_TBRAAB_Uni_Marburg (Rainer Raab, Sascha Rösner, Nina Farwig, Dana Schabo)	TB Raab GmbH and AG Naturschutz, Philipps-Universität Marburg	data shared by TB Raab with the LIFE EUROKITE project	Germany
E_TBRAAB_VFU (Rainer Raab & Ivan Literák)	TB Raab and University of Veterinary Sciences Brno (VFU)	data shared by TB Raab with the LIFE EUROKITE project	Czech Republic

3.3 Bird parameters

The following provides a more detailed explanation of the key parameters related to the birds.

Species abbreviations

This report contains 7 different species of birds of prey with the following abbreviations.

RK = Red kite (*Milvus milvus*)
BK = Black kite (*Milvus migrans*)
BE = Booted eagle (*Hieraaetus pennatus*)
HB = Honey buzzard (*Pernis apivorus*)
IE = Imperial eagle (*Aquila heliaca*)
OS = Osprey (*Pandion haliaetus*)
WE = White-tailed eagle (*Haliaeetus albicilla*)

Origin of bird

Captured with trap = Immature or adult birds, which were captured with known catching method like Dho-Gaza method

Juvenile from nest = Birds, which are still in the nest and unable to fly

From rescue station = Birds, which were brought to rescue stations because of injuries etc. Tagged after rehabilitation

Juvenile from reintroduction = Birds (juveniles from the nest), which were taken from other regions (e.g., England) for reintroduction projects e.g., in southern Spain

Bird persecution

"Bird persecution" refers to the specific cause of bird crime, almost always leading to an animal's death. For this report possible causes of bird persecution include illegal human influences like poisoning, secondary poisoning, shooting, trapping, bird crime and traceable human intervention. The following provides a detailed description of the illegal causes examined in this report. Determining the cause of bird persecution is important for developing protective measures and better understanding the causes of mortality within specific populations.

Poisoning

Poisoning is one of the most common illegal methods used to kill birds of prey. Several birds or other species are often killed by deliberately placed poisoned baits, such as carcasses, eggs, and meat. The type of poison varies, including cholinesterase inhibitors (such as pesticides like Carbofuran), anticoagulants/coumarin derivatives (such as tranquilizers).

Possible signs of poisoning include dead flies, cramped claws, the discovery of granular or purple/blue substances, or food residues in the beak. However, laboratory testing is always recommended.

Laboratory testing involves looking specifically for signs of poisoning and taking samples to test for a selection of specific toxins. In some necropsy reports, toxicological analyses were conducted for general toxic groups rather than for individual substances. For example, samples were tested for the presence of Carbamates as a group, without identifying specific compounds such as Aldicarb, Bendiocarb, Carbofuran, Methiocarb, or Oxamyl, which all belong to this category. Similarly, the term "Rodenticide" was used in cases where a general rodenticide screen was positive, but no individual substance (e.g., Brodifacoum, Bromadiolone) was identified. If a bird was not analysed in the laboratory or if the sample contained a substance that was not one of the toxins tested, the result was classified as ‘unknown’.

In this report, a distinction is made between:

- Primary poisoning
- Secondary poisoning

Primary poisoning

Primary poisoning occurs through deliberate illegal actions such as poisoned baits specifically placed to kill wildlife.

Secondary poisoning

Secondary poisoning covers cases in which poisoning was not considered the primary cause of death. This applies, for example, to birds that died due to predation, collision, or trauma of unknown origin, but toxicological analyses revealed the presence of toxins in the body. In such cases, the detected substances are assumed to have weakened the bird or impaired its behaviour or mobility, thereby increasing the likelihood of death from other causes. It is important to note that the data on secondary poisoning presented here is an exemplary selection, since many birds are not submitted for necropsy, and cases like intoxication in birds killed by collision would remain undetected without thorough toxicological analysis.

Lead poisoning

Lead accumulates in the body and does not directly cause death but can reduce feeding and lead to illness. Exposure can occur through ingestion of contaminated food or from being accidentally shot. This is considered unintentional poisoning, as it generally does not result from a deliberate act.

Landfill poisoning

Telemetry data indicate that the bird visited a landfill, where it may have ingested various harmful substances present in the waste. No specific toxins could be identified; however, as the bird died at the landfill site, the case was classified as landfill poisoning. This is considered unintentional poisoning, as there is no evidence of deliberate contamination.

Shooting

Shooting refers to the illegal shooting or hunting of birds of prey, which is prohibited and punishable in many countries. There are various reasons for killing these birds, including people's aversion to large birds of prey, as they perceive them as a threat to their domestic or ground-nesting birds. Additionally, hunting is increasingly seen as a popular recreational activity, and trophy hunting remains a common practice. Whether a bird has been killed by gunshot is usually only determined through an X-ray examination, as the entry wounds are often difficult to detect.

Trapping

Trapping refers to the illegal capture of animals using traps. Typically, a bait is placed in the trap to attract birds of prey. Killing traps, such as spring traps, are most used. If the trap does not cause immediate death, the animals often suffer agonizing injuries.

Bird crime

Under the term 'bird crime', all cases are summarized where telemetry data or on-site searches suggest a crime against birds of prey, but no conclusive evidence of the cause can be found. This includes, for example, cases where the transmitter has been cut off, and the bird is missing without any clues about its whereabouts.

This also includes "Traceable human intervention", where the exact cause of death remains unresolved, yet the available data strongly indicate the likelihood of human involvement. (e.g. the bird “flies” along a street but could not be found in the end.

Status of the carcass

The finding situation of each bird is unique and can vary from case to case. However, the condition of the carcass can be classified into five general categories: very good, good, medium, poor, and very poor (Figure 9, Table 2). This classification helps to draw conclusions about the cause of death and to determine whether further steps are necessary (Panter et al. 2025).

Table 2: Overview of the categories of carcass status.

Reason, why there was no conviction	
Very good	Cadaver intact Sometimes still warmer to the touch compared to ambient temperature Rigor mortis starting or in progress No insects on the body
Good	Rigor mortis completed before discovery No insects on the body Fly eggs may be present around the eyes or cloaca Little to no decomposition If the animal's body is dismembered: organs are fresh, firm and moist
Medium	Odor may be present, beginning decomposition Eyes are sunken but clearly visible Fly larvae and insects may be present If the animal's body is dismembered: organs are starting to become mushy/dry on the surface
Bad	Advanced decomposition Eyes are sunken but clearly visible Beetles are predominant on the carcass If the animal's body is dismembered: organs are mushy and liquefying
Very bad	Eyes are sunken and barely visible The body is completely dry Very light in weight Bones and feather remnants present Partial disarticulation of individual bones

Figure 9: Example pictures of the categories for the status of the carcass. a) very good, b) good, c) medium, d) poor and e) very poor (Panter et al. 2025).

Calculation of the birth date

The determination of the birth date varies slightly depending on the bird species. While age determination in nestlings is usually relatively easy, it becomes increasingly difficult as the bird ages. When a nestling is fitted with a transmitter, it is in its first calendar year (1 CY). For example, to determine the exact age in days, the wing length in millimetres is measured for red kite chicks (20 mm on day 1 to 433 mm on day 51). For the white-tailed eagle, the age in days can be determined from day 16 onwards by measuring the body weight in grams. Based on experience and observations, average birth dates have been determined for most bird species.

Table 3: Average birth dates have been determined on expert assessments for the different species in cases the calculation with the help of body measurements was not possible.

Species	Area	Average birth date
Red kite	Spain/ Mallorca	22.04.
Red kite	Rest of Europe	13.05.
White-tailed eagle	Europe	07.04.
Imperial eagle	Europe	06.05.
Black kite	Europe	06.06.
Honey buzzard	Northern Germany	02.07.
Osprey	Northern Germany	21.05.
Booted eagle	Spain	29.04.

Place of tagging

The "place of tagging" category specifies the location where the birds were tagged with the logger. Along with the country, the province/region and nearest town are listed. Furthermore, the precise coordinates (WGS 84) of the tagging site are also provided.

Age of tagging

"Age of tagging" refers to the age of the bird, at the time it is tagged with the logger. This information is important because it helps researchers track the bird's development, migration patterns, and behaviour over time. The age of tagging can provide insights into the bird's life cycle stage (e.g., chick, juvenile, adult). The age of the birds is given in whole calendar years (CY). This means that the age is calculated starting from the birth year, and each new year increases the age by 1 year, regardless of the exact date of birth. A bird born in 2020 is therefore in its 2nd calendar year (2 CY) on January 1, 2021.

3.4 Categories of certainty

The categories of certainty of mortality reasons are defined as followed.

1. **Certain**: Unequivocal result based on evidence from one or more sources.
2. **Probable**: Strong indication of a single cause but lacking definitive proof. No evidence of alternative causes.
3. **Possible**: Evidence suggests a likely cause, but plausible alternative causes cannot be ruled out due to incomplete information.
4. **Inconclusive**: Insufficient evidence to confidently determine the cause of death, or multiple equally likely causes exist (This category is not relevant for this report).

The cause of mortality and level of certainty is assessed by a group or single individual having expertise in the ecology of the investigated species, using available evidence from the three information sources: GPS tracking, site investigation, and necropsy. Here we briefly describe the following levels: conclusive - split into certain, probable, possible – and inconclusive. The assessor identifies the most likely cause of mortality from the main categories (e.g., predation, poisoning) from the master list (given for the red kite as example in appendix Table C1) and associated level of certainty along with giving a reason for each assignment based on the data types used. There is also the option to select more detailed subcategories, e.g., predation by eagle, poisoning by Carbofuran, in case such additional information is available. Certainty levels are always chosen based on main categories (Panter et al. 2025).

"Certain" mortality cause

A case is evaluated as "certain" if there is unequivocal proof of the mortality cause. A typical example is when the carcass condition allows for an unequivocally conclusive necropsy with a clear result pointing to a single cause of mortality, which is also in accordance with tracking and site investigation data. Although the aim should always be to use information from all three LEAP sources for cause of death assessments, the carcass might be unretrievable or necropsy can fail, e.g., due to the corpse being frozen before the necropsy. If a necropsy is unavailable or inconclusive, a case can also be considered certain based on observations during site investigations and tracking data alone. Assuming that the carcass is found, it can provide a clear indication of mortality (e.g., sign of struggle and a plucking site would indicate predation, blood on a rotor blade and amputated wing would indicate collision with the wind turbine), then the certain category may be applied even with no necropsy. If a carcass cannot be retrieved, a case can also be considered certain based on observations during site investigations and tracking data alone (sudden death in an open area followed by movement along street lines would indicate shooting) (Panter et al. 2025).

"Probable" mortality cause

The tracking data or the site investigation strongly points to a single cause of death, but the definitive proof is missing. There is however no sign for another cause of death. Poisoning or disease can e.g., lead to atypical behaviour of the kite in the hours and days before its death, e.g., the bird moves less and sits idle for consecutive days before mortality occurs (Panter et al. 2025).

"Possible" mortality cause

There are indications for a probable cause of death, but other plausible mortality causes cannot be completely ruled out due to incomplete information, e.g., where the carcass condition is poor

or no carcass is available (thus necropsy analysis is impossible) and only the site investigation and GPS tracking provide indications of a specific mortality cause. Often, possible causes of mortality remain plausible due to limited information gained from transmitter metadata at the moment of death. An example of such limitations is when a mortality event happens during a period with gaps in GPS tracking data (Panter et al. 2025).

3.5 Investigation

The categories of the investigation process are defined as followed.

1. **Investigation status:** Provides information on whether a legal investigation was conducted
2. **Police investigation:** Indicates whether law enforcement or relevant authorities were informed
3. **Legal proceeding:** Provides information on whether a legal process has been initiated
4. **Conviction**: Indicates whether the legal proceedings resulted in a conviction

Investigation status

The Investigation status provides information on whether a legal investigation was conducted and, if so, its current stage. If the status is *No,* no investigation was initiated. *No information received yet* indicates that it is unclear whether an investigation took place, as no details have been provided so far. If the status is *Ongoing*, the investigation is still in progress, with no final outcome yet. *Stopped* indicates that the investigation was permanently discontinued because there was insufficient evidence to proceed, for example, if no perpetrator could be identified. Finally, *Completed* means that the investigation has been concluded, either resulting in a conviction or determining that no illegal activity occurred (Table 4).

Table 4: Explanation of terms used in the investigation status.

Investigation Status	
No	No investigation was initiated
No information received yet	Unclear whether an investigation took place, as no details have been provided
Ongoing	The investigation is still in progress, with no final outcome yet
Stopped	The investigation was permanently discontinued
Completed	The investigation has been concluded

Involvement of the police and/or authorities

The police investigation status indicates whether law enforcement or relevant authorities were informed about the case and provides insight into the progress of the investigation. Depending on the circumstances, the case may have been reported to the *police*, the *authorities*, or *both*.

In this context, *police* refer to the official national or regional law enforcement services. The term *authorities* refer to other competent public bodies that may deal with wildlife crime cases, such

as lower nature conservation authorities or specialised wildlife crime units. The exact institutional responsibilities vary between countries and, in some cases, even between regions.

If *neither the police nor the authorities* were informed, this is explicitly stated. In some instances, the status may be *No information received yet*, meaning there are no available details on the progress or outcome of the investigation so far.

Once a case has been reported, its investigation follows a specific process. *Ongoing* means that the case is still being investigated, with no final conclusion yet. *Stopped* indicates that the investigation was discontinued due to insufficient evidence or other limiting factors. Finally, *Completed* means that the investigation has reached a conclusion, either leading to legal action or determining that no further steps are necessary (Table 5).

Table 5: Explanation of terms used in the police investigation and status of the police investigation.

Involvement of the police and/or authorities	
Police informed	The police have been informed
Authorities informed	The authorities have been informed
Police and authorities informed	Both police and authorities have been informed
Neither police nor authorities informed in time	Neither the police nor the authorities have been informed
No information received yet	Unclear whether the police or authorities were informed and unclear whether an investigation took place, as no details were given
Ongoing	The case is still being investigated without a final conclusion yet
Stopped	The investigation was discontinued
Completed	The investigation has been concluded, leading to legal action or determining that no further steps are necessary.

Legal proceeding

The legal proceeding status provides information on whether a legal process has been initiated and, if so, its current stage. If the status is *No*, no legal investigation has been conducted. *Pending* means it is still uncertain whether legal action will be taken. *No information received yet* indicates that there is no available data on whether any legal proceedings have been initiated.

If legal action has begun, the process may be in different stages. *Ongoing* means that a legal investigation or court proceeding is still in progress. *Stopped* indicates that the process was discontinued, for example, due to insufficient evidence. *Not yet* suggests that legal proceedings have not started but may still be initiated. Finally, *Completed* means that the legal process has concluded, either resulting in a verdict or a final decision that no further action is necessary (Table 6).

Table 6: Explanation of terms used in the legal proceeding.

Legal proceeding	
No	No legal investigation has been conducted
Pending	Still unclear whether legal action will be taken
No information received yet	No available information on whether any legal proceedings have been initiated
Ongoing	Legal investigation or court proceeding is still in progress
Stopped	The process was discontinued
Not yet	Legal proceedings have not started but may still be initiated
Completed	Legal process has concluded, either resulting in a verdict or a final decision that no further action is necessary.

Conviction

The Conviction status indicates whether the legal proceedings resulted in a conviction or not. If the status is *No*, the court case did not lead to a conviction. *Awaiting a verdict* means that the legal process is still ongoing, and a conviction may still be possible. *Convicted* confirms that the court proceedings resulted in a conviction. If the status is *No information received*, there are no available details on whether a conviction occurred so far (Table 7). The reason for each status is explained separately for each case.

Table 7: Explanation of terms used in Conviction.

Conviction	
No	The court case did not lead to a conviction
Awaiting a verdict	The legal process is still ongoing
Convicted	The court proceedings resulted in a conviction
No information received yet	No available information on whether a conviction occurred

4 Results

The investigation into the illegal deaths of birds of prey aims to provide a comprehensive overview of the number and causes of fatalities. To this end, all illegally killed tagged birds within the LIFE EUROKITE database have been systematically categorized by country and cause of death. In total, detailed analyses of 320 birds from 24 countries are presented.

Please note that due to different numbers of tagged birds per country and the different density of red kites and other species per country the results can differ significantly per country. Therefore, these results do not provide any information about the frequency of illegal persecution compared to the density of red kites and other species in each country.

4.1 General overview

As the LIFE EUROKITE project focuses mainly on the red kite, most data are from dead red kites. To provide a comprehensive overview, the general situation in Europe is presented using figures and several maps. Subsequently, detailed maps illustrate the distribution of specific causes of death. Even upon initial examination, it becomes evident that illegal persecution constitutes a significant problem across Europe.

From the 3,554 tagged birds a total of 1,623 have died so far, including nestlings. Of these, a total of 1,594 individuals (1,480 red kites, 13 black kites, 14 booted eagles, 17 honey buzzards, 32 imperial eagles, 8 ospreys, 30 white-tailed eagles) died in the respective country where we also detected bird persecution within our sample. The first results of the LIFE EUROKITE project show, that 320 (20.08 %) of the tagged birds (293; 19.80 % red kites, 3; 23.08 % black kites, 1; 7.14 % booted eagles, 2; 11.76 % honey buzzards, 12; 37.50 % imperial eagles, 1; 12.50 % ospreys, 8; 26.67 % white-tailed eagles) were victims of illegal activities in 24 countries (10/01/2025) (Figure 10 & Figure 11). Among the various causes of illegal activities, poisoning is by far the leading cause of death. In total 238 birds were poisoned (226 red kites, 7 imperial eagles, 1 osprey and 4 white-tailed eagles) (Figure 12 to Figure 19Figure 18). 66 birds were shot (55 red kites, 3 black kites, 1 booted eagle, 1 honey buzzard, 4 imperial eagles and 2 white-tailed eagles) (Figure 20 to Figure 25), 7 birds were trapped (5 red kites, 1 honey buzzard and 1 white-tailed eagle) (Figure 26 to Figure 28), 8 birds were victims to bird crime (6 red kites, 1 imperial eagle and 1 white-tailed eagle) (Figure 29 to Figure 31) and one tagged red kite died due to traceable human intervention (Figure 32). In only 8 cases a conviction was achieved for bird persecution (Figure 52).

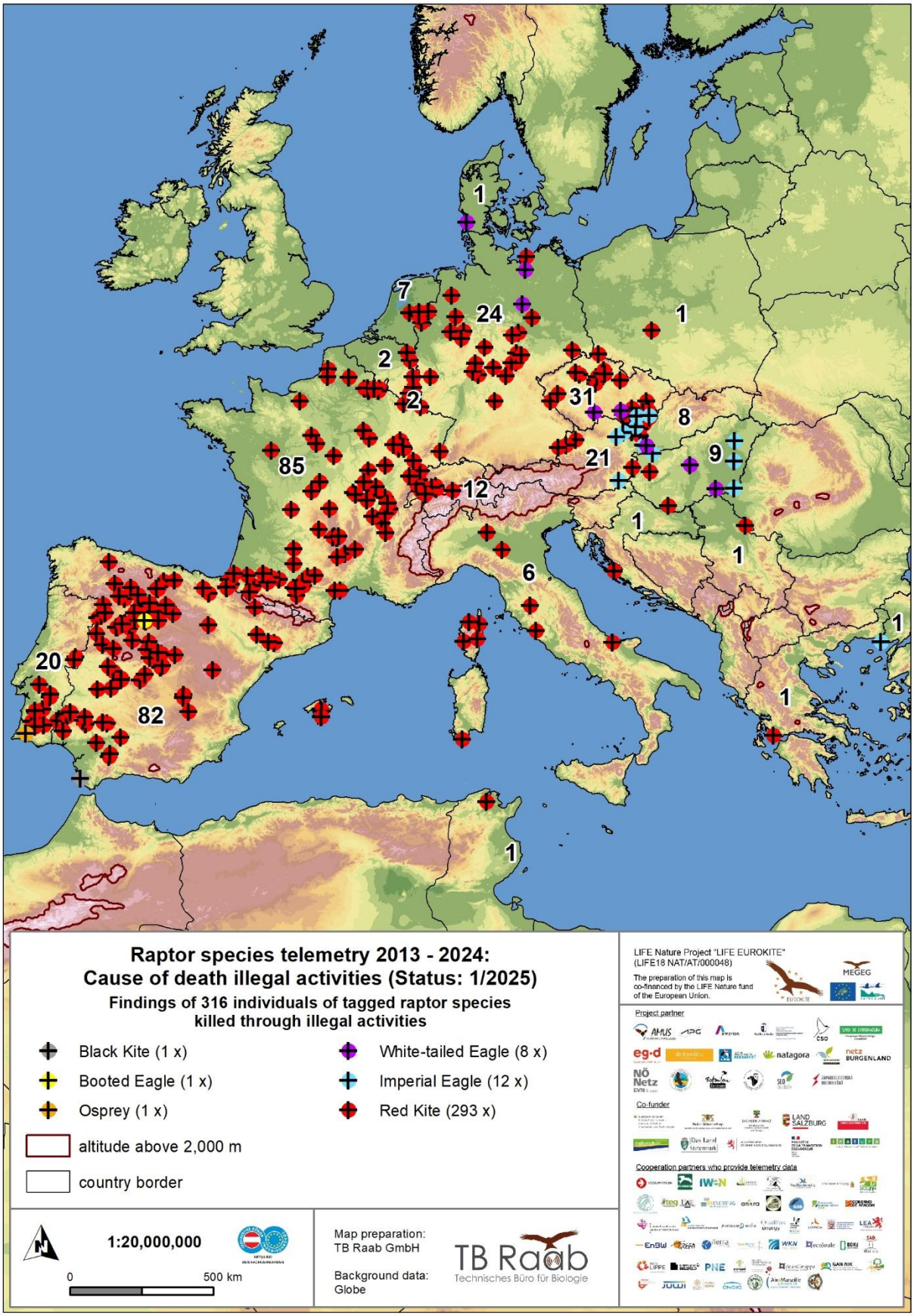

Figure 10: Interim results of the 316 tagged birds which died due to illegal activities across Europe and northern Africa in the years 2013-2024. Additionally, 4 tagged individuals died in Africa.

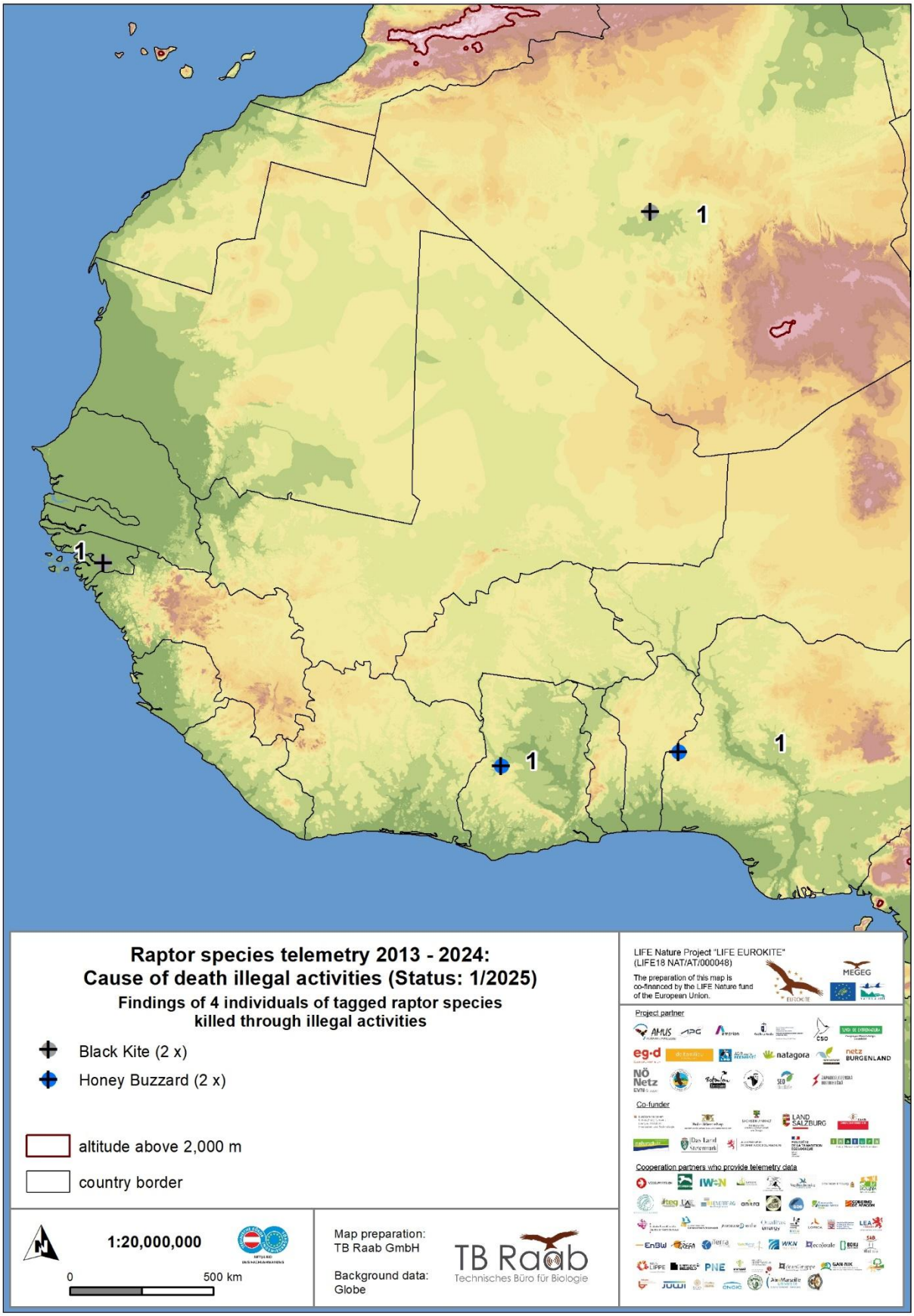

Figure 11: Interim results of the 4 tagged birds which died due to illegal activities in Africa in the years 2013-2024. Additionally, 316 tagged birds died in Europe and northern Africa.

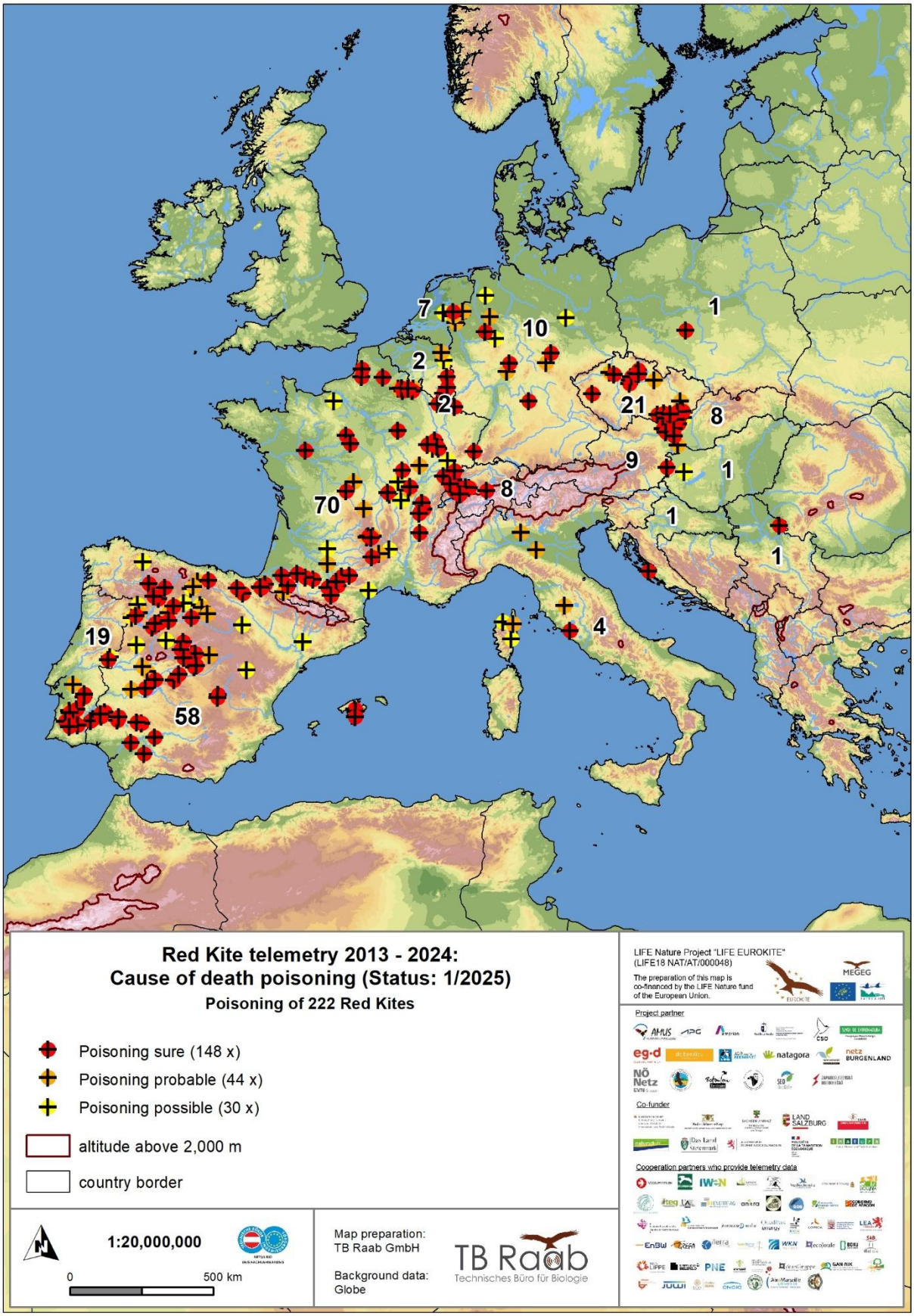

Figure 12: Interim results of 222 poisoning cases in tagged red kites from 2013-2024.

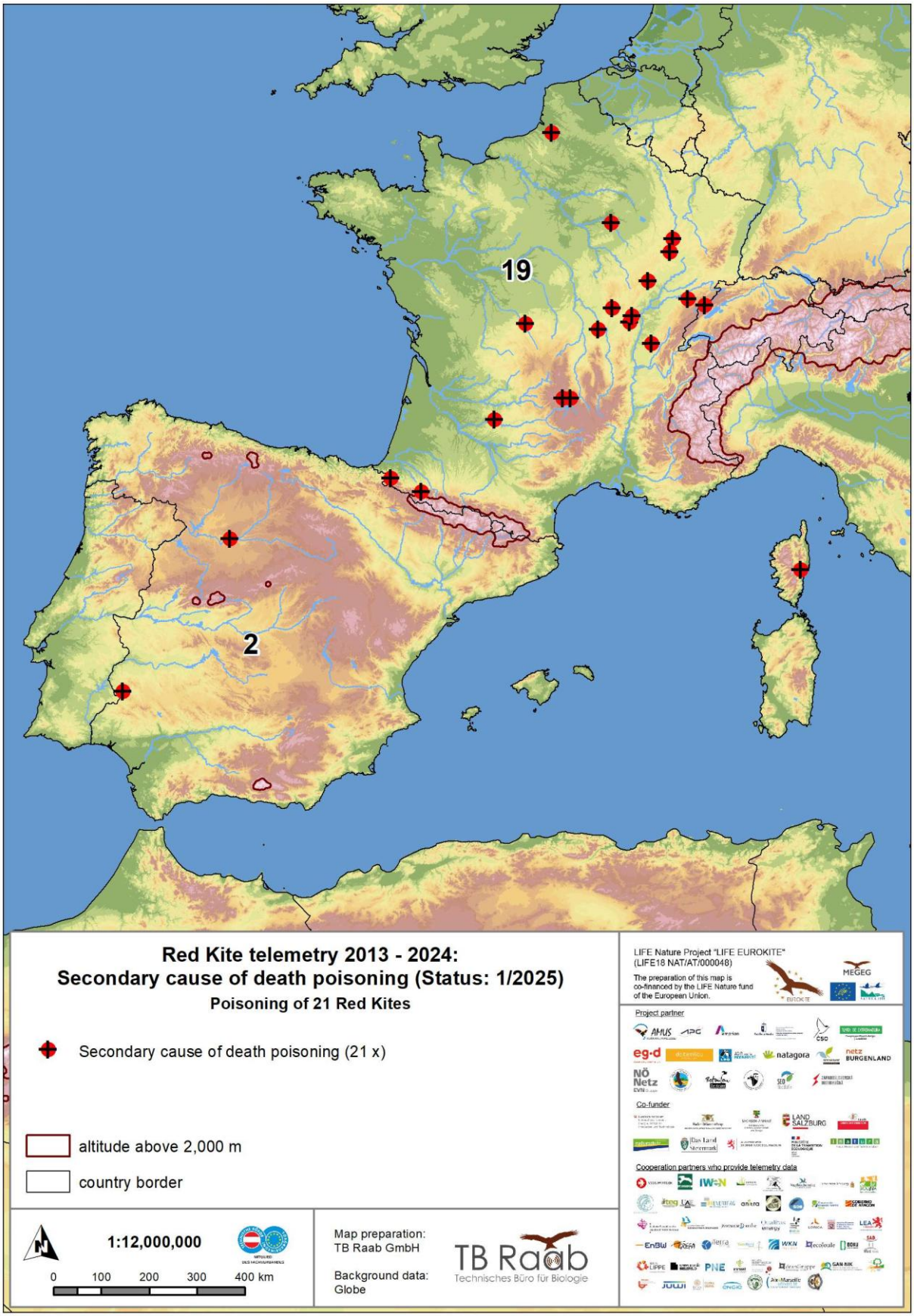

Figure 13: Interim results of 21 secondary poisoning in tagged red kites from 2013-2024.

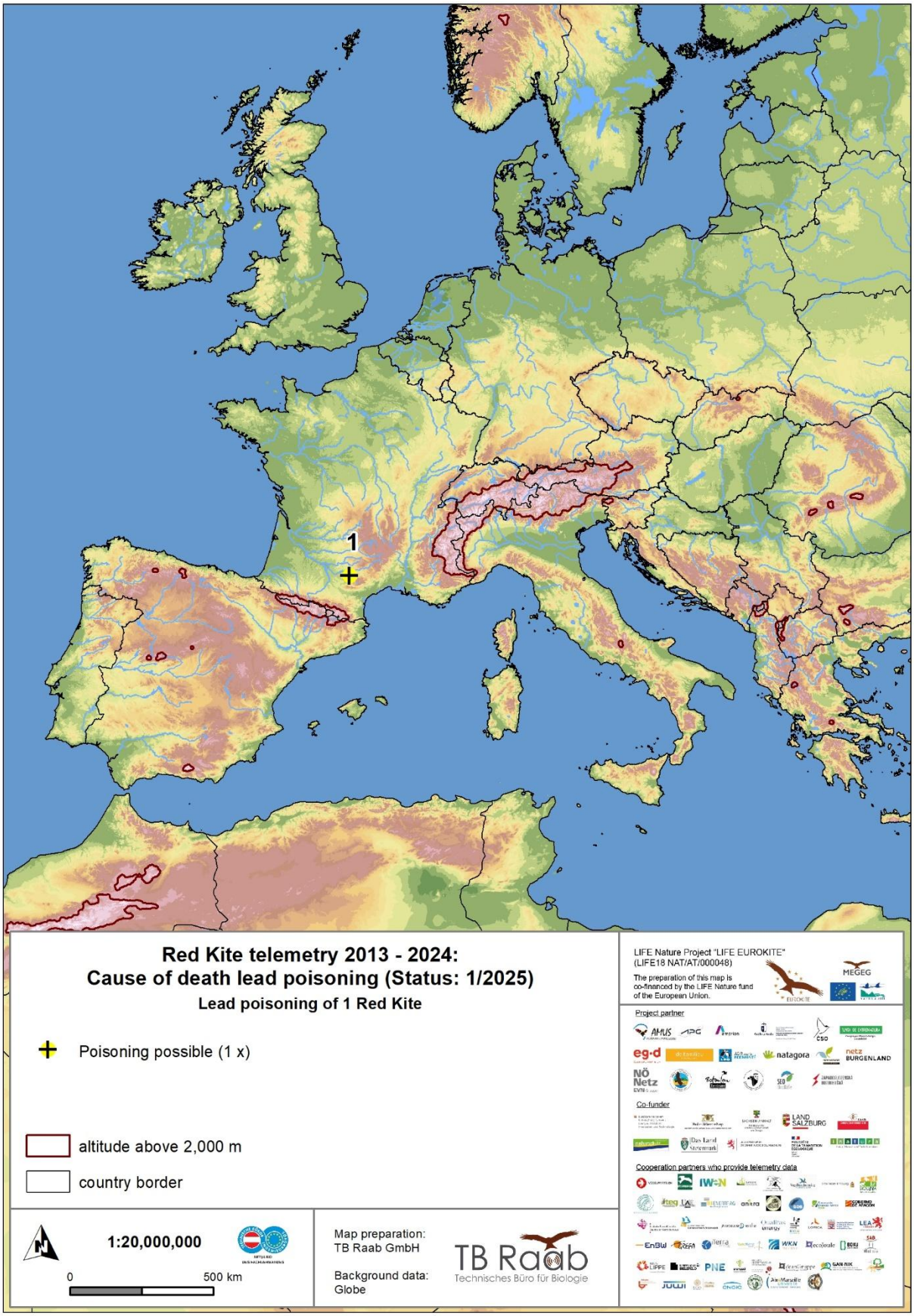

Figure 14: Interim results of 1 lead poisoning case in a tagged red kite from 2013-2024.

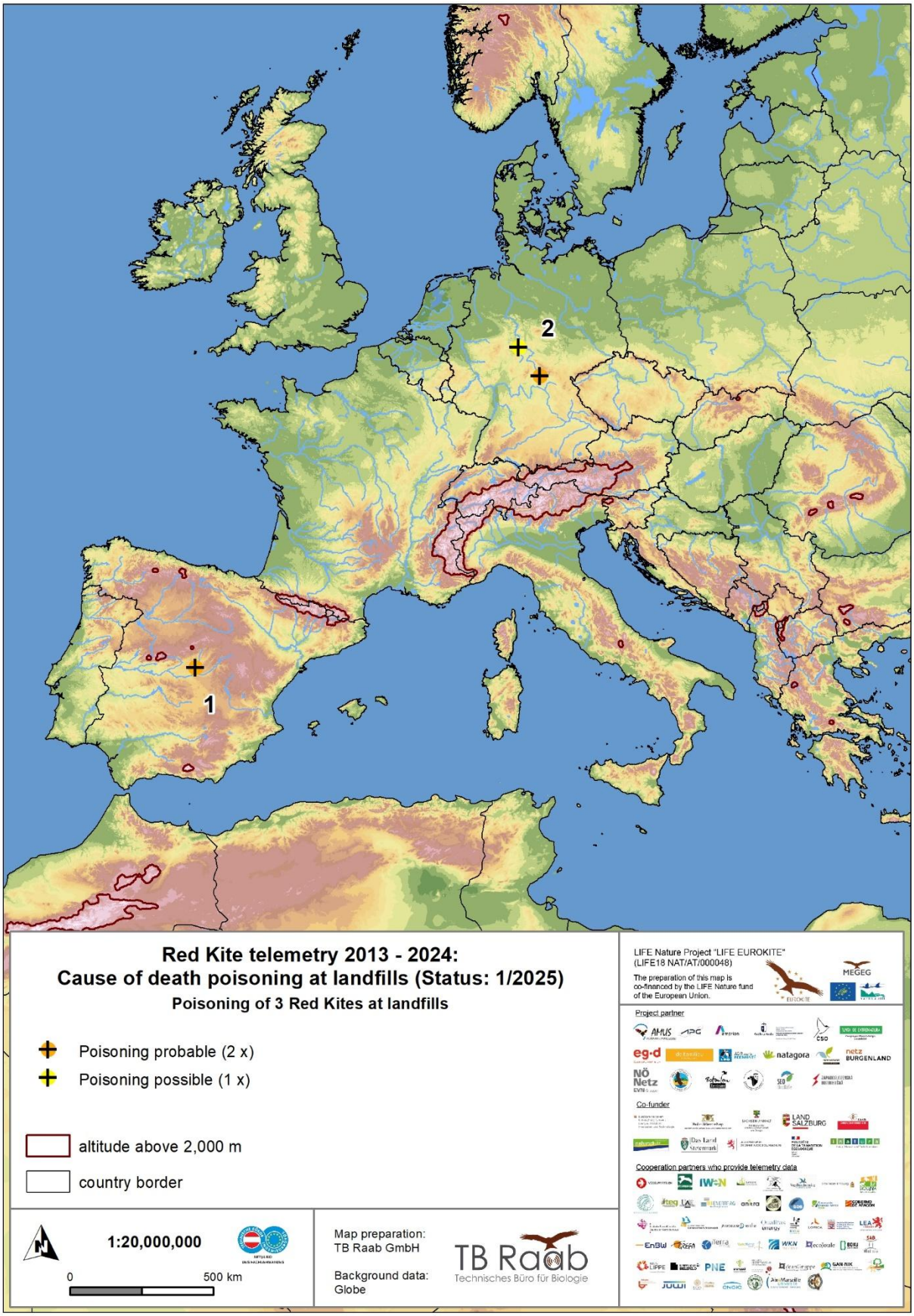

Figure 15: Interim results of 3 poisoning cases (landfill) in tagged red kites from 2013-2024.

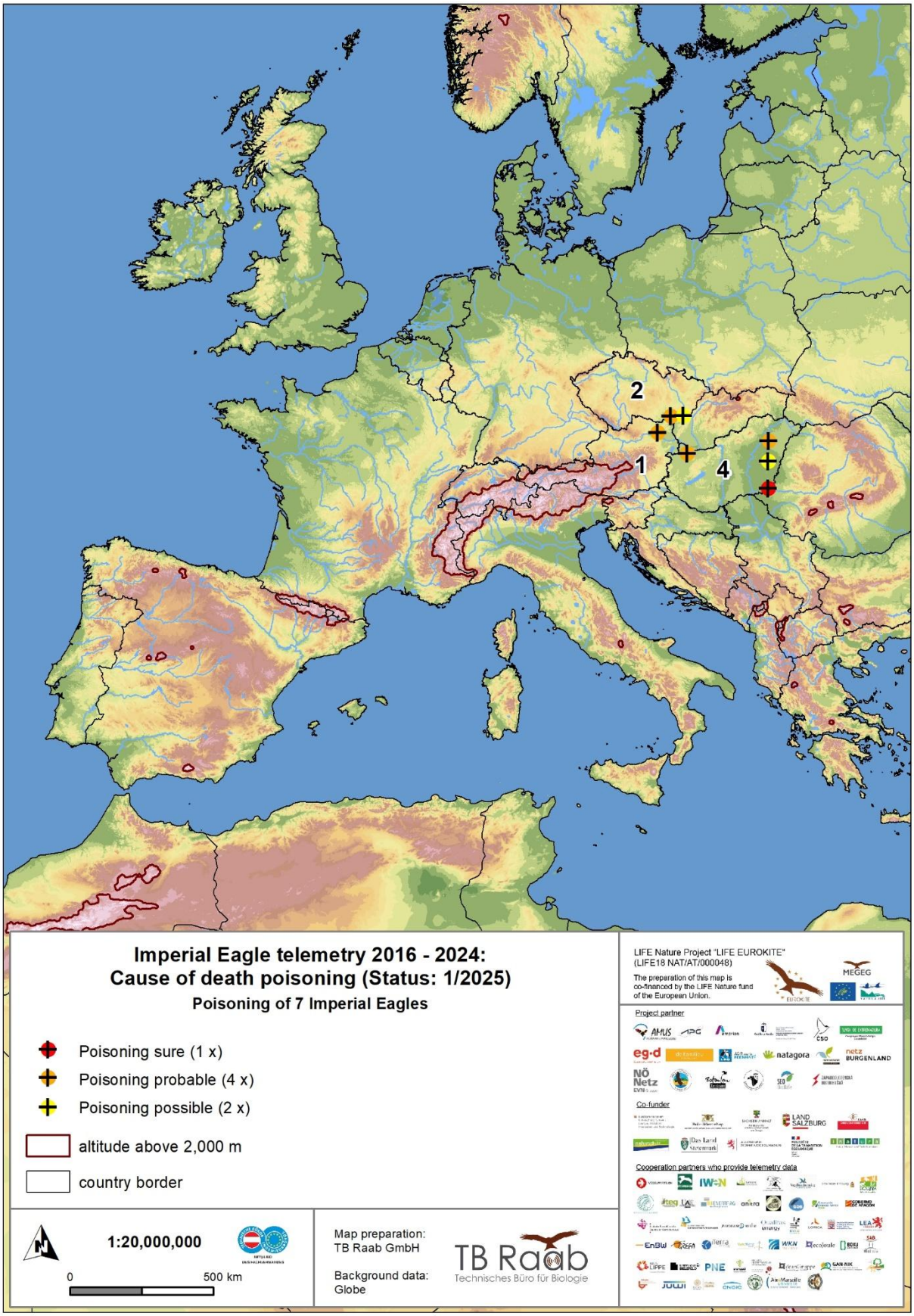

Figure 16: Interim results of 7 poisoning cases in tagged imperial eagles from 2016-2024.

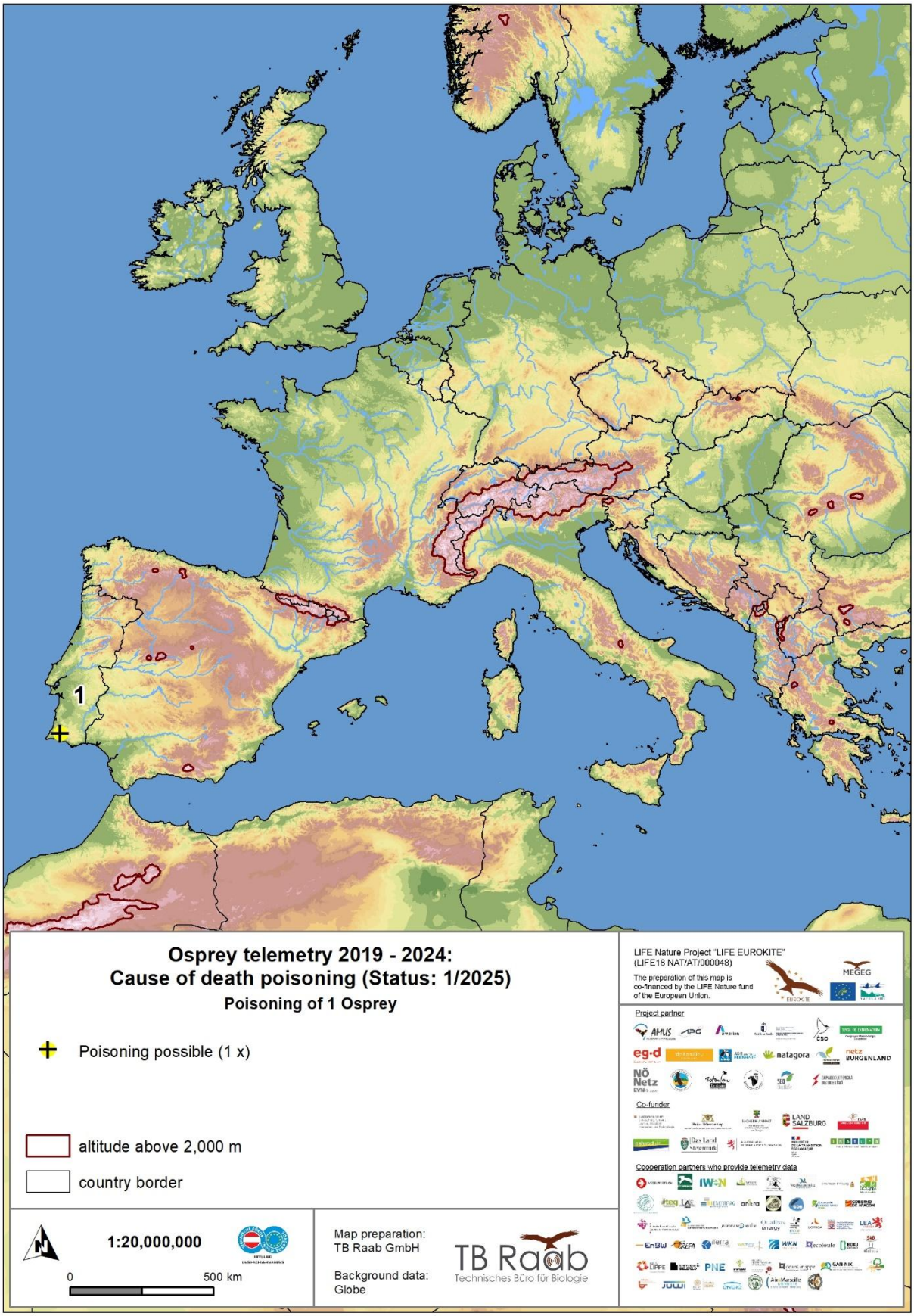

Figure 17: Interim results of 1 poisoning case in a tagged osprey from 2019-2024.

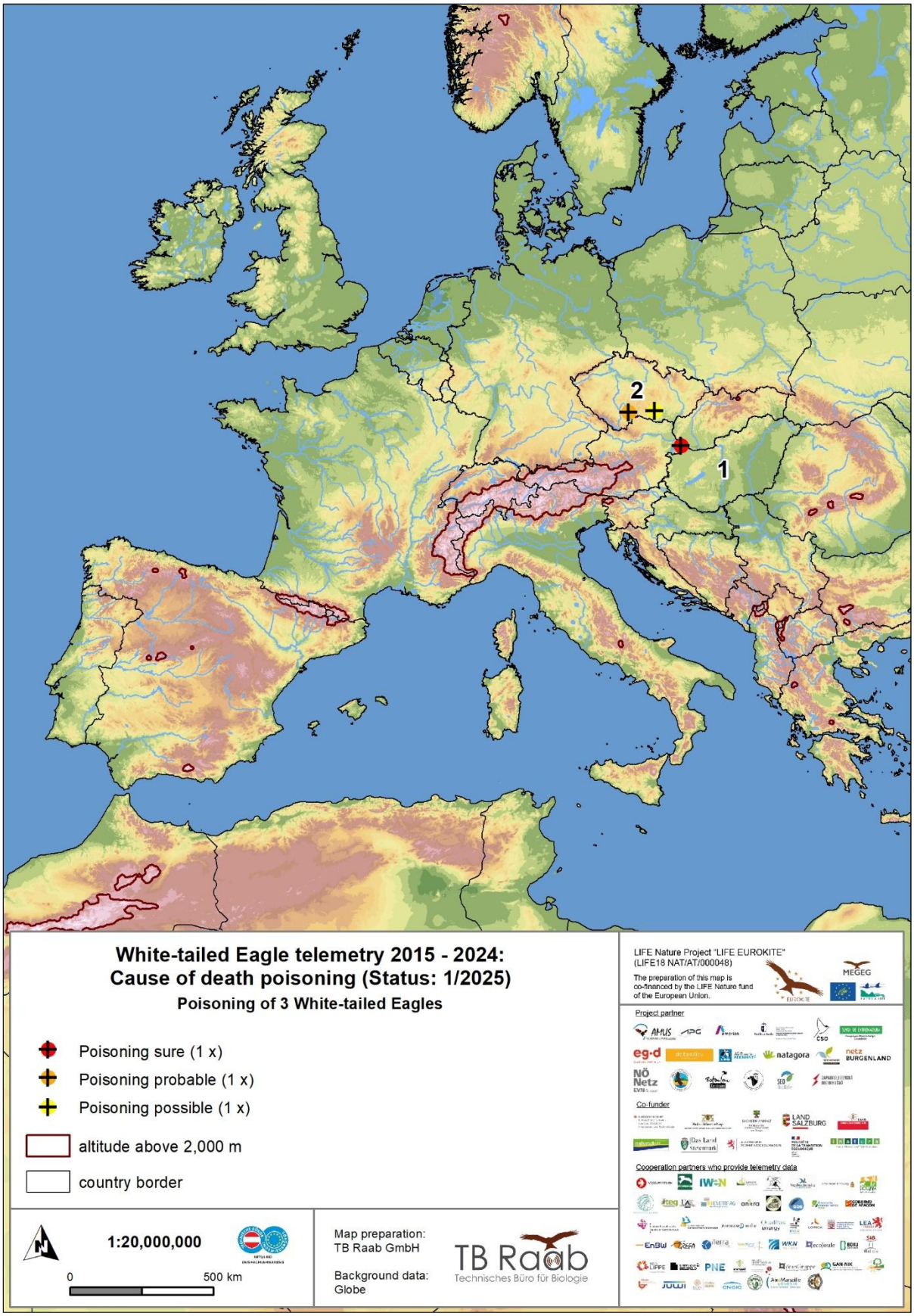

Figure 18: Interim results of 3 poisoning cases in tagged white-tailed eagles from 2015-2024.

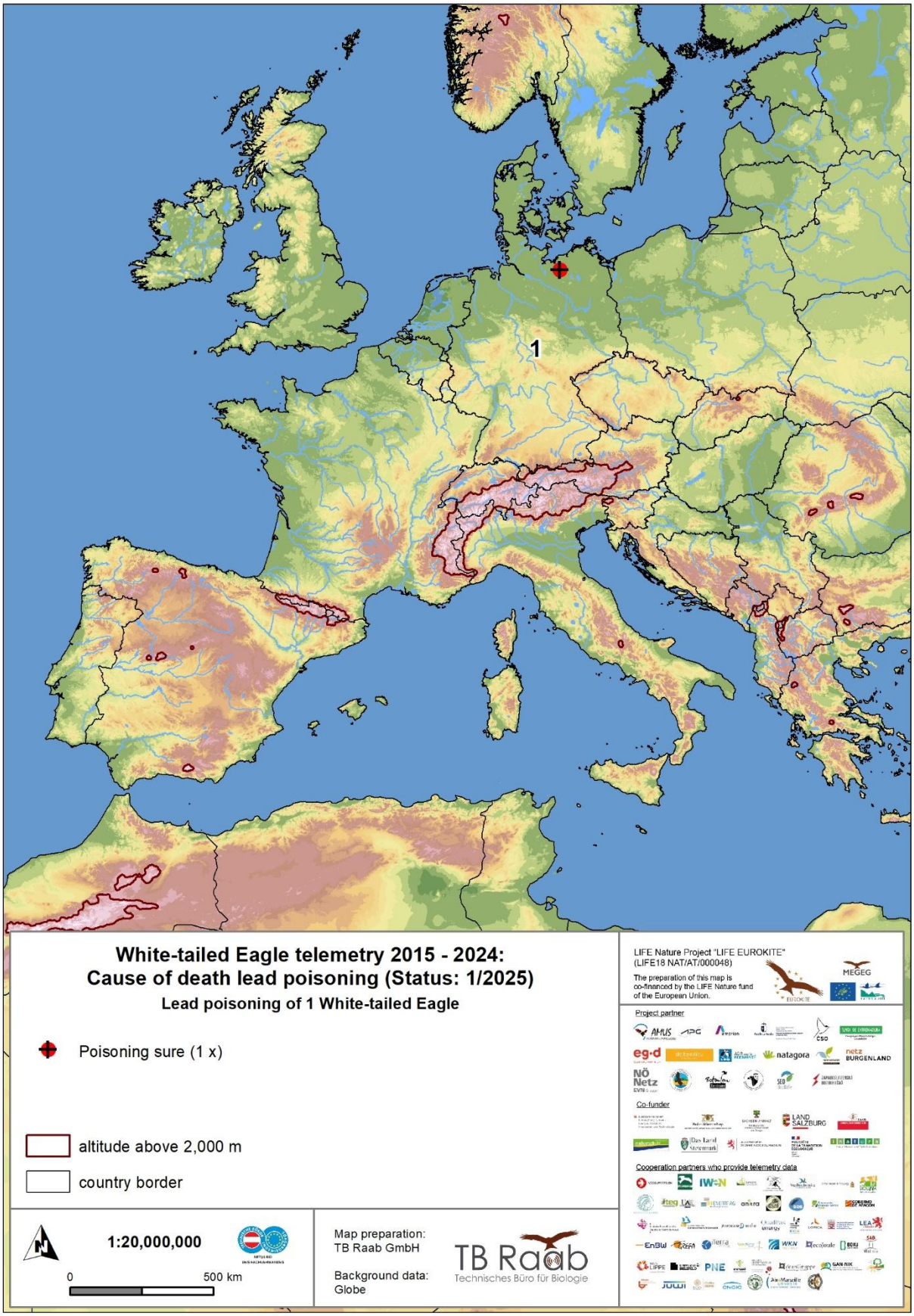

Figure 19: Interim results of 1 lead poisoning case in a tagged white-tailed eagle from 2015- 2024.

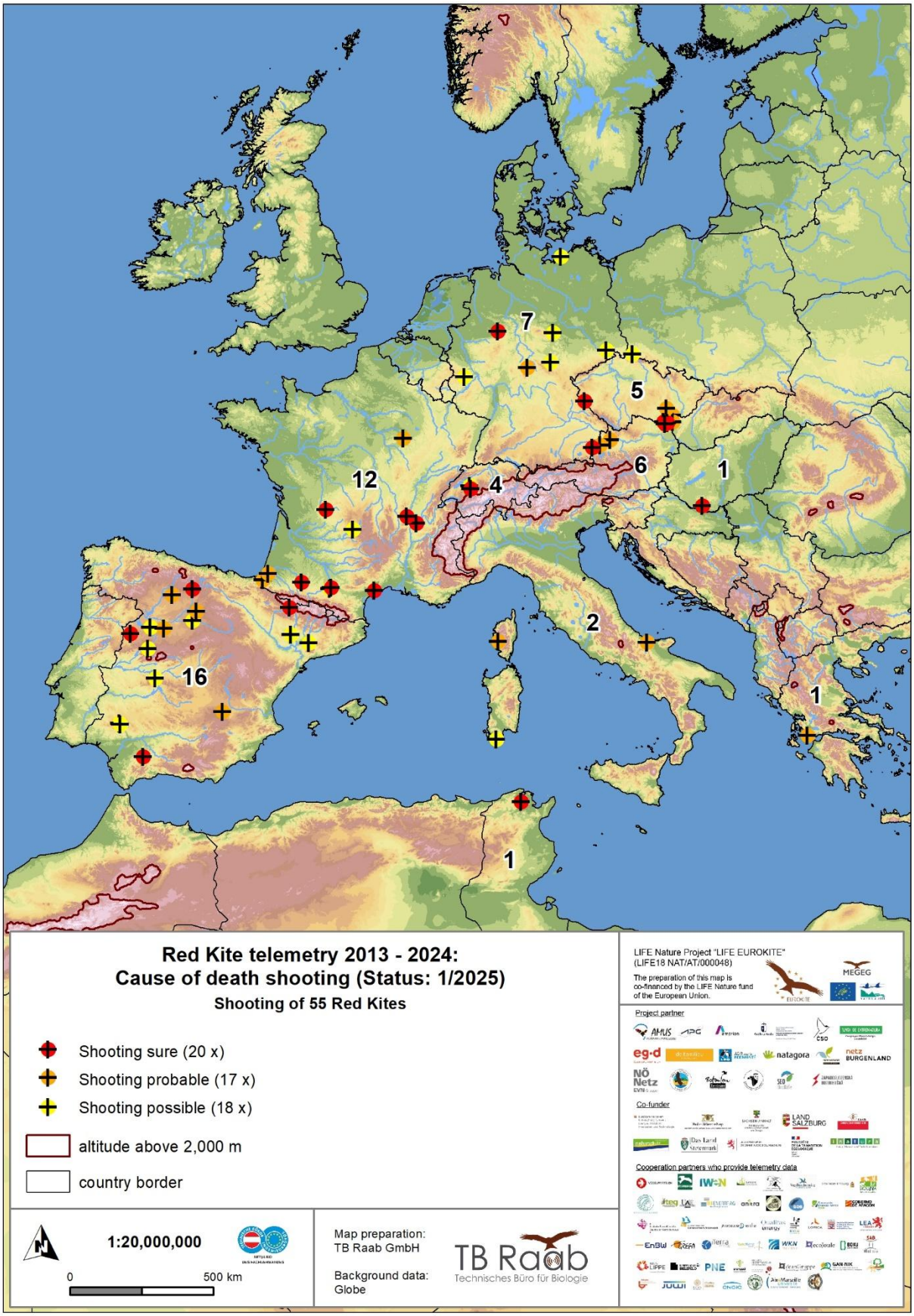

Figure 20: Interim results of 55 shooting cases in tagged red kites from 2013-2024.

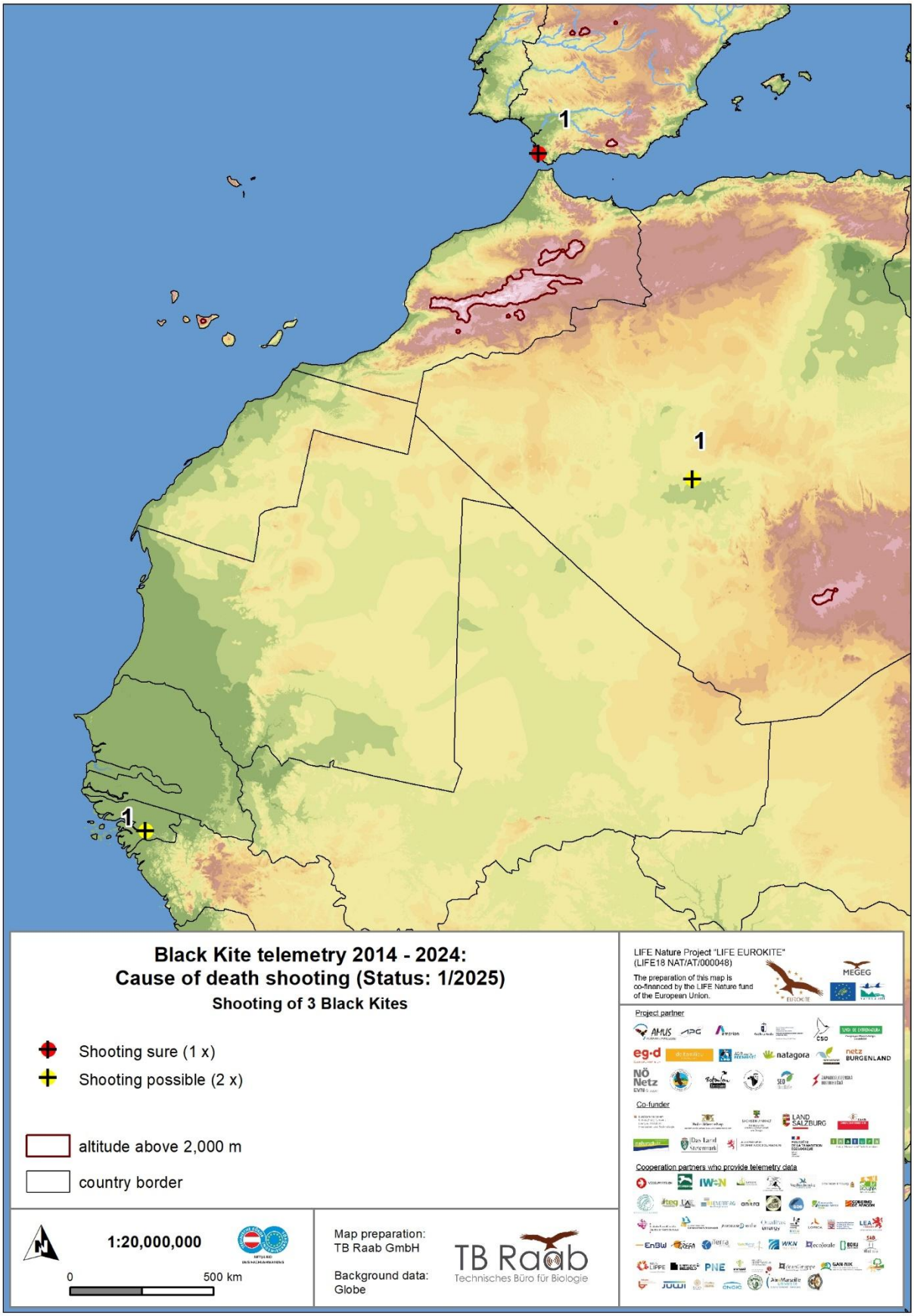

Figure 21: Interim results of 3 shooting cases in tagged black kites from 2014-2024.

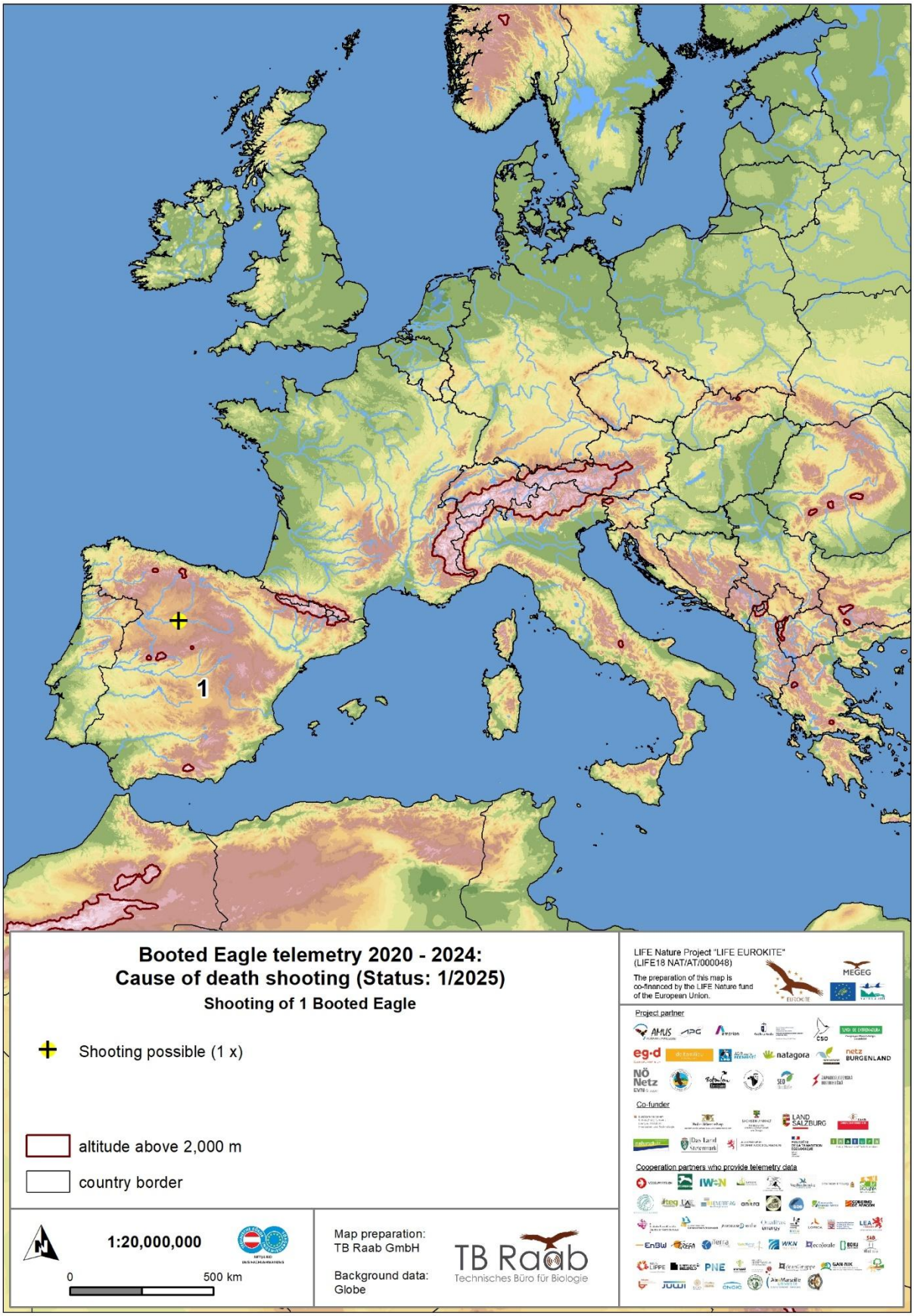

Figure 22: Interim results of 1 shooting case in a tagged booted eagle from 2020-2024.

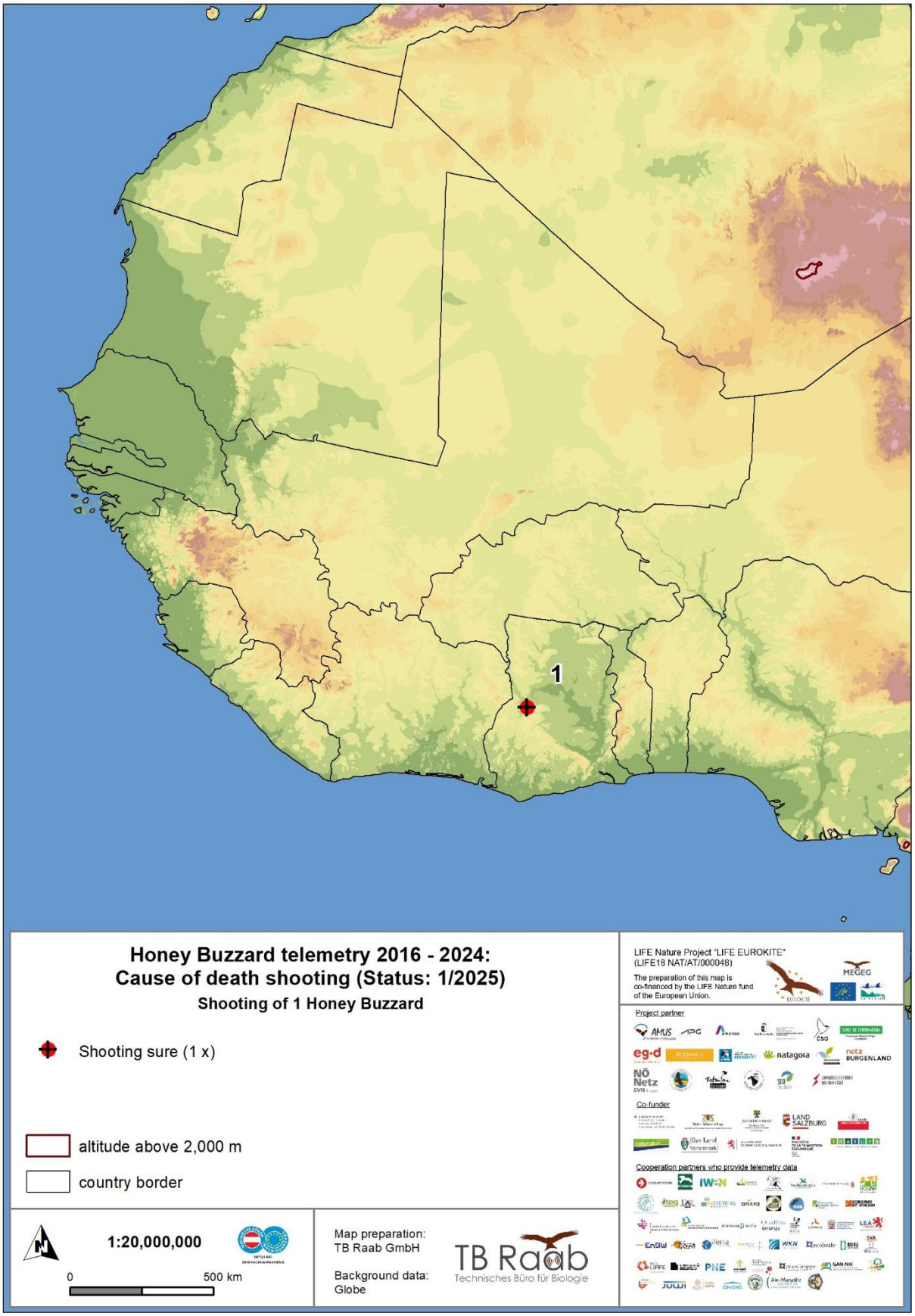

Figure 23: Interim results of 1 shooting case in a tagged honey buzzard from 2016-2024.

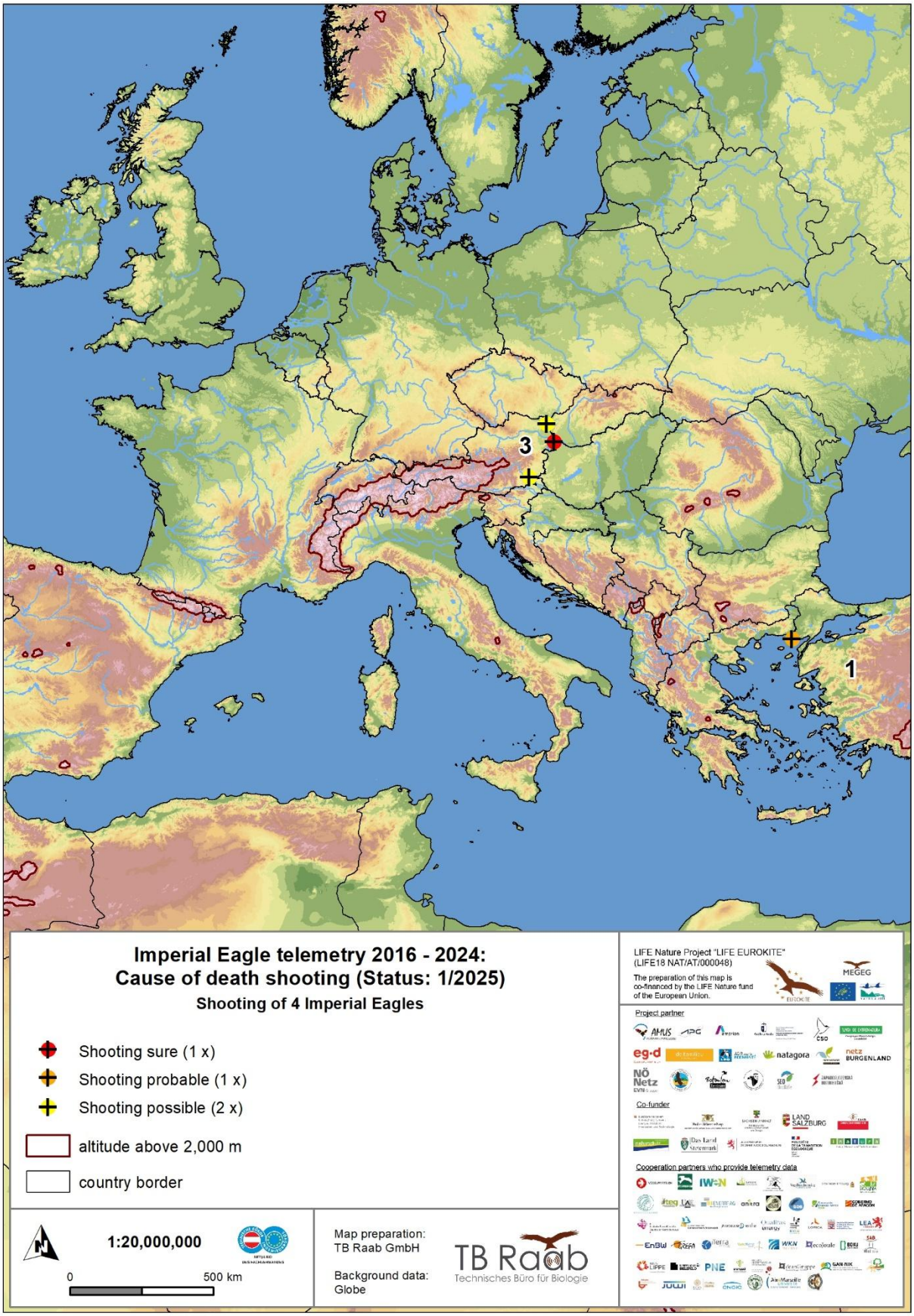

Figure 24: Interim results of 4 shooting cases in tagged imperial eagles from 2016-2024.

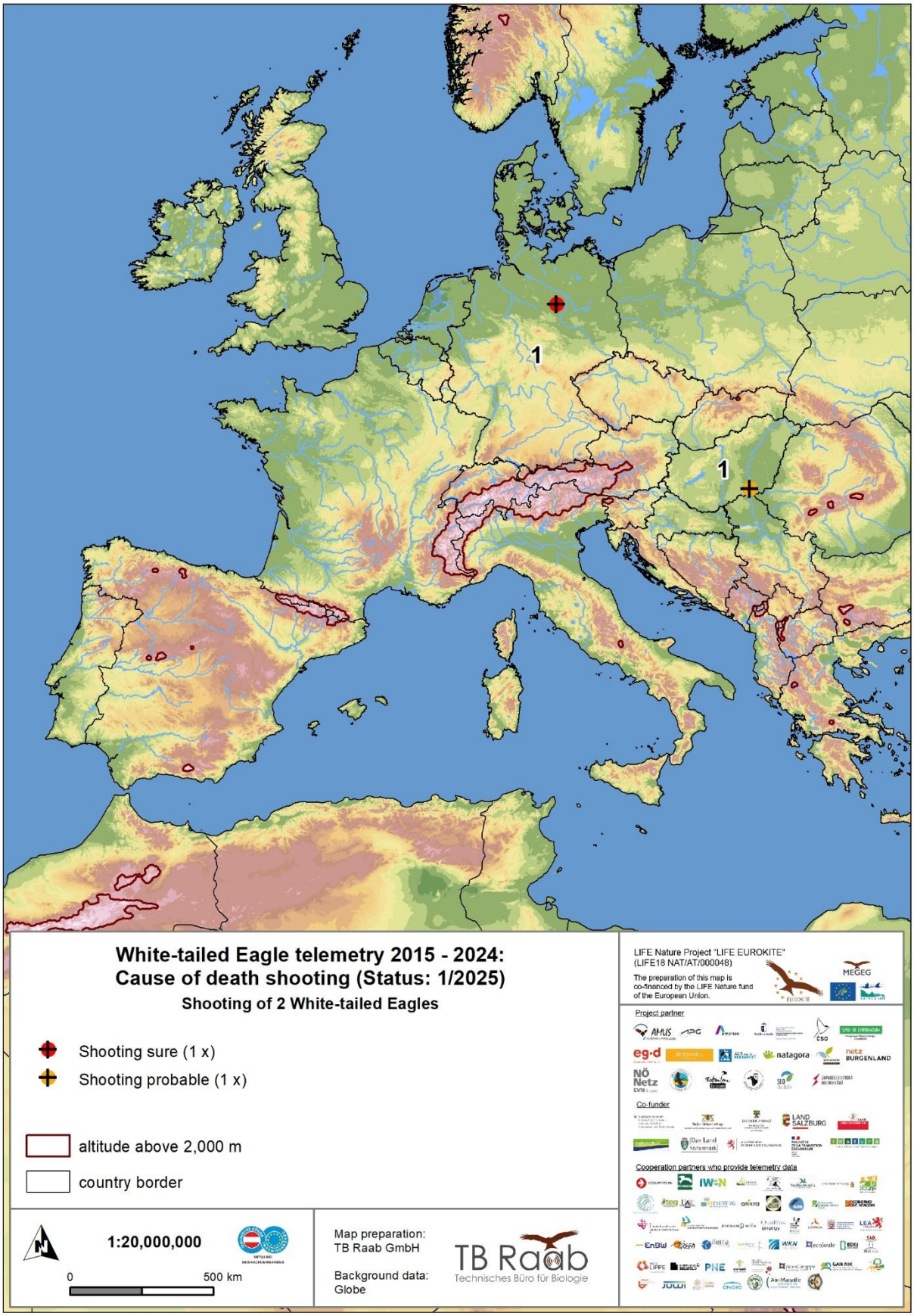

Figure 25: Interim results of 2 shooting cases in tagged white-tailed eagles from 2015-2024.

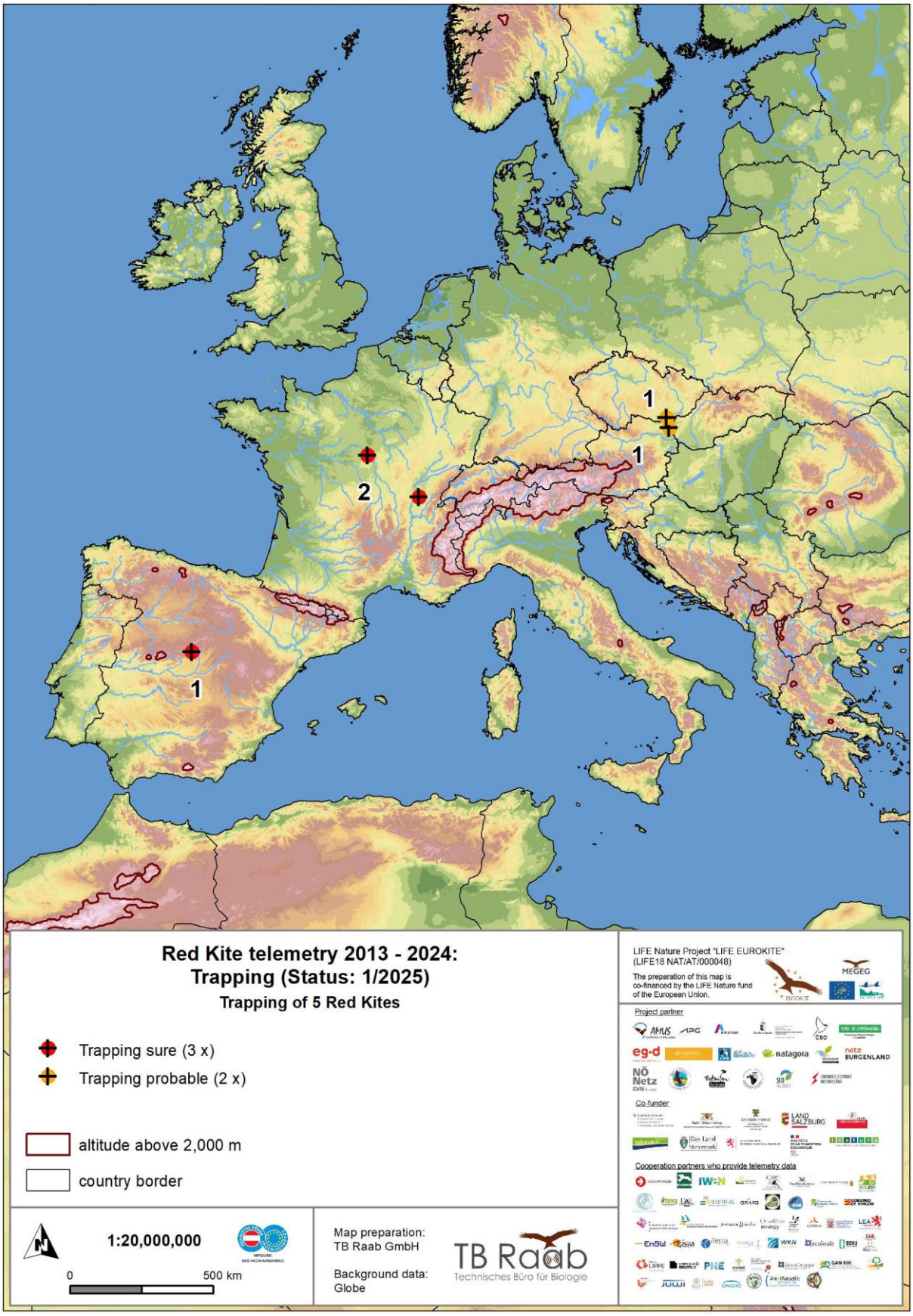

Figure 26: Interim results of 5 trapping cases in tagged red kites from 2013-2024.

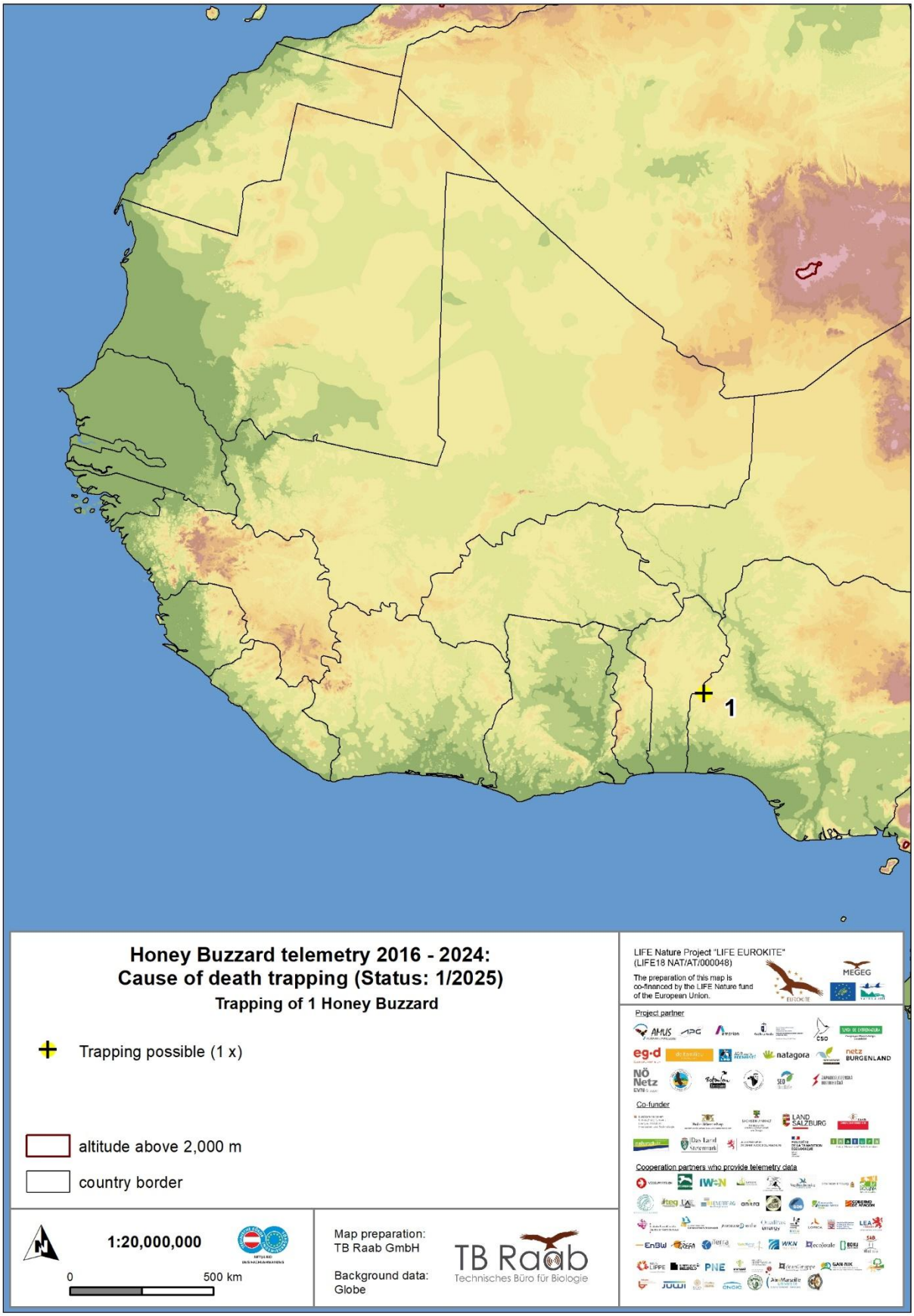

Figure 27: Interim results of 1 trapping case in a tagged honey buzzard from 2016-2024.

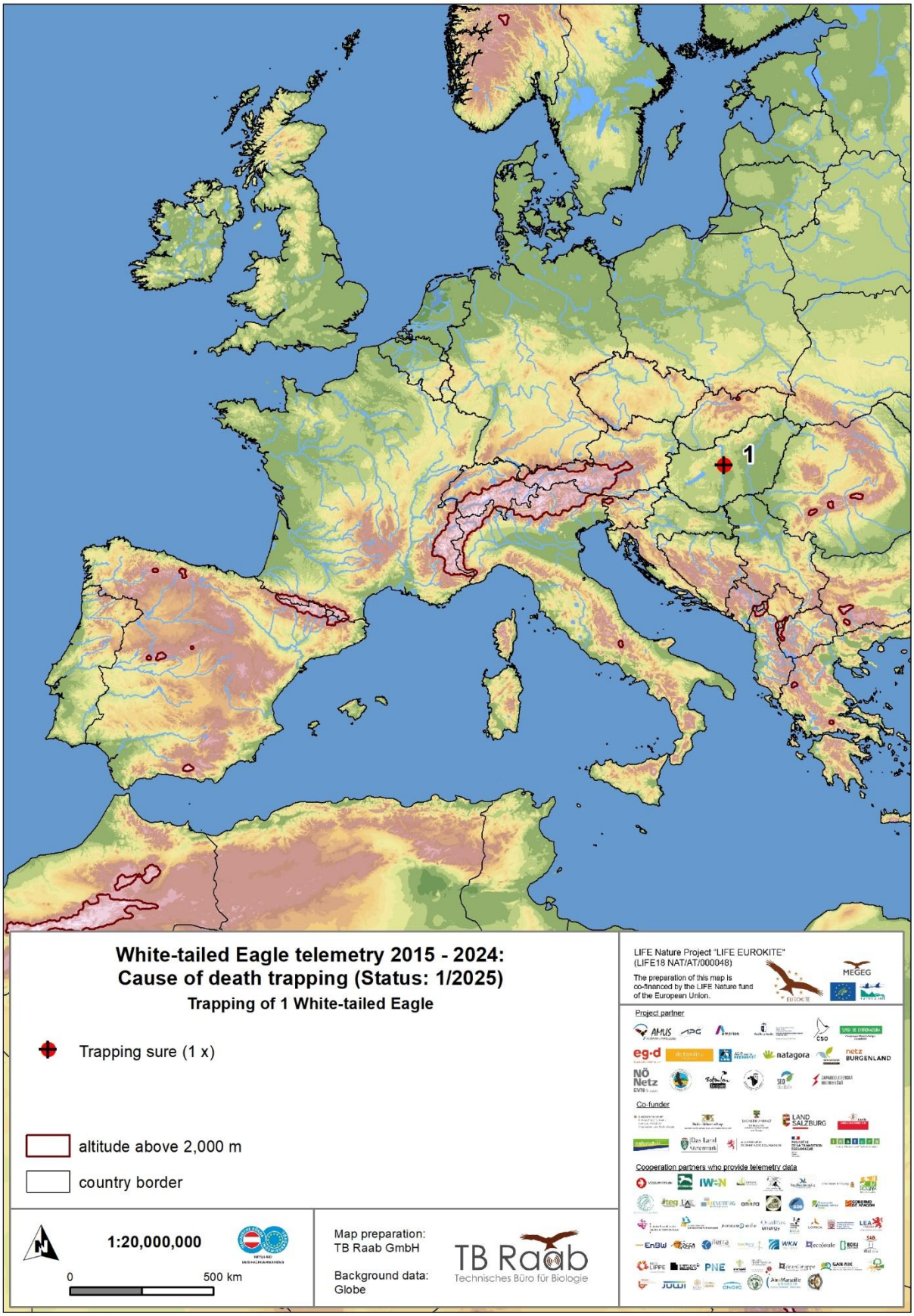

Figure 28: Interim results of 1 trapping case in a tagged white-tailed eagle from 2015-2024.

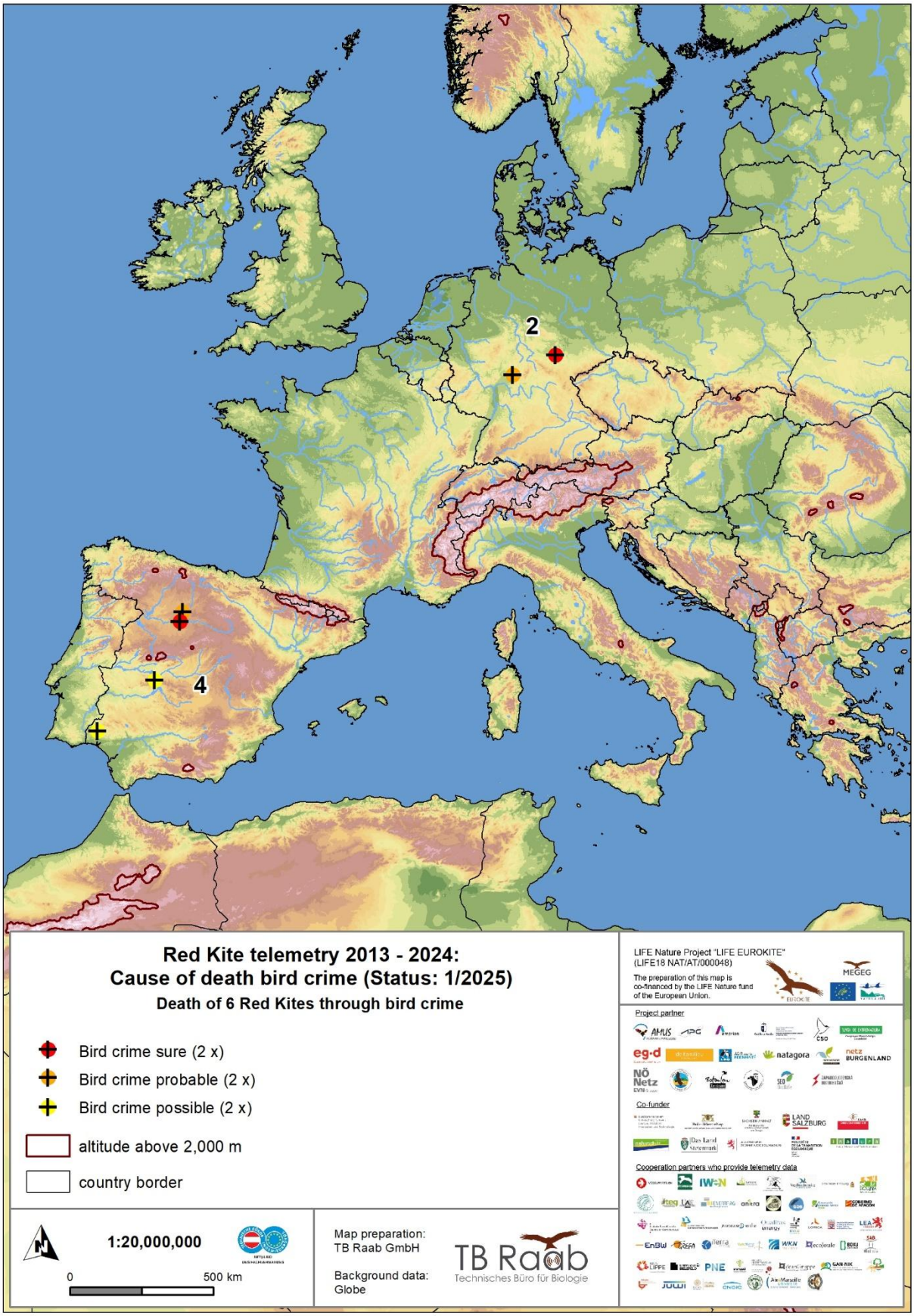

Figure 29: Interim results of 6 bird crime case in tagged red kites from 2013-2024.

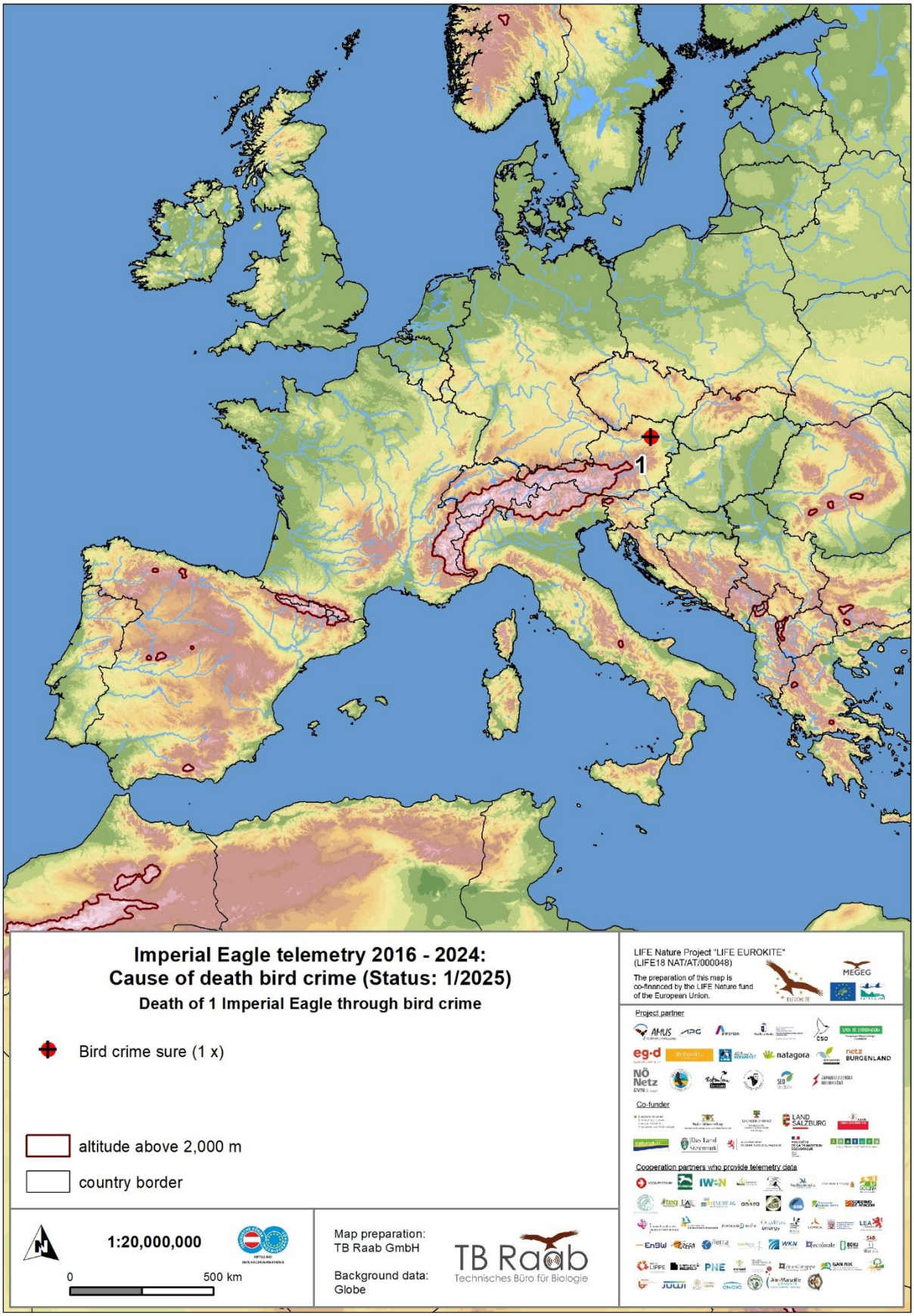

Figure 30: Interim results of 1 bird crime case in a tagged imperial eagle from 2016-2024.

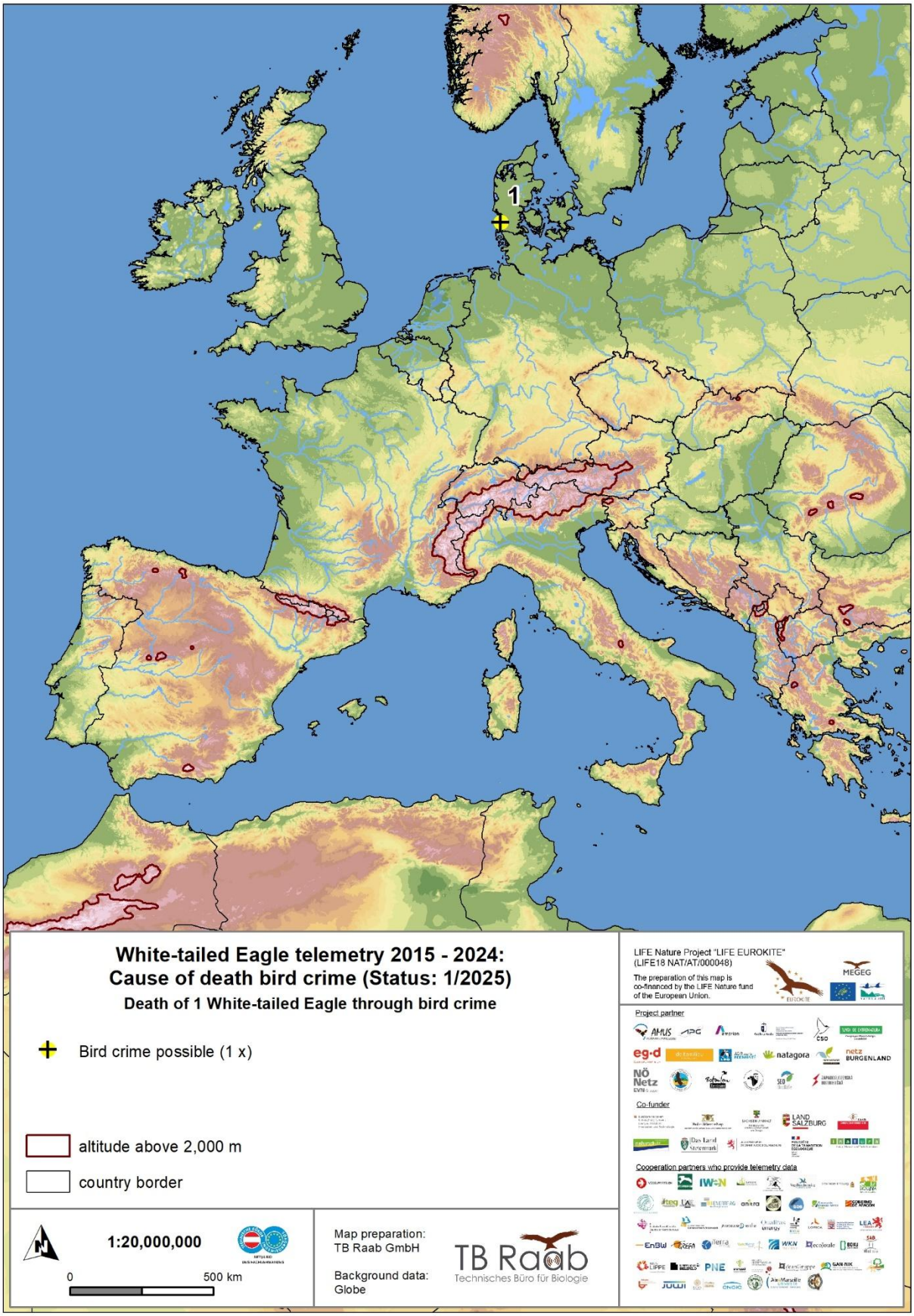

Figure 31: Interim results of 1 bird crime case in a tagged white-tailed eagle from 2015-2024.

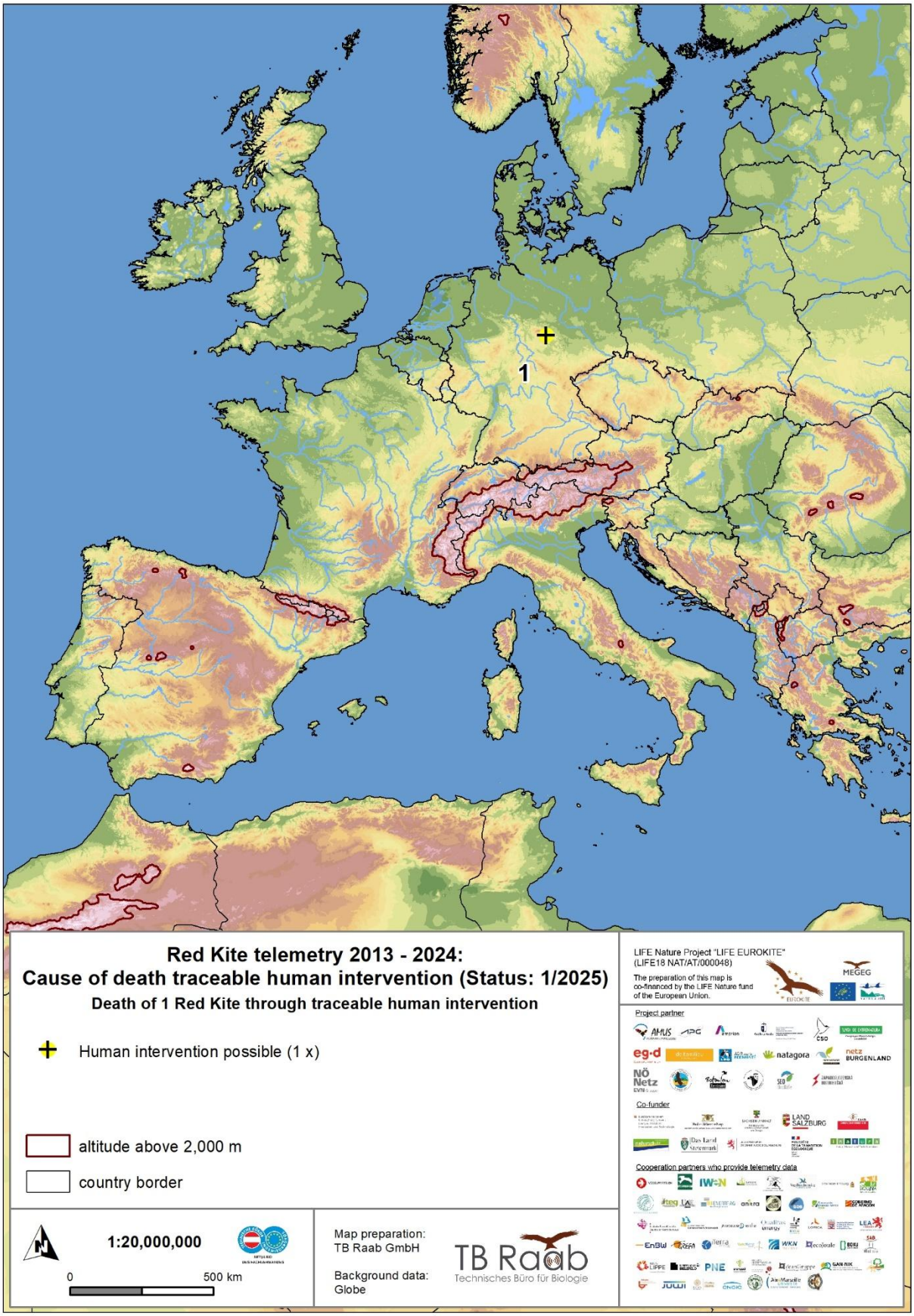

Figure 32: Interim results of 1 traceable human intervention case in a tagged red kite from 2013-2024.

Although these results do not provide any information on the frequency of bird persecution compared to the density of red kites and other birds of prey in the individual countries, the data nevertheless show the distribution of bird persecution in Europe: France and Spain reported the highest number of illegal fatalities of tagged birds (all age classes), with 85 and 82 bird victims. Czech Republic followed with 31 tagged birds. Germany and Austria had 24 and 21 tagged birds which were victims of bird persecution, respectively. Other countries such as Portugal (20), Switzerland (12) and Hungary (9) also saw notable numbers of fatalities. Several countries show lower numbers, including Slovakia (8), the Netherlands (7) and Italy (6). Countries like Algeria, Croatia, Denmark, Ghana, Greece, Guinea-Bissau, Nigeria, Poland, Serbia, Tunisia, and Turkey reported only one illegal case each.

Figure 33 gives an overview of bird persecution (all age classes) compared to other mortality reasons occurring in the respective countries. The proportion of bird persecution compared to all other causes of mortality is relatively high. For example, the percentage of bird persecution is 58.33 % in the Netherlands, 51.28 % in Portugal, 41.06 % in France, 36.47 % in the Czech Republic, and 33.87 % in Austria.

Figure 34 gives an overview of bird persecution compared to other mortality reasons occurring in the respective countries only for the red kite (all age classes). The results are quite similar as for all species together. For example, the percentage of bird persecution is 58.33 % in the Netherlands, 52.78 % in Portugal and 44.44 % in Slovakia.

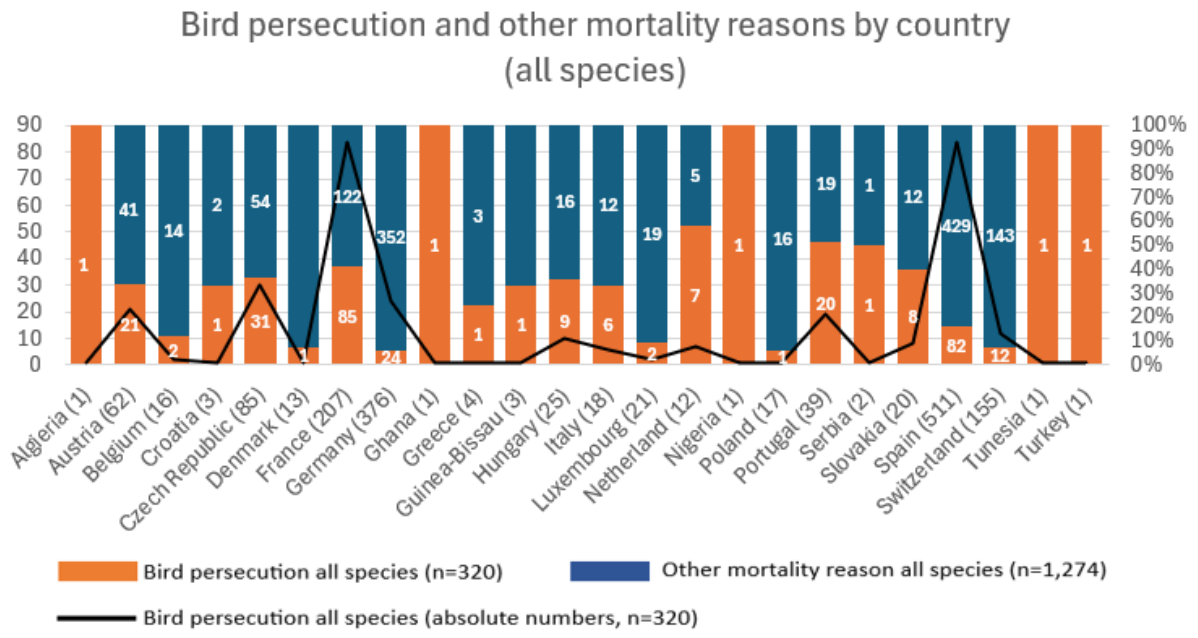

Figure 33: Overview of bird persecution (n=320) and other mortality reasons (n=1,274) separated into countries in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

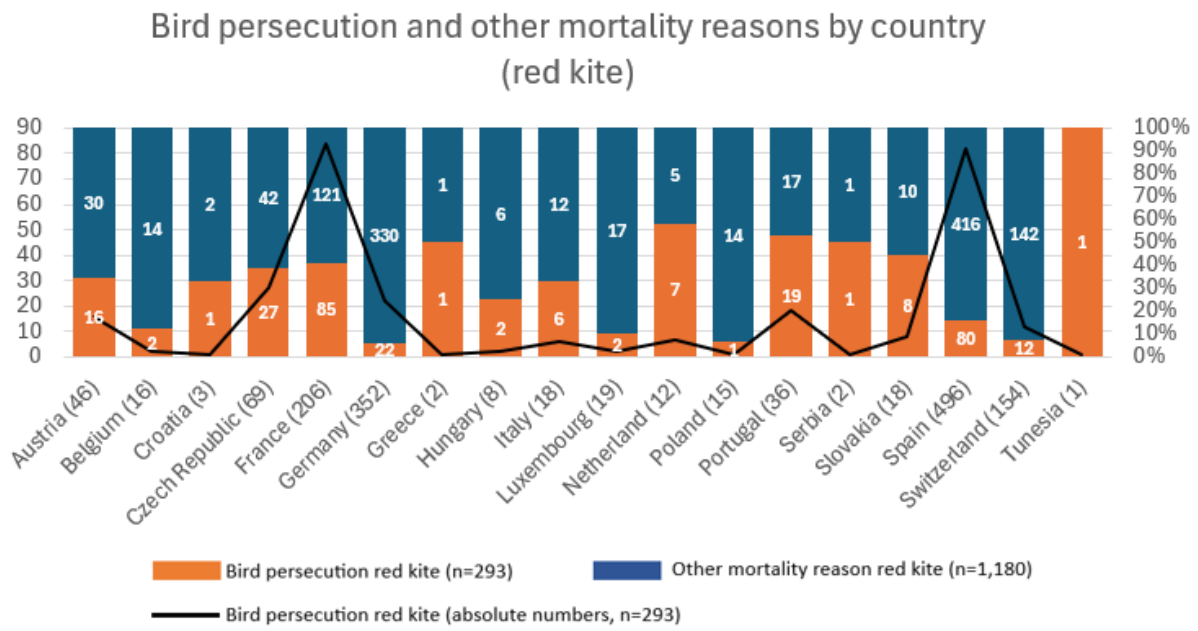

Figure 34: Overview of bird persecution (n=293) and other mortality reasons (n=1,180) for the red kite separated into countries in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

The annual analysis of bird persecutions (all age classes) shows an increasing trend, particularly from 2016, when 15 deaths were reported. From 2017 onwards, a further rise was observed, with 29 victims to bird persecution, and the trend continued with 39 in 2019. The highest number was recorded in 2022, with 64. In 2023, the number of bird persecution cases declined to 38, followed by a slight increase to 41 in 2024. It is important to note that the increasing sample size over the years may have influenced these results, making it unclear whether there is a true increase. Despite this, the numbers remain alarmingly high, compared to other mortality reasons (Figure 35).

Figure 36 shows the bird persecution of red kites (all age classes) with a quite similar development. It shows an increasing trend, particularly from 2016 (14) to 2022 (60). In 2023, the number of bird persecution cases declined to 34, followed by a slight increase to 39 in 2024. It is important to note that the increasing sample size over the years may have influenced these results, making it unclear whether there is a true increase. Despite this, the numbers remain alarmingly high, compared to other mortality reasons (Figure 36).

When extrapolating the data on illegal bird persecution over five years (2020–2024), it is estimated that approximately 46.180 red kites have died as a result of persecution.

This estimate is based on the following calculation:

- The breeding population of red kites is approximately 39,000 pairs.
- To estimate the total autumn population, a multiplication factor of 5.5 is applied: → 39,000 × 5.5 = 214,500 individuals (autumn population)

- The average annual mortality rate in red kites is estimated at 23 % (overall mortality rate calculated with the help of tagged red kites):
  → This results in 49.335 deaths per year (from all causes).
- Of these, an estimated 18.72 % die due to illegal persecution (mean percentage of tagged birds that died due to illegal activities compared to the overall mortality between 2020-2024 in this sample size, including nestlings):
  → Approximately 9.236 individuals per year die from bird persecution.

Over a five-year period, this amounts to around 46.180 red kites killed due to illegal persecution. Taking into account population fluctuations, underreporting, and unrecorded cases, the actual figure may be much higher.

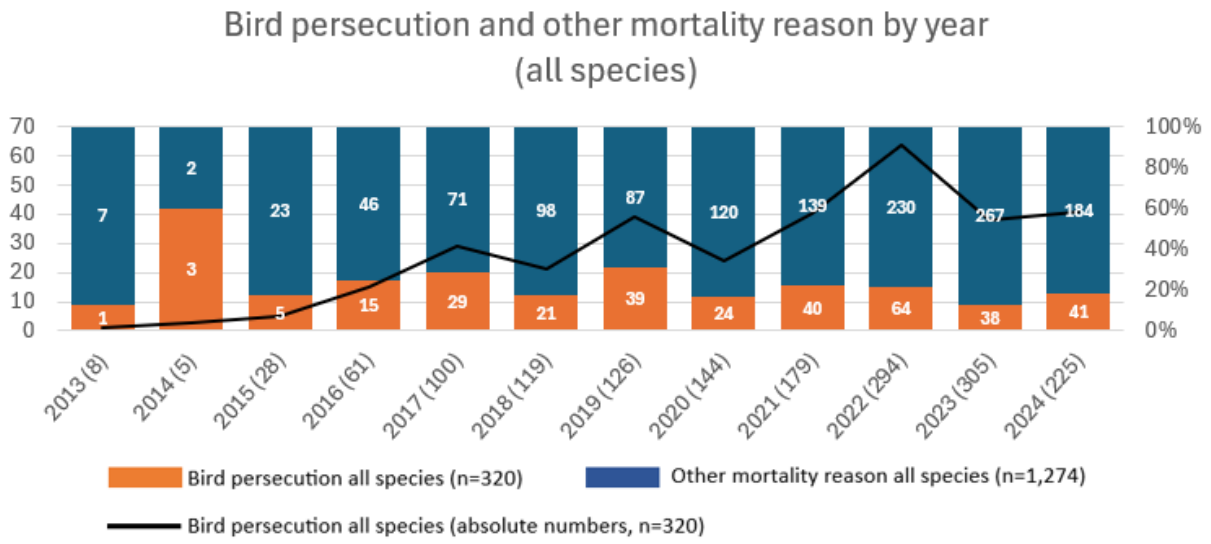

Figure 35: Overview of bird persecution (n=320) and other mortality reasons (n=1,274) separated by years in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

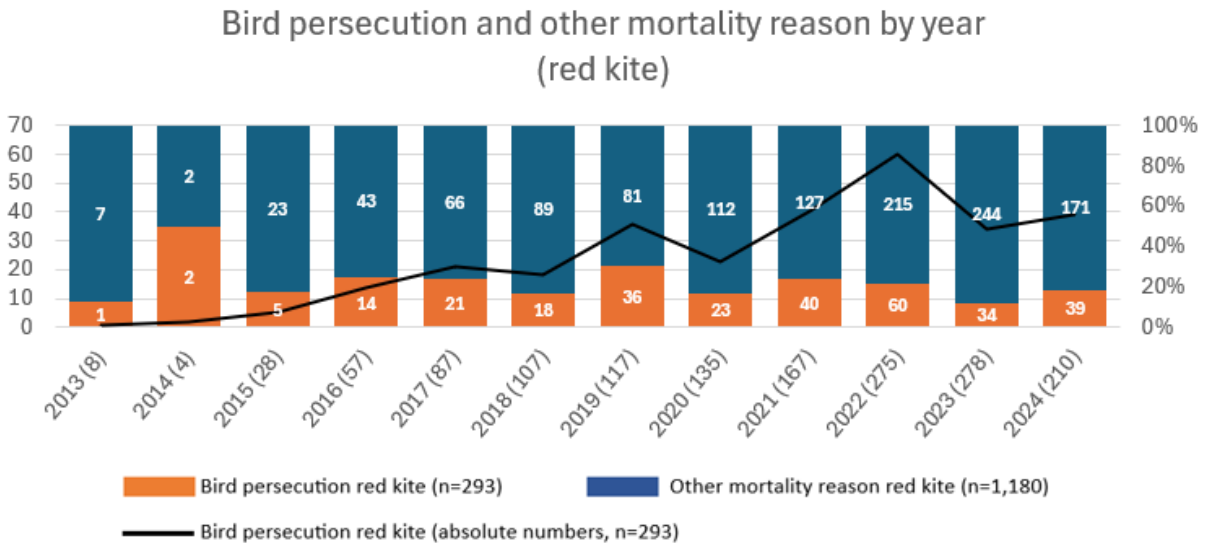

Figure 36: Overview of the bird persecution (n=293) and other mortality reasons (n=1,180) for the red kite separated by years in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

The monthly distribution of bird persecution (all age classes) shows that the number of cases fluctuates across the months. Particularly striking are March and October, which recorded the highest number of bird persecution, with 38 and 37 cases for all species, whereas other mortality reasons seem to be more common in June and July (Figure 37). For the red kite persecutions (all age classes) March and October were also the months with highest numbers of bird persecution cases (37 and 35, respectively) (Figure 38).

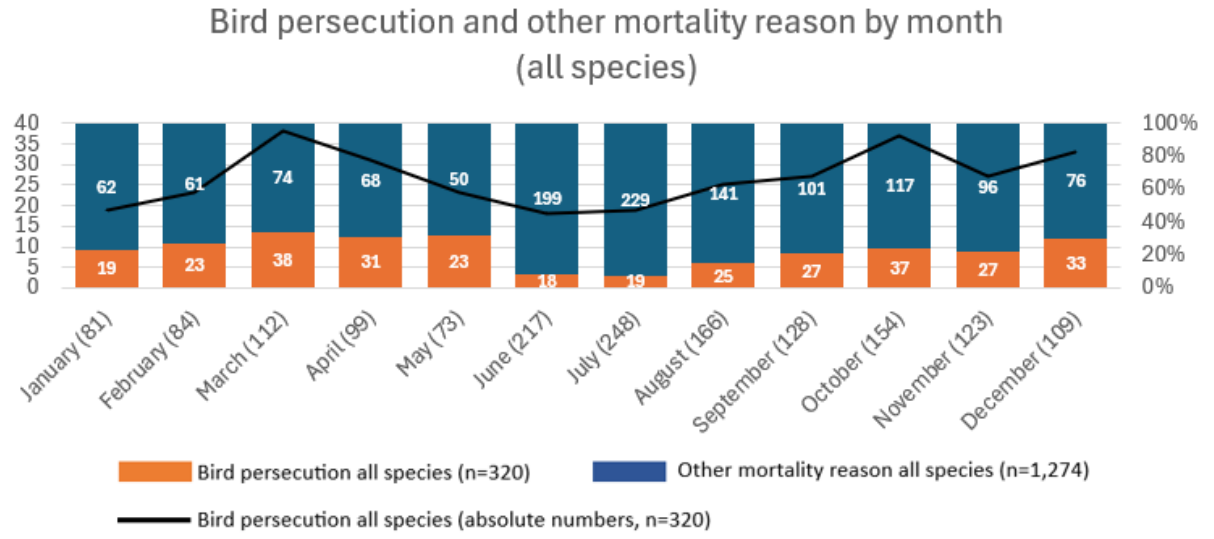

Figure 37: Overview of bird persecution (n= 320) and other mortality reasons (n=1,274) separated by months in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

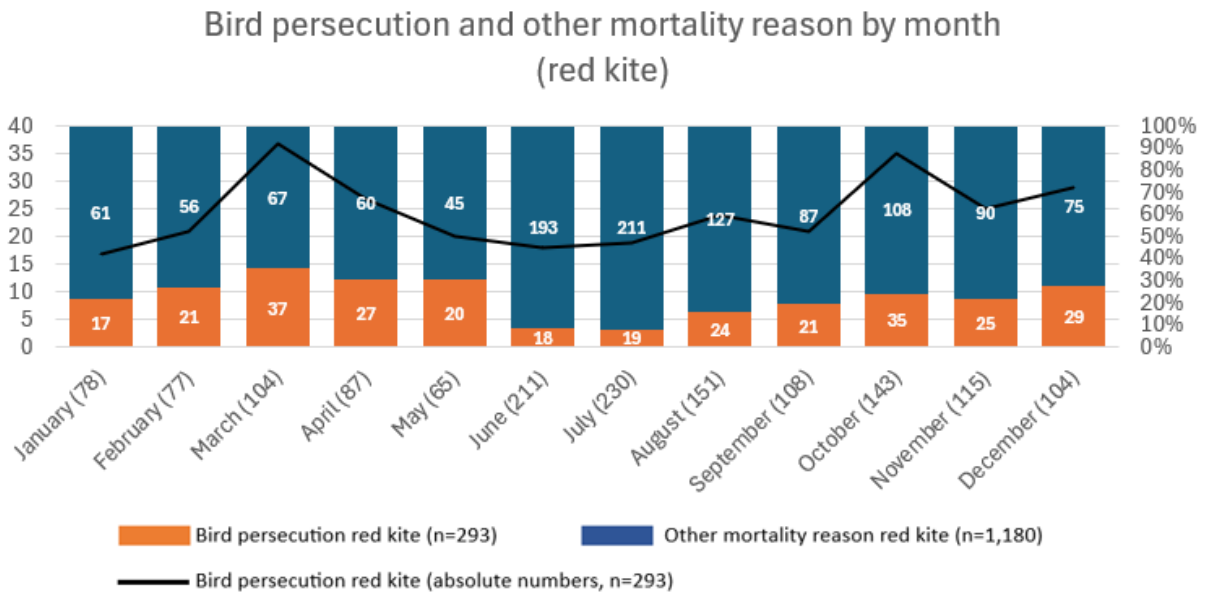

Figure 38: Overview of bird persecution (n=293) and other mortality reasons (n=1,180) for the red kite separated by months in the period from 2013 to 2024. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

To better analyse the seasonal patterns of bird persecution, all documented cases (n=320) recorded between 2013 and 2024 were grouped into four biologically relevant phases of the annual cycle. This categorisation reflects key stages in the life history of raptors and provides a meaningful framework for interpreting mortality trends. The 4 different phases (spring migration, stay in the breeding area, autumn migration and stay in the wintering area) were determined with the help of the telemetry data.

Migration periods were defined to capture phases of increased mobility, during which raptors are more visible and thus more vulnerable to persecution. The breeding season presents heightened risk due to the territorial behaviour of adult birds and the dependence of juveniles. In winter, many individuals stay in or migrate to wintering areas, where they often gather in groups, becoming more visible and easily identifiable, and thus making them more vulnerable to threats.

The aggregated analysis across all years shows that 40 individuals (all age classes) were victims to bird persecution during spring migration, 131 during the breeding period, 37 during autumn migration, and 112 in their wintering area (Figure 39). Also, for the red kite (all age classes) most bird persecution cases occurred during the stay in the breeding area (Figure 40).

When results are analysed by season, higher overall mortality during the breeding period can mask differences in the relative importance of persecution. In relative terms, persecution-related mortality is highest during autumn migration, decreases in winter and spring migration, and is lowest during breeding. This pattern may be influenced by seasonal hunting activity, such as increased shooting pressure during autumn migration and intensified predator control, including poisoning, before and during early breeding.

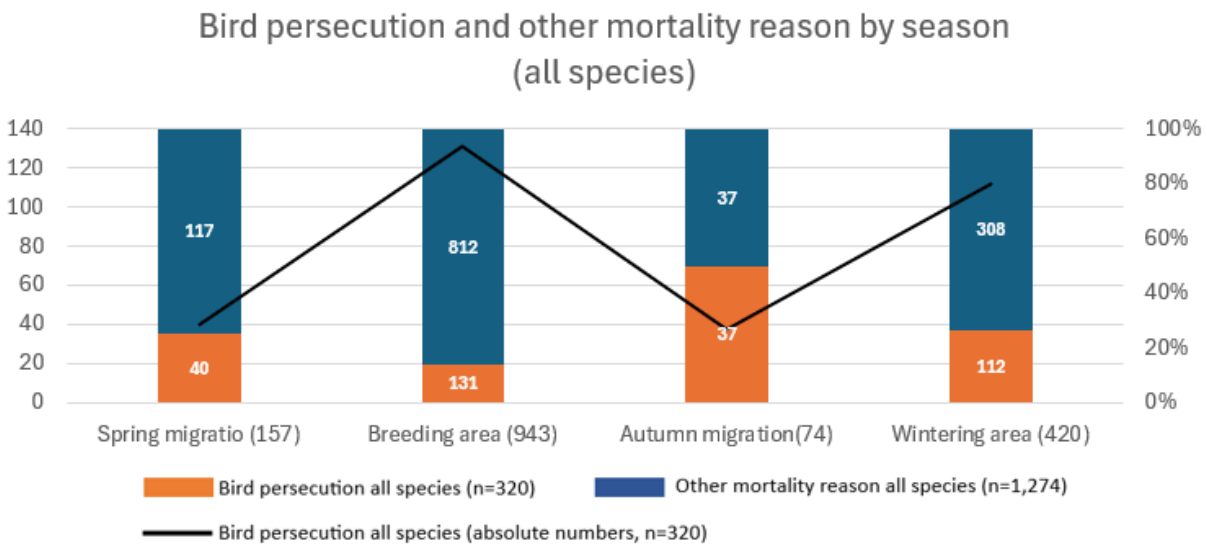

Figure 39: Seasonal analysis of bird persecution (n=320) and other mortality reasons (n=1,274) during the migration in spring and autumn and the stay in the wintering and breeding area. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

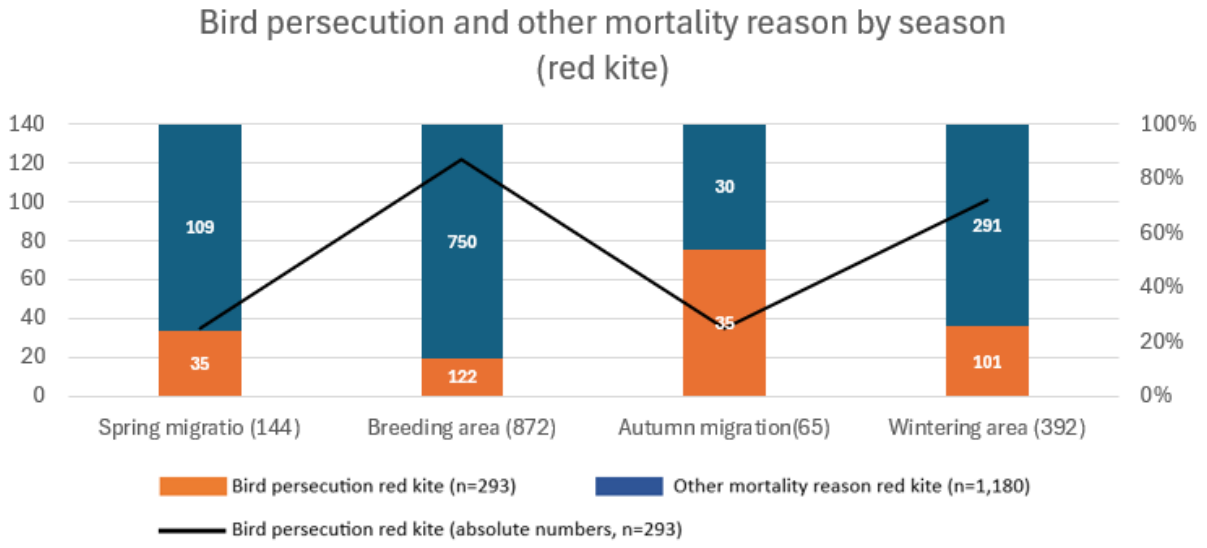

Figure 40: Seasonal analysis of bird persecution (n=293) and other mortality reasons (n=1,180) for the red kite during the migration in spring and autumn and the stay in the wintering and breeding area. Orange bars show the percentage of bird persecution cases relative to all other recorded mortality cases. Black line indicates the total number (absolute numbers) of bird persecution.

4.2 Bird persecution

The following section summarises the results of the illegal bird persecution.

4.2.1 Poisoning

The data on poisoning incidents shows the extent of toxic substance-related fatalities across various countries. The 21 cases of secondary poisoned birds are included. France had the highest number of poisoned raptors (all age classes) detected, with 71 tagged birds affected, followed by Spain with 59 cases. The Czech Republic also had a significant number of poisonings, with 25 tagged birds. Other countries that experienced notable poisoning incidents include Portugal (20 tagged birds), Germany (13 tagged birds) and Austria (10 birds). Switzerland and Slovakia each recorded 8 poisoned birds, while the Netherlands had 7. Hungary and Italy reported 6 and 4 cases, respectively. A smaller number of poisoning incidents were detected in Belgium (2 cases), Luxembourg (2 cases) and Serbia (1 case) (Figure 41). However, due to different numbers of tagged birds per country and the different density of birds per country the results can differ significantly per country. Therefore, these results do not provide any information about the frequency of bird persecution compared to the density of tagged birds in each country.

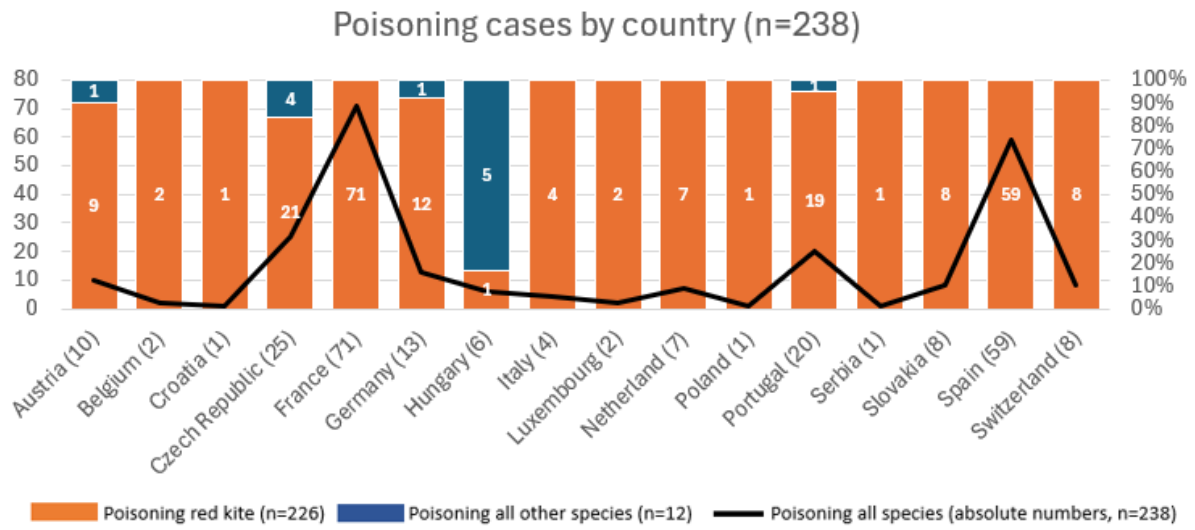

Figure 41: Overview of the number of poisoned birds (n=238) by country in the period from 2013 to 2024. Orange bars show the percentage of poisoning cases of red kites relative to all other species. Black line indicates the total number (absolute numbers) of poisoning cases. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

Detected substances

Among the 238 tagged birds confirmed to have been poisoned (including 21 cases of secondary poisoning), toxicological analyses identified 26 distinct toxic compounds in 125 individuals. Across the 125 birds analysed, a total of 214 toxic substance detections were recorded, indicating that many birds carried more than one toxin in their bodies. The most frequently detected substance was Carbofuran, which was detected in 55 cases. Brodifacoum was detected in 39, Difenacoum in 26, Bromadiolone in 23 and Difethialone in 19 cases. Aldicarb was detected in 11 cases, Pentobarbital was detected 6 times and Methiocarb and Flocoumafen were detected in 4 birds each. Terbufos was detected in 3 birds, and 3 birds were exposed to toxins associated with 'landfill'. Lead was detected in 2 birds. Bendiocarb, Cadmium, Carbamate, Chlorpirifos, Chloralose, Diazonin, Dieldrin, Metaldehyde, Methamidophos, Mevinphos, Oxamyl and Parathion were each detected in 1 bird. The chemical group rodenticides were detected in 6 cases, while Carbamates were detected in one case (Figure 42).

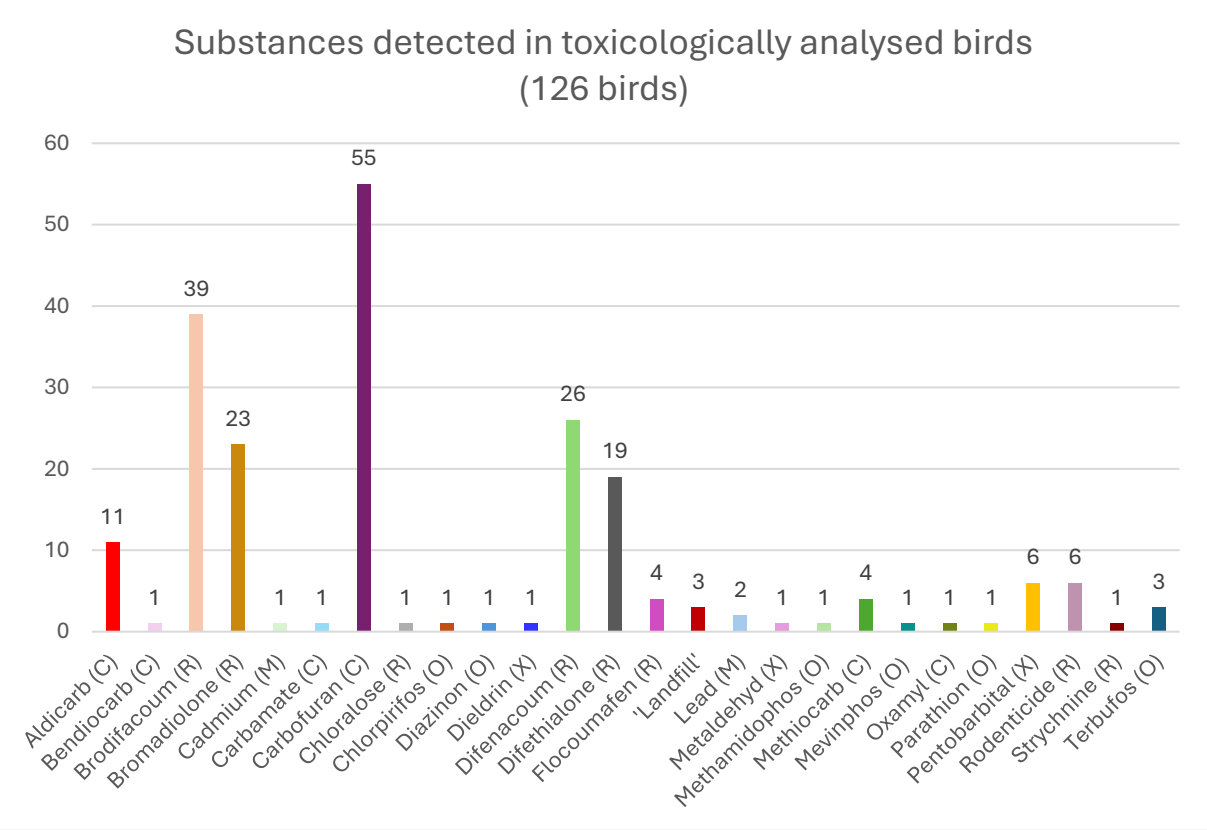

Figure 42: Substances detected (26 substances) in poisoned birds (126 toxicologically analysed birds with detected substances). In total, 238 birds were classified as poisoned based on field evidence and GPS data. Toxicological analyses were available for 126 individuals. Most birds had more than one toxin in their bodies, but not all detected toxins were the direct cause of death. In one case, exposure could only be confirmed at the level of the Carbamate substance group, as the specific compound had not been analytically identified. Detected substances are classified into the following chemical groups: (C) Carbamates, (R) Rodenticides, (O) Organophosphates, (M) Metals, and (X) Other substances.

Toxicological analyses of poisoned birds revealed the presence of 26 active substances, including a range of pesticides, rodenticides, heavy metals, and veterinary drugs. Among the compounds identified were Carbamate insecticides such as Aldicarb, Bendiocarb, Carbofuran, Diazinon, Methiocarb, Methamidophos, Oxamyl, Mevinphos, and Terbufos, rodenticides such as Brodifacoum, Bromadiolone, Difenacoum, Difethialone, Floccoumafen and Strychnine as well as

organophosphates like Chlorpyrifos and Parathion. Other substances including Dieldrin, Cadmium, and Pentobarbital have also been detected. Most of these substances are not approved for use under current European legislation (European Parliament and Council of the European Union, 2009b) (Table 8).

The use of the toxic substances Pentobarbital (European Community Number 200-983-8) and Metaldehyde (European Community Number 203-600-2) is approved within the European Union. Even if Cadmium is a poisonous metal, its use is somewhat limited for this reason and metal accumulation is a threat to wildlife (National Center for Biotechnology Information, 2026), it is also approved within the European Union. Under Regulation (EU) 528/2012 (BPR), the detected rodenticides (Brodifacoum, Bromadiolone, Chloralose, Difencaoum, Difethialone, Flocoumafen, Strychnine) are approved as active substances, even though they are strictly regulated (European Parliament and Council of the European Union, 2012).

Table 8: Regulatory status and legal framework of not approved toxic substances detected in poisoned raptors tagged in the LIFE EUROKITE project (2013–2024) according to Regulation (EC) No 1107/2009 of the European Parliament and Council.

Substance	Status	Regulation	Legislation
Aldicarb	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	2003/199/EC
Bendiocarb	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2002/2076
Carbofuran	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2007/416
Chlorpyrifos	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2020/18
Diazinon	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2007/393
Dieldrin	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2019/1021
Methiocarb	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2019/1606
Metamidophos	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	2006/131/EC
Mevinphos	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	2002/2076
Oxamyl	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	Reg. (EU) 2023/741, Dir 06/16/EC, Reg. (EU) No 540/2011
Parathion	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	01/520/EC
Terbufos	Not approved	Reg. (EC) No 1107/2009 (repealing Directive 91/414/EEC)	2002/2076

Substances confirmed as lethal

As mentioned above, most birds contained more than one toxic substance; however, not all detected toxins were identified as the direct cause of death. Toxicological analyses confirmed the presence of toxic substances in 126 birds (including 21 secondary poisoned birds), whereas in 112 cases poisoning was suspected but the responsible substance remained unknown. To determine which substances were lethal, 105 individuals were analysed (excluding the 21 cases of secondary poisoning out of the 126 toxicologically analysed birds). In 94 of these birds, toxicological threshold values were exceeded, allowing the lethal substance to be clearly identified. In the remaining 11 cases the lethal compound could not be determined, because multiple substances exceeded toxicological thresholds. The following section examines the substances confirmed as lethal, as summarised in Figure 43.

Carbofuran was identified as the predominant lethal toxicant, being detected in 55 cases. Of these, 53 birds were confirmed to have died from Carbofuran exposure. Rodenticides (including brodifacoum, bromadiolone and other compounds) were detected in 118 birds. However, rodenticides were confirmed as the cause of death in only 14 cases. Aldicarb was detected in 11 birds, of which 8 fatalities were directly attributed to this substance. Pentobarbital was detected in 6 birds and was confirmed as the cause of death in all 6 cases. Terbufos was detected in 3 birds, all of which died as a result of Terbufos exposure. Methiocarb was detected in 4 birds but was responsible for mortality in only 1 case.

Several additional toxic substances were each detected once and were confirmed as the cause of death in the respective individual. These included Bendiocarb, Diazinon, Dieldrin, Metaldehyde, Methamidophos, Oxamyl, and Parathion. In 1 case, toxicological analysis confirmed exposure to a Carbamate pesticide. Although the specific compound could not be identified, cholinesterase inhibition and measured concentrations indicated exposure levels consistent with lethal intoxication.

Lead poisoning was detected in two birds; in one case it resulted in mortality, whereas in the other case death was attributed to a different toxic substance due to substantially higher toxicological threshold exceedances. Cadmium, Chlorpyrifos, Chloralose and Mevinphos were detected once each but were not classified as the lethal substances.

In 11 cases, the lethal substance could not be clearly identified. This occurred, for example, when multiple toxic substances were detected in a single individual and several toxicological threshold values were exceeded. Birds classified as landfill cases were also included in this category, as the exact lethal substance could not be determined (Figure 43). As it could not be conclusively determined whether secondary poisoned birds (21 cases) died indirectly from toxic exposure, these cases were not included in the figure.

It should be noted that many birds were exposed to rodenticides, which were often detected at sublethal concentrations. While these doses were not immediately lethal, rodenticides can accumulate over time and may either directly cause mortality or progressively impair physiological functions, leading to long-term health effects.

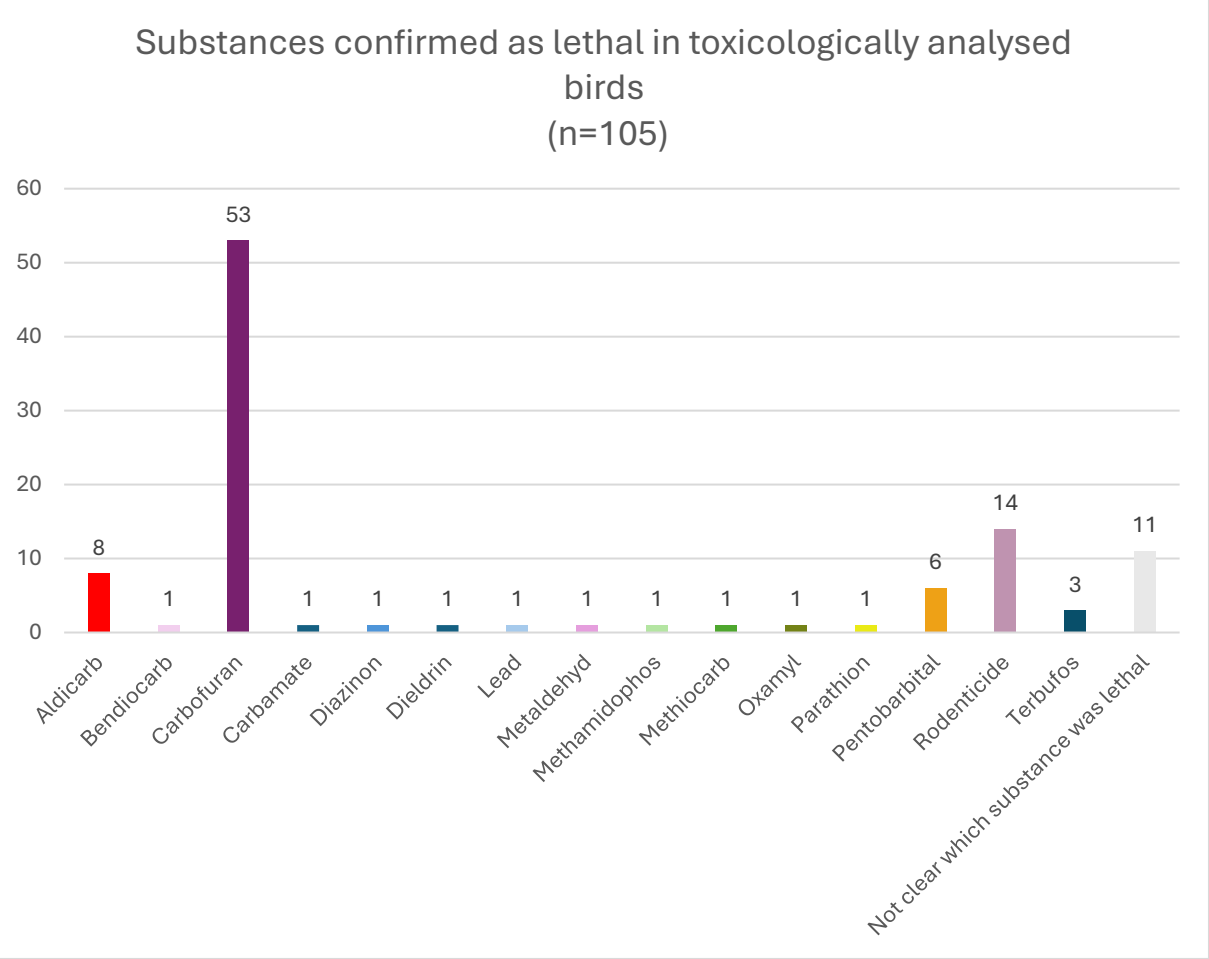

Figure 43: Toxic substances confirmed as lethal (15 substances) in poisoned birds. In total, 238 birds were classified as poisoned based on field evidence and GPS data, including 21 secondary poisoning cases. Toxicological analyses detected substances in 126 birds, of which 105 individuals (excluding secondary poisoned birds) were confirmed to have died as a result of poisoning. In 94 of these birds, toxicological threshold values allowed the lethal substance to be clearly identified, while in the remaining 11 cases the lethal compound could not be determined because multiple substances exceeded toxicological thresholds. Most birds carried more than one toxic substance. In one case, exposure could only be confirmed at the level of the Carbamate group, as the specific compound was not analytically identified.

Assessment of intentional poisoning

Poisoning cases were evaluated using toxicological findings together with field observations. Birds were classified as intentionally poisoned when evidence clearly indicated deliberate poisoning, such as detection of substances banned in the European Union, discovery of poisoned bait near the carcass, the presence of multiple dead birds at the same site or when the perpetrator had been identified. When available evidence did not allow a clear determination of intentional poisoning, cases were classified as undefined. This group includes birds exposed to substances that are legally permitted in the EU (e.g. rodenticides, metaldehyde or cadmium), cases of secondary poisoning, birds recovered from landfill sites, and birds without toxicological examination. It also covers cases in which a detected substance was banned at the time of analysis but remained legally authorised when the poisoning event occurred. Overall, 91 of the 238 poisoned birds were classified as intentional poisoning cases, while 147 cases remained undefined.

It should be noted that the number of confirmed intentional poisoning cases represents a minimum estimate, as additional cases may have gone undetected.

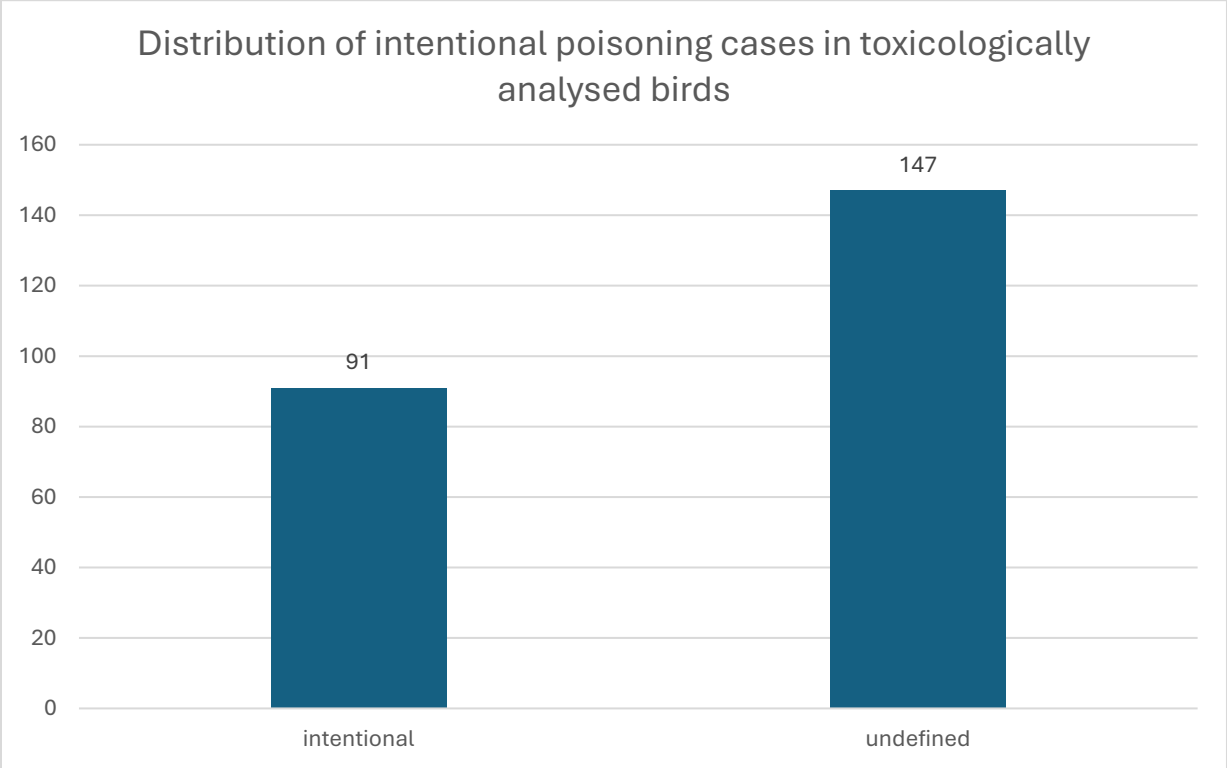

Figure 44: Number of poisoned birds classified as confirmed intentional poisoning or as cases with undetermined intent. Confirmed intentional poisoning includes cases involving toxic substances prohibited in the European Union, the presence of poisoned bait, multiple birds found dead at the same site or instances where the perpetrator has been identified. Cases with undetermined intent include birds exposed to legally permitted substances, secondary poisoning, landfill-related cases, or birds without toxicological analysis. Of the 238 poisoned birds, 91 were classified as confirmed intentional poisoning and 147 as cases with undetermined intent.

4.2.2 Shooting

The data on bird persecution related to shooting shows that Spain recorded the highest number with 18 tagged birds (all age classes) shot, followed by France with 12 cases. Austria and Germany had 9 and 8 birds shot, respectively. Other countries with notable shooting incidents include the Czech Republic (5) and Switzerland (4). Several countries reported fewer shooting incidents, including Italy and Hungary (2 each), while Algeria, Ghana, Greece, Guinea-Bissau, Tunisia, and Turkey each reported 1 shooting incident (Figure 45). However, due to different numbers of tagged birds per country and the different density of birds per country the results can differ significantly per country. Therefore, these results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in each country.

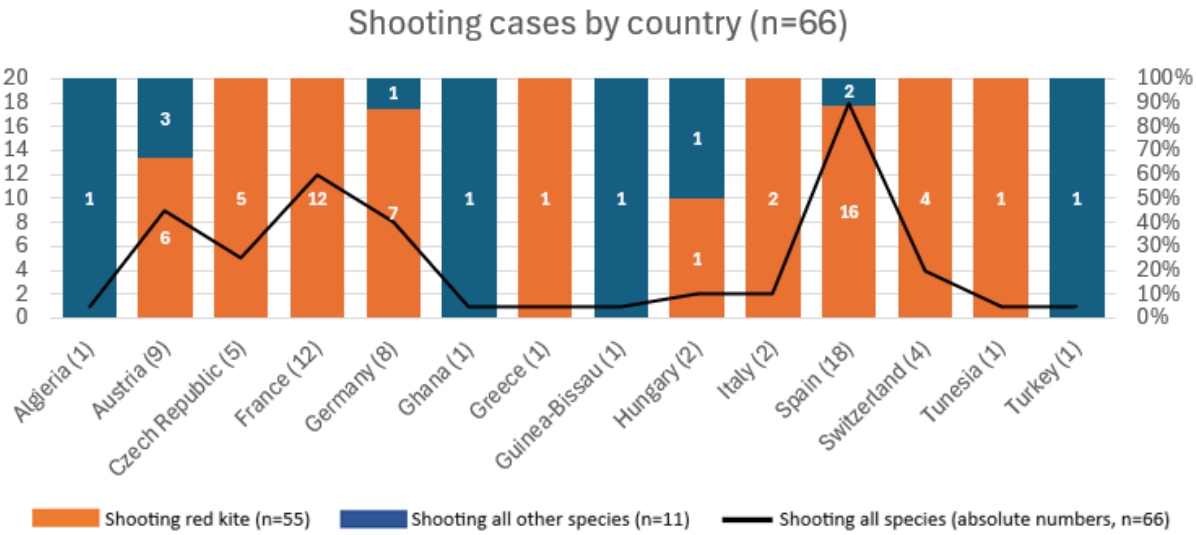

Figure 45: Overview of the number of shot birds (n=66) by country in the period from 2013 to 2024. Orange bars show the percentage of shooting cases of red kites relative to all other species. Black line indicates the total number (absolute numbers) of shooting cases. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

4.2.3 Trapping

France reported 2 incidents of trapping while Austria, Czech Republic, Hungary, Nigeria and Spain each reported 1 incident of bird trapping (Figure 46). However, due to different numbers of tagged birds per country and the different density of birds per country the results can differ significantly per country. Therefore, these results do not provide any information about the frequency of bird persecution compared to the density of red kites and other bird of prey in each country.

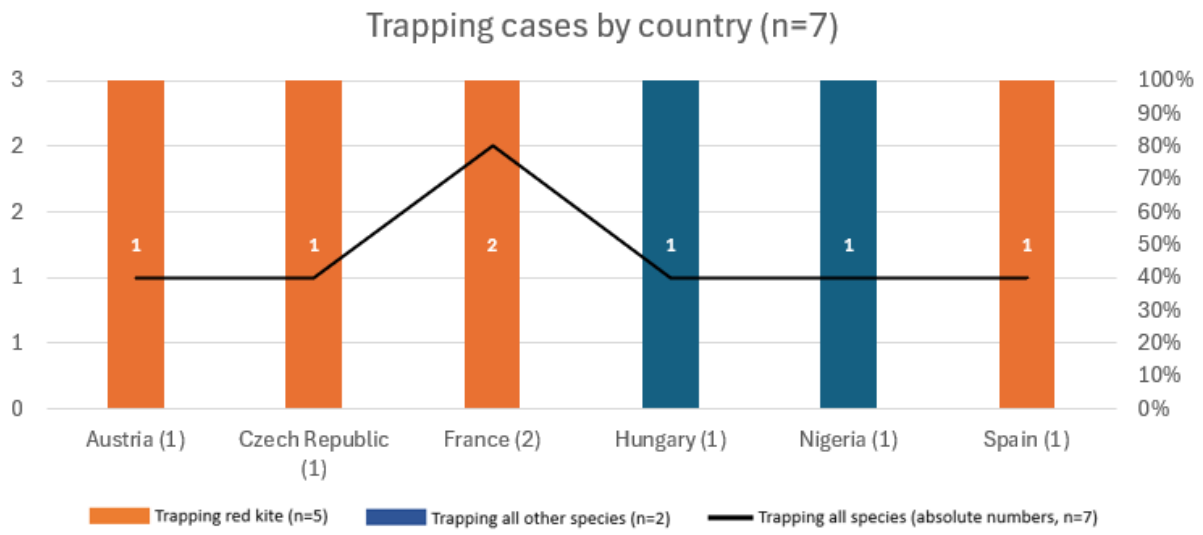

Figure 46: Overview of the number of trapped birds (n=7) by country in the period from 2013 to 2024. Orange bars show the percentage of trapping cases of red kites relative to all other species. Black line indicates the total number (absolute numbers) of trapping cases. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

4.2.4 Bird crime

The data on bird crime includes cases where illegal persecution is strongly suspected based on telemetry data or field investigations, but the exact cause of death could not be determined. Unlike poisoning, shooting or trapping, these cases involve missing birds or transmitters that have been deliberately removed, leaving no direct evidence of what happened. Spain recorded 4 incidents, followed by Germany with 3 (one case is categorized under traceable human activity). Austria and Denmark each recorded 1 case.

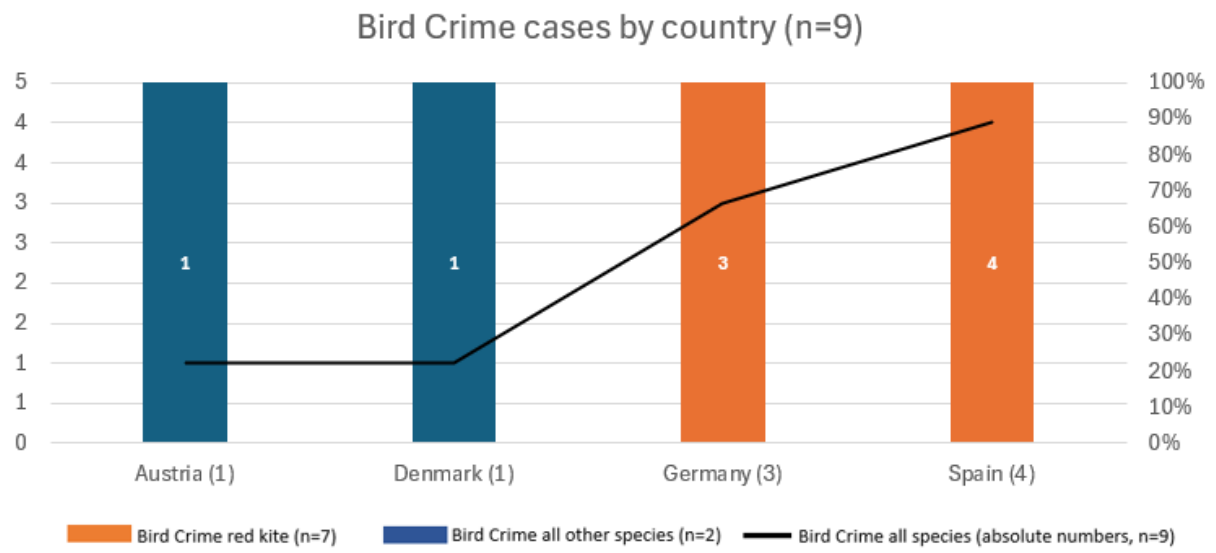

Figure 47: Overview of the number of bird crimes (n=9) by country in the period from 2013 to 2024. Orange bars show the percentage of bird crime cases of red kites relative to all other species. Black line indicates the total number (absolute numbers) of bird crime cases. Including one case of traceable human activity in Germany. Due to different number of tagged birds per country and the different density of birds per country the results can differ significantly per country. The results do not provide any information about the frequency of bird persecution compared to the density of red kites and other birds of prey in the respective country.

4.3 Investigation

The following section summarises the results of the investigation

Involvement of the police and/or authorities

The data reveals varying levels of communication with the police and other authorities. In 125 cases, no information regarding communication with police or authorities has been received so far. In 36 cases, neither the police nor any authorities were informed. However, in 64 cases, the police were informed, while in 38 cases, the authorities were notified. Both the police and the authorities were informed in 57 cases (Figure 48).

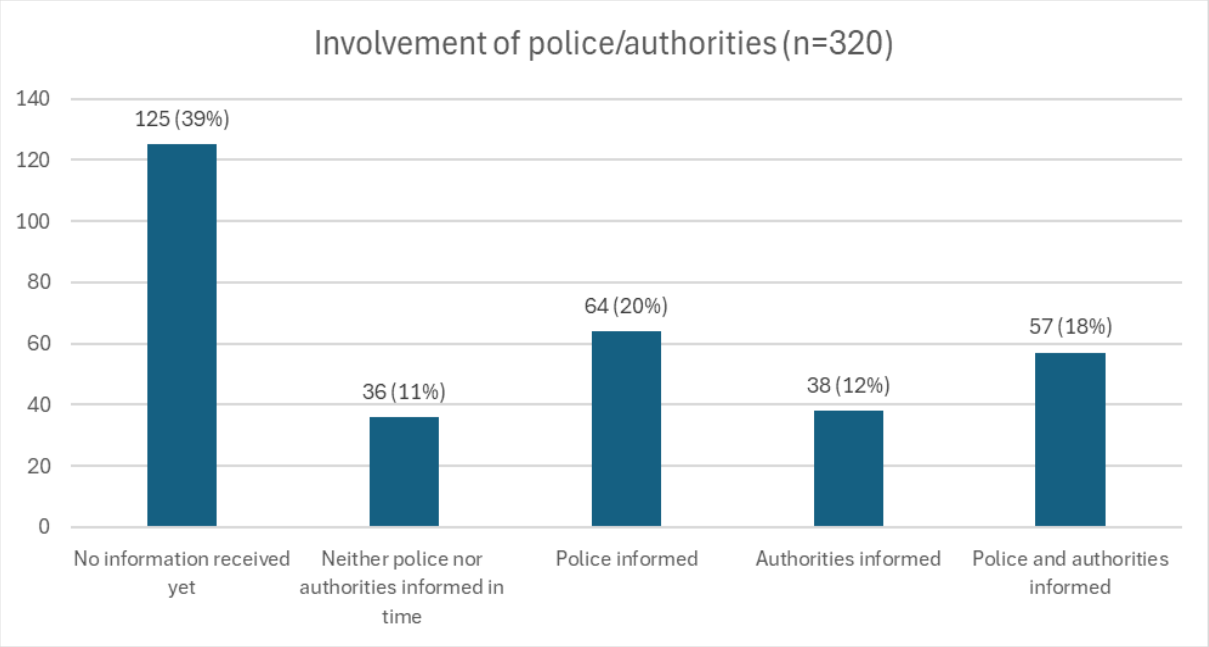

Figure 48: Overview of the involvement of the police and the authorities in the cases of bird persecution (n=320).

Investigation status

Notably, for most cases (202 in total), no information regarding the investigation status was received so far. A total of 50 cases were not investigated, while 23 investigations are still ongoing. Additionally, 37 cases were stopped, and only 8 investigations were successfully completed so far (Figure 49).

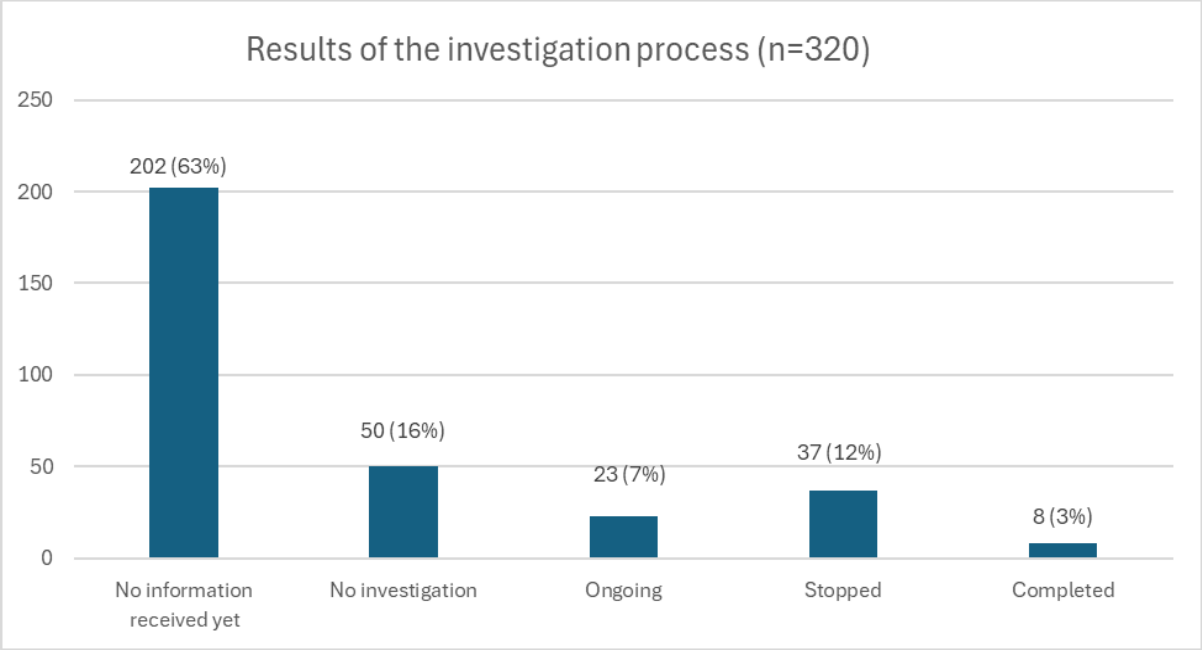

Figure 49: Overview of the results of the investigation in the cases of bird persecution (n=320).

Results legal proceeding

The data on legal proceedings indicates that in 70 cases, no legal action was initiated. Meanwhile, 11 cases are currently pending, and 12 cases have ongoing legal proceedings. Additionally, 17 cases were stopped, and only 8 cases have been successfully completed (Figure 50). For 202 cases, no information regarding legal proceedings was received so far.

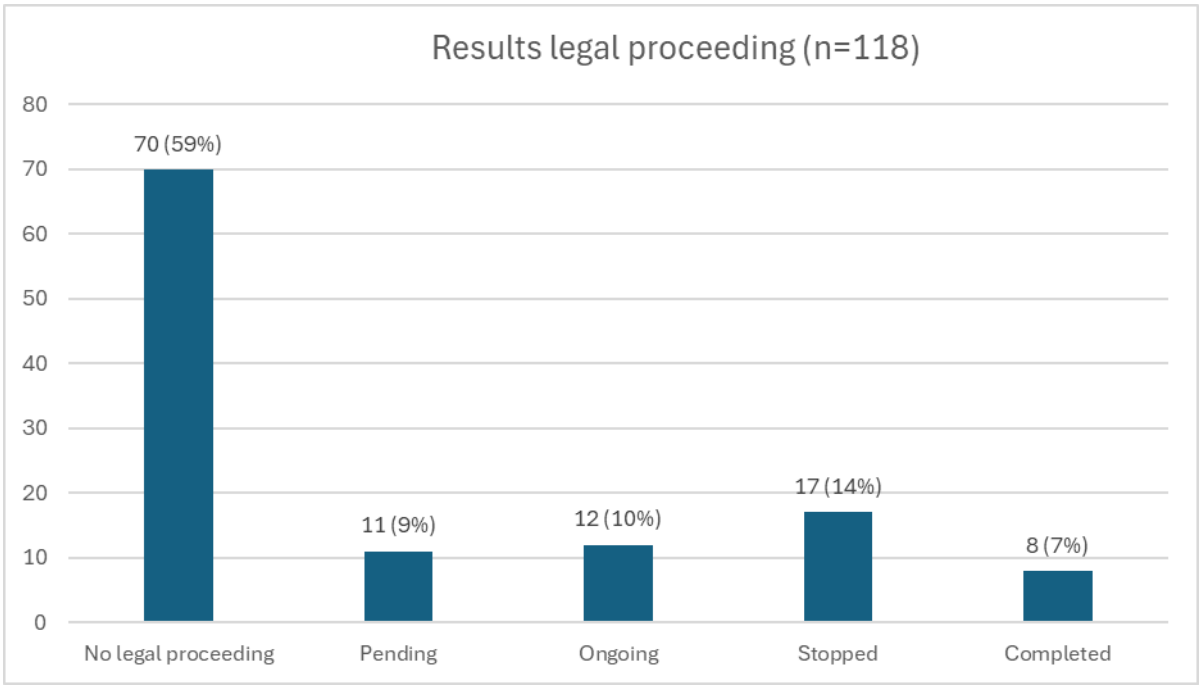

Figure 50: Overview of the results of the legal proceeding n in the cases of bird persecutions (n=118). For 202 cases, no information regarding legal proceedings was received so far.

Ongoing/Pending legal proceedings by countries

In 7 countries, legal proceedings of bird persecution are ongoing (12 cases) or pending (11 cases). In Spain, 4 cases are currently ongoing, and another 4 are pending further legal action. France and the Czech Republic each report 2 ongoing and 2 pending cases, while Slovakia has 3 pending cases awaiting legal action. Portugal and Germany both have 2 and Austria has 1 ongoing case. For those 3 countries no cases are pending (Figure 51).

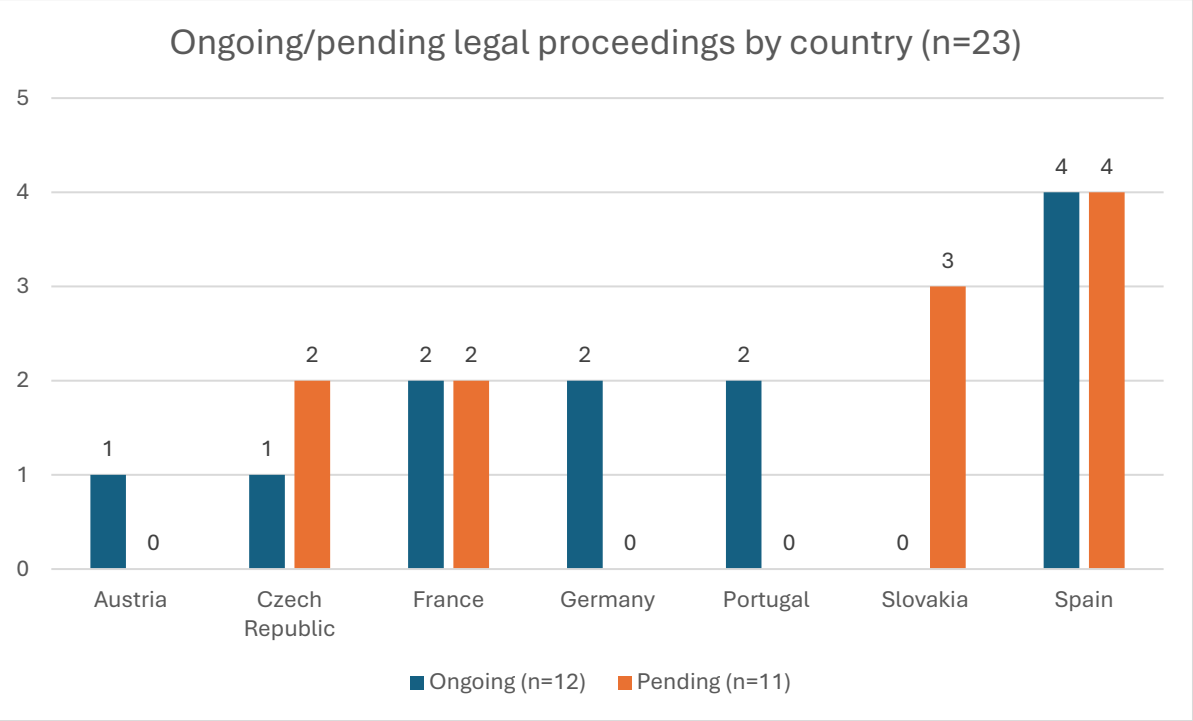

Figure 51: Overview of ongoing and pending legal proceedings in the cases of bird persecution (n=23).

Results of the conviction

The data on convictions shows that in 87 cases, there was no conviction, while 23 cases are still awaiting a verdict. Only 8 cases resulted in a conviction (Figure 52).

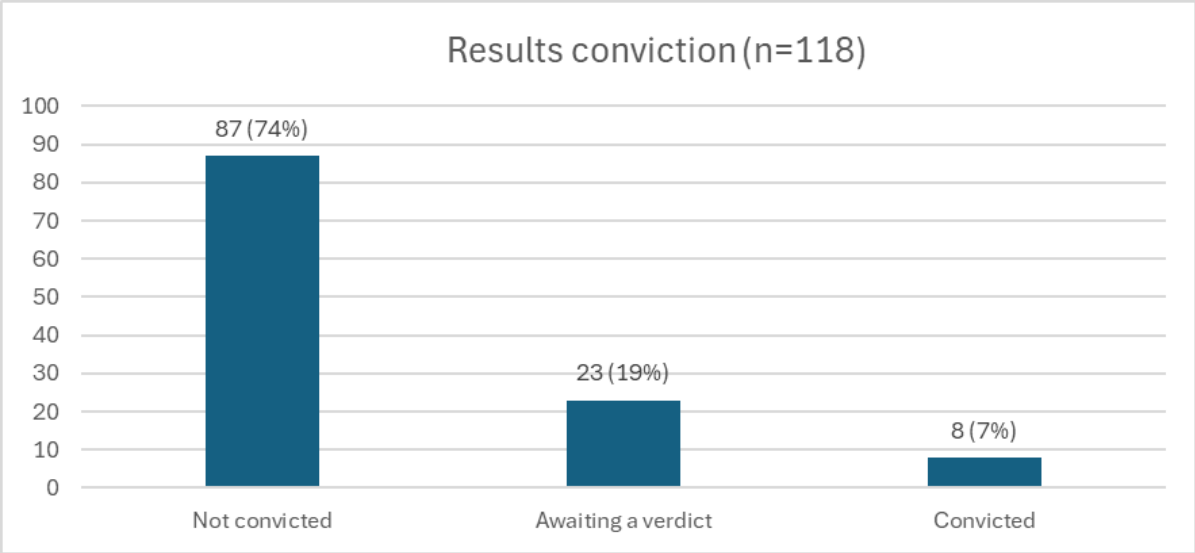

Figure 52: Overview of the results of conviction in cases of bird persecutions (n=118).

In 4 countries a conviction related to bird persecution was made (Figure 53). In addition to the overview of convictions shown in four countries, detailed information on the specific sentences issued is provided (Table 9).

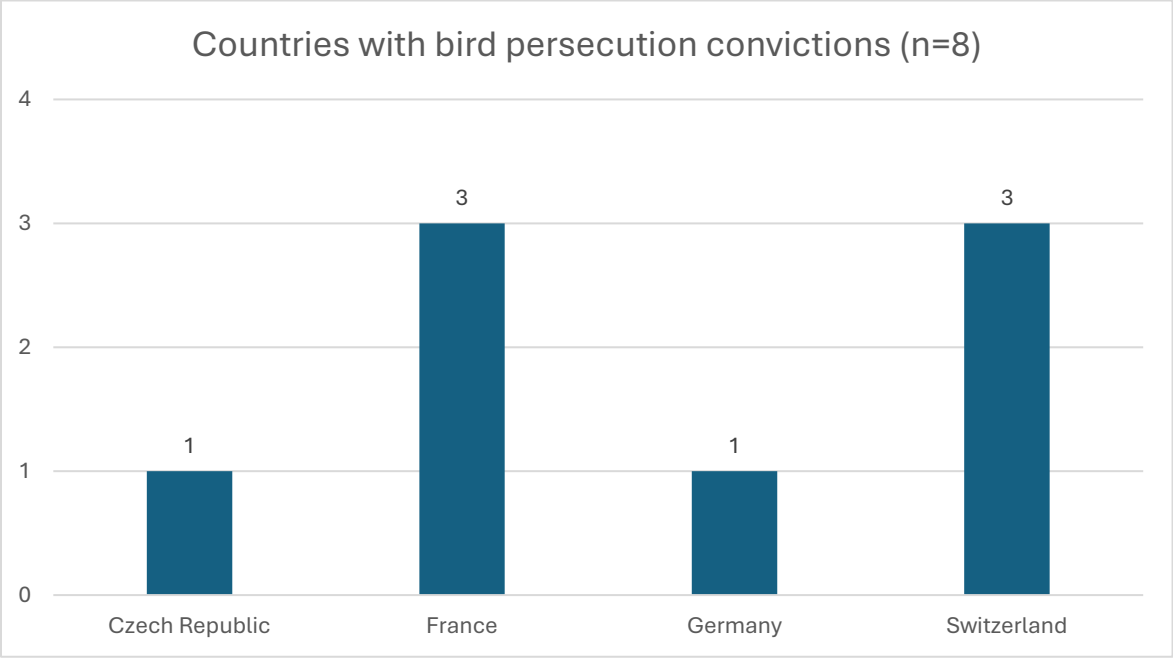

Figure 53: Overview of the total number of legally confirmed convictions related to bird persecutions of the tagged individuals in the LIFE EUROKITE database in the period from December 2013 to December 2024.

Table 9: Sentences issued in cases with convictions related to bird persecution by country

Country	Conviction
Czech Republic	A 3-year sentence, including a 2-year suspended sentence and a fine.
France	A 2-year suspended sentence along with a €2,000 fine, of which €1,000 was suspended. Additionally, the LPO Auvergne Rhône-Alpes was awarded €2,500 in compensation for ecological damage, €2,500 for moral damages, and €800 in court costs.
	A suspended fine of €1,000 and a civil penalty of €2,600, including €2,000 for moral damages and €600 in court costs, paid to LPO AURA. The compensation claim for ecological damage was not upheld by the court.
	A 5-month suspended prison sentence, a 1-year suspension of the hunting license, and a 3-year ban on firearm possession, along with a €250 fine. The perpetrator was also ordered to pay €800 to each of the four civil parties involved in the case as compensation for moral damages. In addition, €800 was awarded to LPO France for ecological damage related to the destruction of the red kite (from a total of €7,050 requested).
Germany	A fine of €1,800 was imposed, along with the revocation of the hunting license
Switzerland	A fine of approximately €9,500 (CHF 10,000) was imposed. Although the perpetrator was convicted in a single trial, the sentence was based on three separate bird persecution incidents for which he was held responsible.

The reasons for the lack of convictions within the remaining 312 cases vary. In 27 cases, neither the police nor any authorities were informed in time, which may have hindered further legal action. 15 cases cited a lack of sufficient evidence, while in 10 cases, no perpetrator could be identified. Additionally, there was 1 case where the police chose not to file a complaint and 1 case where charges were dropped. 19 cases involve secondary poisoning, which cannot be prosecuted. Furthermore, 23 cases are still undergoing legal proceedings. For 216 cases, no information on the reasons for non-conviction was available (Table 10).

Table 10: Overview of the reasons why there was no conviction in cases of bird persecution.

Reason, why there was no conviction	
Neither police nor authorities informed in time	27
Too little evidence	15
No perpetrator identified	10
The police did not want to make a complaint	1
Secondary poisoning	19
Charges dropped	1
Legal proceeding ongoing	23
Convicted	8
No information received yet	216
Total	**320**

5 Hotspots of poisoning cases in Europe

The following figures (Figure 54 to Figure 56) show the distribution of poisoned red kites in Europe.

Figure 54 shows the geographical distribution of red kite victims of poisoning (excluding lead and landfill poisoning) based on this report (n= 222), whereas Figure 55 shows numbers of poisoning reported from non-tagged red kites and therefore are additional data (n=1,295) not previously discussed in this report. Figure 56 shows the combination of two previous figures and thus includes data of the tagged red kites previously discussed in this report and the additional data of non-tagged red kites (n=1,517). However, these maps only show known cases, the actual number is significantly higher. It can be assumed that many other areas also experience considerably more cases of illegal poisoning.

Note also that not all cases listed in these maps are necessarily cases where poisoning was the primary cause of death. In many cases, poisoning (mainly by anticoagulants) was a secondary cause of death.

Figure 57 provides a Europe-wide overview of the estimated extent of poisoning risk. This assessment was based on the time red kites spent in individual countries and on information from poisoning cases involving both tagged and untagged individuals. The maps clearly demonstrate that poisoning occurs across the entire distribution range of the red kite and is not confined to specific countries but rather represents a Europe-wide conservation issue.

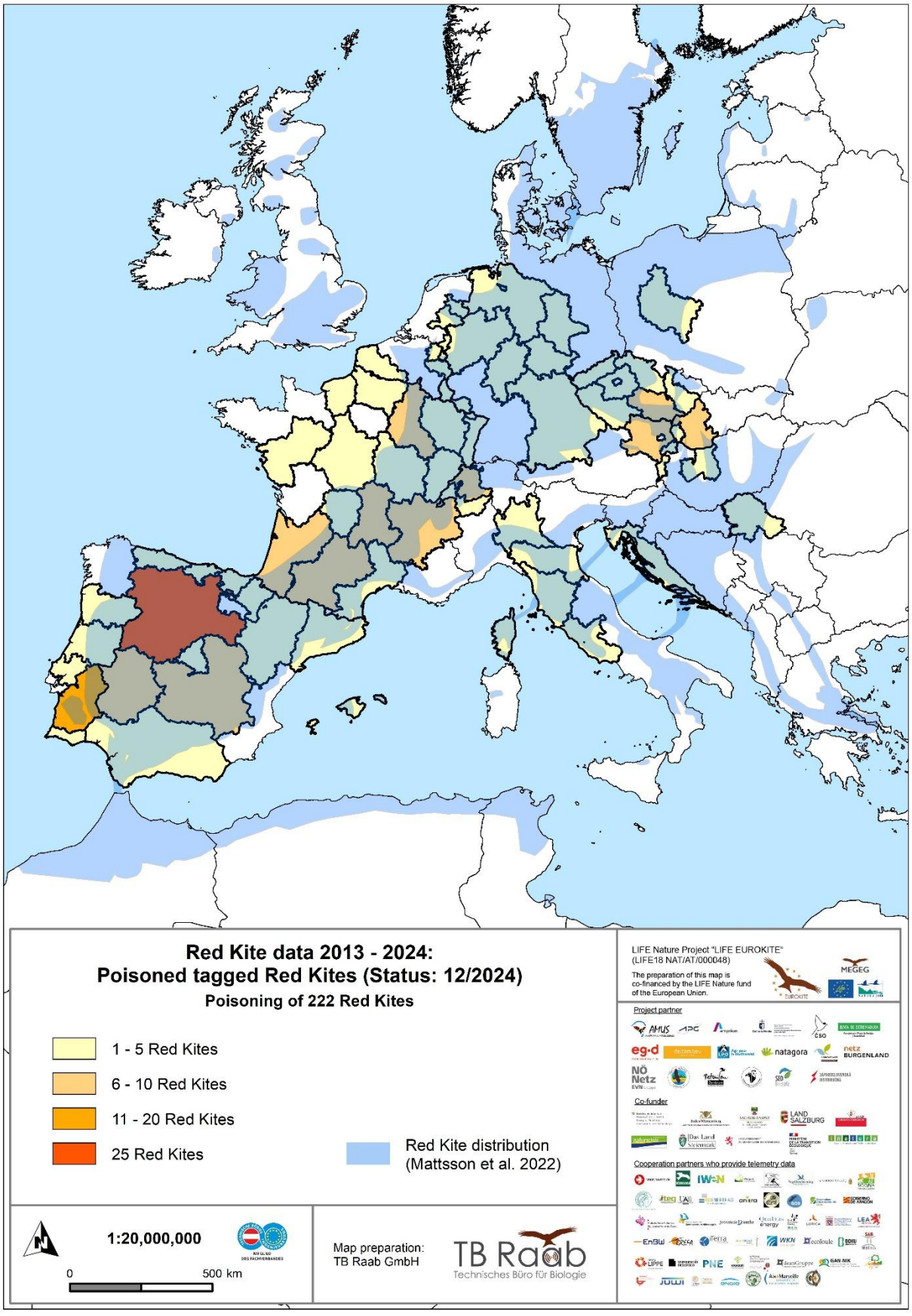

Figure 54: Geographical distribution of red kite victims of poisoning based on tagged red kites (n= 222). Not included are cases of Lead and Landfill poisoning.

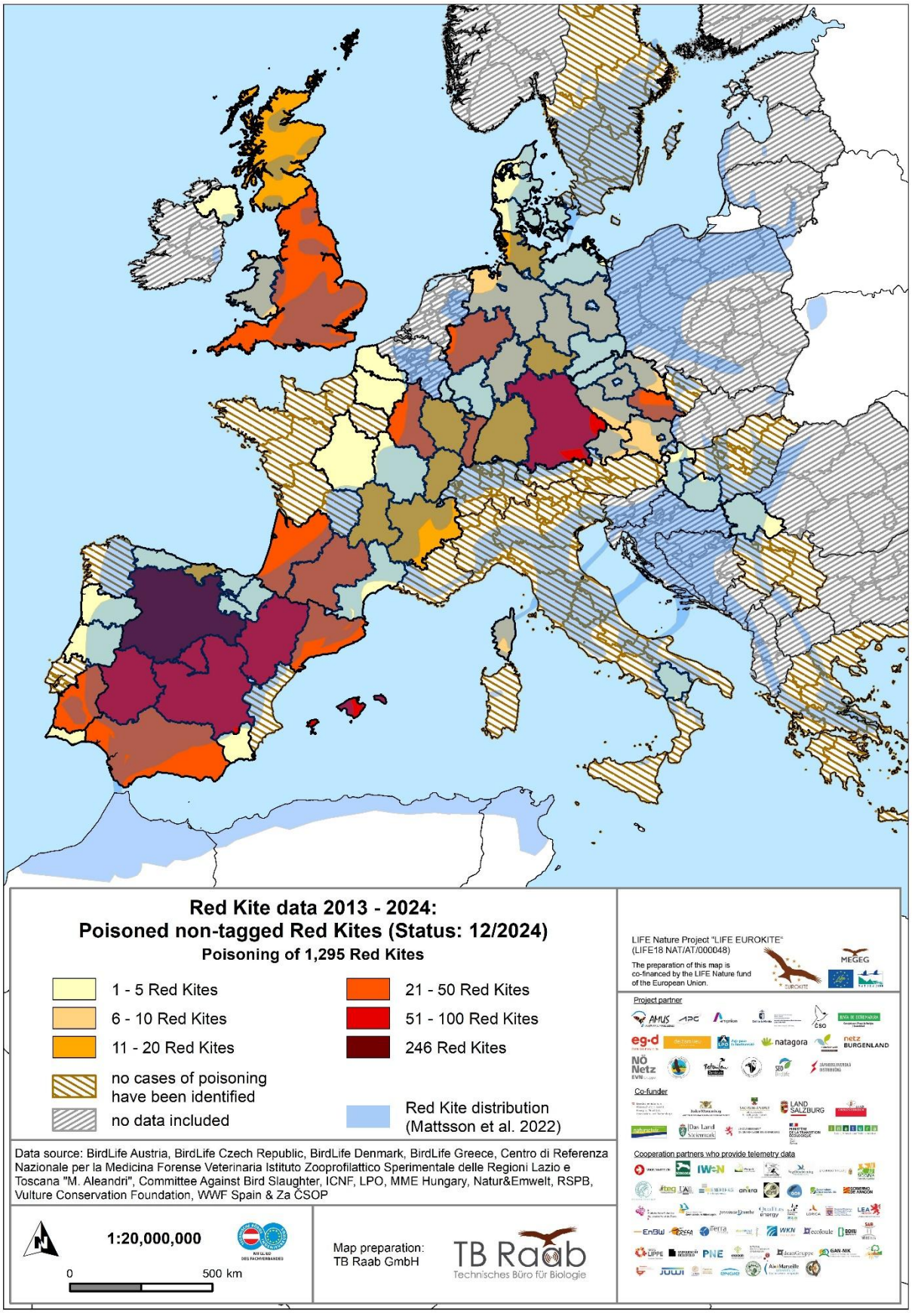

Figure 55: Geographical distribution of red kite victims of poisoning based on non-tagged red kites (n=1,295).

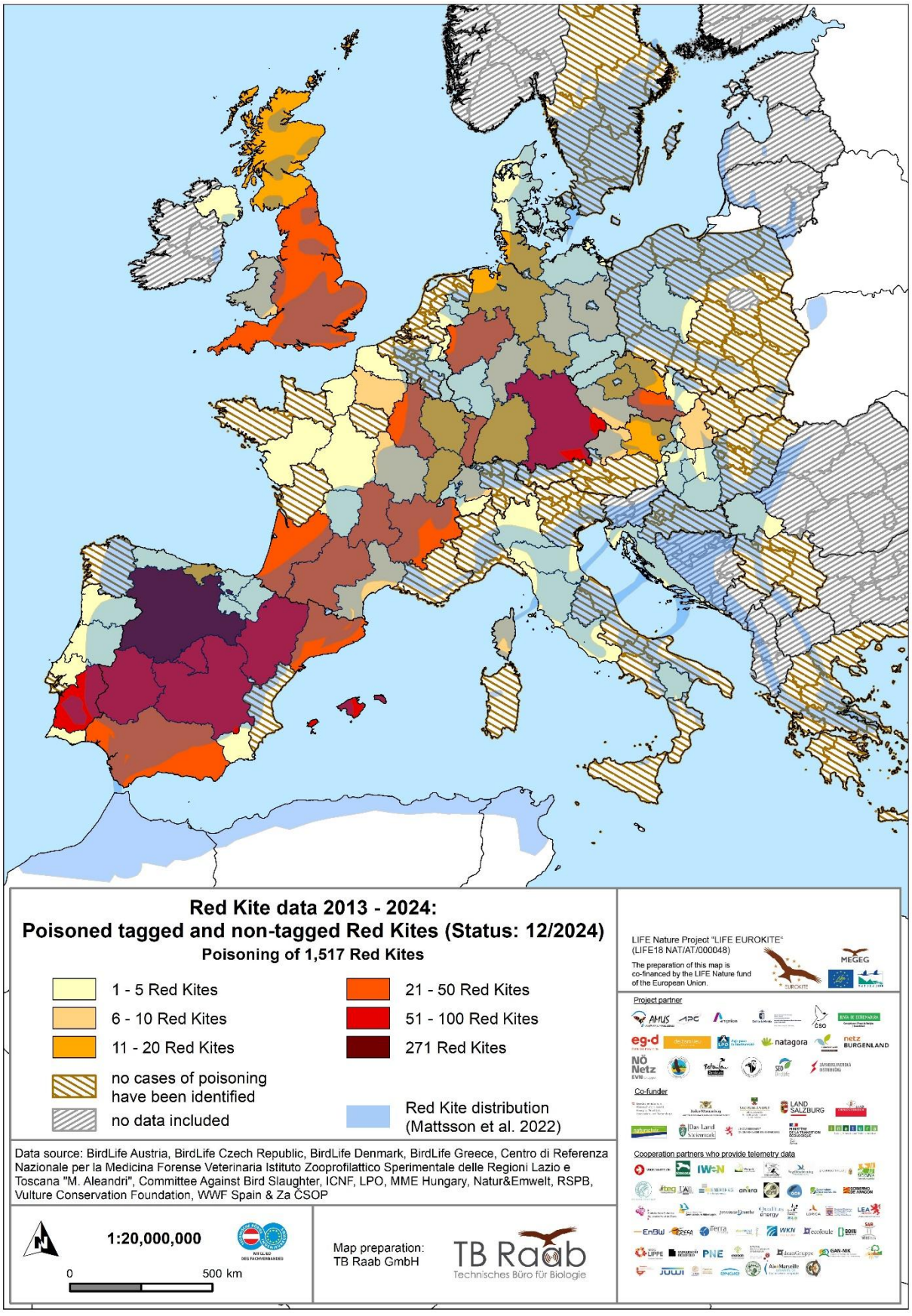

Figure 56: Geographical distribution of red kite victims of poisoning based on tagged and not tagged red kites (n=1,517).

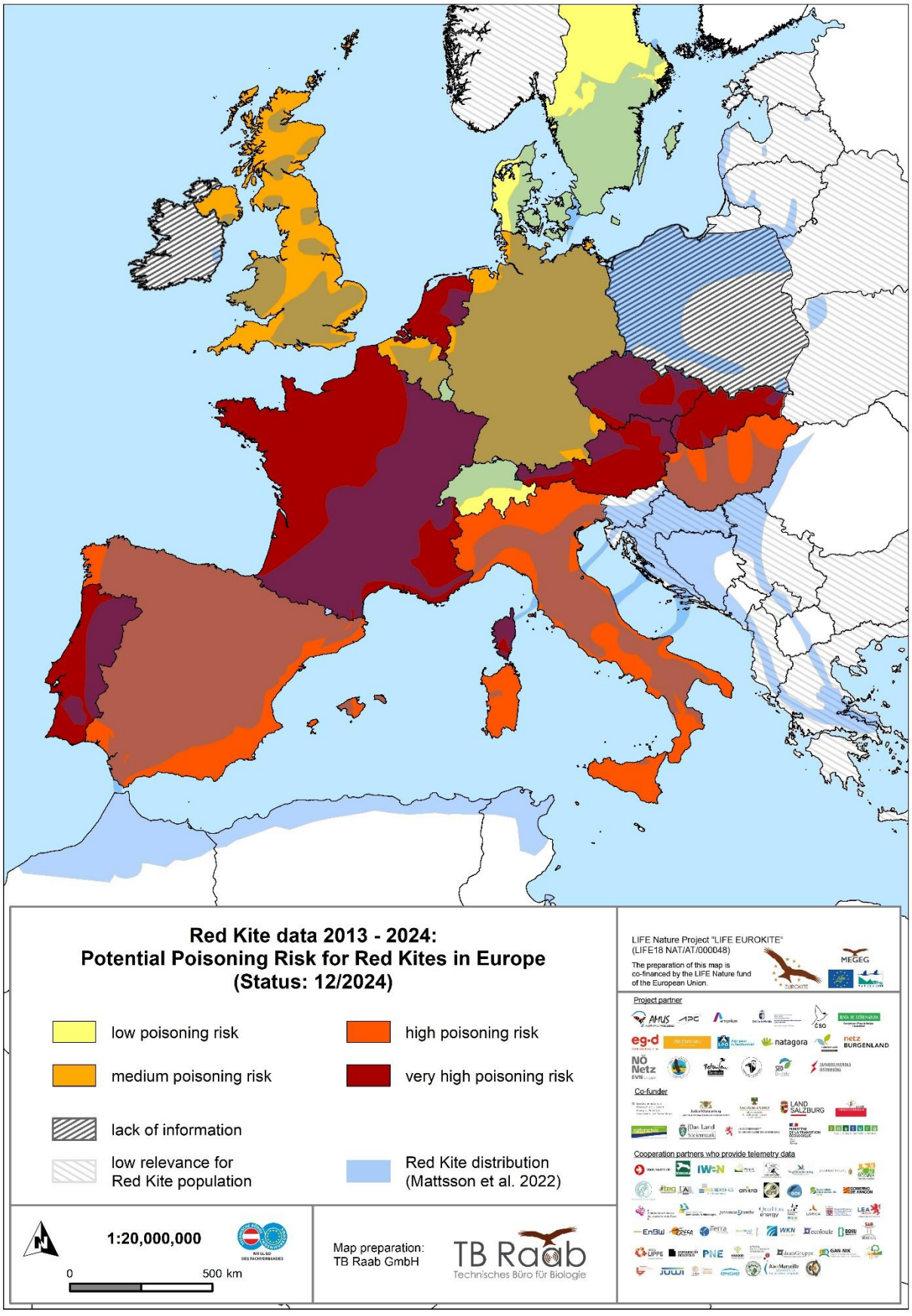

Figure 57: Potential poisoning risk for red kites in Europe.

6 Best practice

The following section provides an overview of best practices examples for combating bird persecution.

France: In 2022, the LIFE EUROKITE project documented an exemplary case of international cooperation that led both to the rescue of a bird and to a criminal conviction. The bird in question (RK_2085) had been equipped with a GPS transmitter in Switzerland by local project partners. When the red kite suddenly stopped moving for an extended period, the Swiss team became concerned. Since the bird's last known position was in France, they alerted the relevant local partners there.

The local partners found the bird alive on a farm, trapped in a cage. In addition to the still living bird, several dead birds and toxic substances were also discovered. As the red kite was in good health it had been released immediately. Unfortunately, a few weeks later, it died from predation in Spain, unrelated to the original incident.

Thanks to the clear evidence, a conviction was achieved in France: a suspended fine of €1,000 was imposed, along with a civil penalty of €2,600, comprising €2,000 for moral damages and €600 in legal costs, awarded to the French partner organisation. The claim for compensation for ecological damage, however, was not upheld by the court.

This case highlights the vital importance of cross-border cooperation, telemetry data, and rapid communication in wildlife conservation. Thanks to the coordinated efforts of all parties involved, from Switzerland, France, and Austria, the bird could be rescued, and a legal success was achieved in the fight against bird persecution.

Austria: An effective prevention approach against illegal raptor persecution was implemented in Austria (Zistersdorf, Niederösterreich) even before the start of the LIFE EUROKITE project: The municipality Zistersdorf had experienced a series of illegal poisonings and cases of raptor persecution. The responsible district authority organised an information event, in close cooperation with the current LIFE EUROKITE coordinator and the police. All gamekeepers from the region were invited. During the event, the legal framework was explained, the extent of past incidents was highlighted, and the consequences of further violations were clearly communicated.

A central element of the communication was the announcement that, in the event of further incidents, an external official hunting inspector would be appointed to monitor local hunting practices. This clear message had an impact: since then, the number of illegal raptor poisonings has significantly declined.

This case demonstrates the effectiveness of proactive communication, clearly defined responsibilities, and official presence. Through the cooperation of police, public authorities, and the LIFE EUROKITE project, a sustainable change in behaviour was achieved without the need for criminal proceedings – a successful example of preventive species conservation.

Spain: Initiatives and LIFE projects such as LIFE VENENO NO, LIFE Guardianes de la Naturaleza and LIFE SWiPE have strengthened cooperation between conservation NGOs, environmental authorities and law-enforcement bodies. A key success is the use of specialised anti-poison dog units, which greatly improve the detection of poisoned baits and carcasses. Standardised investigation protocols, forensic analysis and targeted training for officers and prosecutors have increased the effectiveness of legal action. Those actions also led to a decline in numbers of bird crime.

WCA: The Wildlife Crime Academy (WCA) is achieving significant success in its mission to combat wildlife crime by training professionals in various countries to enhance their capacity to detect, investigate, and prosecute wildlife criminals. The academy's model, initially developed in Andalusia, Spain, and replicated in the Balkans, has demonstrably reduced wildlife crime, particularly poisoning incidents, by equipping professionals with the necessary forensic and investigative skills. Through international training courses, the WCA is building a network of experts across Europe and beyond, fostering collaboration and knowledge-sharing to combat wildlife crime effectively.

By integrating crime scene investigation techniques, forensic science, and judicial processes, illegal wildlife poisoning incidents in Andalusia were reduced by 80% over a period of 15 years. This success demonstrates that, with appropriate procedures, sustained effort, and effective collaboration, similar outcomes can be achieved in other countries.

CABS-Project EDGAR: The Committee Against Bird Slaughter (CABS) has been working against illegal raptor persecution in North Rhine-Westphalia (Germany) since the 1980s. In 2015, this work was extended to the whole of Germany. The project EDGAR (Registration and Documentation Centre for Raptor Persecution and Wildlife Crime) was funded by the Federal Agency for Nature Conservation (BfN) for three years from 1st August 2015 to 31st July 2018 with funds from the Federal Environment Ministry. Since then, the project has stood on its own two feet and is financed by supporter donations. Staff from CABS headquarters in Bonn, document all known cases of illegal bird of prey persecution in Germany, file criminal charges, advise reporters, witnesses and authorities, offer advice and guidance on site.

It can serve as a best-practice example for effective data collection on raptor persecution and wildlife crime. It provides a centralized and systematic approach to gathering and analysing cases across a country. In addition, EDGAR acts as a point of contact at the national level, supporting local authorities, NGOs, and enforcement bodies in tackling illegal activities more effectively.

7 Discussion

Using a unique and extensive dataset, we demonstrated that illegal activities are common across Europe for the red kite, an indicator species of wider ecosystem health (Walker et al. 2016; Segio et al. 2019b). By utilizing GPS tracking, this study overcomes the limitations of commonly used methods, such as ring recoveries, opportunistic carcass collections as well as regional studies (e.g., Kolbe et al. 2019, Langgemach et al. 2023), providing more reliable inferences about patterns of mortality causes (Panter et al. 2025; Panter et al. under review).

Analysis of standardized mortality risks across countries for red kites highlights important geographical differences with significant implications for conservation strategies. Poisoning is one of the most prevalent anthropogenic causes of death for red kites across Europe.

Despite this, poison use is strongly regulated at the national level both in the types and amount of poison used (e.g., France: Loi n°2016-1087, French Republic 2016; Germany, where poisoning incidences were low**:** §17 of the German Animal Welfare Act, General Federal Ministry of Justice, 2024), although the enforcement of laws might strongly vary between countries (UNEP and GRID-Arendal, 2020). Carbofuran, a highly toxic substance used to control insect pests, has been banned in the European Union (EU) since 2008 (Commission of the European Communities, 2007) and in Switzerland since 2011 (Pflanzenschutzmittelverordnung, Swiss Federal Council, 2011). Our findings and existing literature however demonstrate that Carbofuran is still used in many European countries (Krone et al. 2017; Deák et al. 2021; Kitowski et al. 2021). The use of poison for pest control can have devastating effects on non-target species, which are exposed through indirect trophic pathways (Mougeot et al. 2011; Coeurdassier et al. 2014). In the EU and all European countries included in this study, both targeted and accidental killing of protected species such as the red kite are illegal. Despite this, wildlife (including red kites) continues to be affected by poison use with potential for population-level consequences (Mateo-Tomás et al. 2020; Panter et al. under review).

Secondary poisoning on the one hand, includes birds that have been exposed to legally used toxic substances such as rodenticides (e.g., anticoagulants) that are detected in tissue samples but were presumably not intentionally placed to kill birds of prey. On the other hand, secondary poisoning is identified in birds where it is not the primary cause of death — for example, when a bird dies due to predation, collision, or trauma of unknown origin, but toxicological analyses reveal the presence of toxins in the body. In such cases, it is assumed that the poison may have contributed to the mortality by impairing the bird's health, behaviour, or mobility, thereby increasing the likelihood of death from other causes. In this case there might be a much higher number of birds killed due to secondary poisoning, but no analysis has been conducted.

The toxicological analyses revealed exposure to a wide range of substances, with Carbofuran and anticoagulant rodenticides being the most frequently detected. While Carbofuran was confirmed as the cause of death in the majority of cases where it was detected, many birds carried rodenticides at sublethal levels. These findings suggest that sublethal exposure may be more widespread than lethal exposure, raising concerns about long-term physiological impairment and potential delayed mortality. This distinction between detection and confirmed lethality underscores the need to consider both acute and chronic impacts of toxic substances on raptor populations.

Assessment of intentional poisoning indicates that 91 of 238 poisoned birds were confirmed as deliberately targeted, while 147 cases remained undefined. It should be noted that the confirmed intentional cases represent a minimum estimate, as many deliberate poisonings may go undetected. The undefined category includes birds exposed to legally permitted substances, cases of secondary poisoning, landfill-associated exposure, or birds not subjected to toxicological analysis. This uncertainty highlights both the complexity of distinguishing intentional from incidental exposure in the field and the potential underestimation of deliberate poisoning events.

Illegal shooting accounted for considerable mortality of raptors, despite legal protection across Europe (national laws implemented under the EU Birds Directive 2009/147/EC, European Parliament and Council of the European Union, 2009a; Swiss Jagdgesetz, Swiss Federal Council 1988). Evidence suggests that direct persecution of raptors is often performed by some gamekeepers (Brochet et al. 2016; Murgatroyd et al. 2019) and pigeon-keepers (Hirschfeld et al. 2017), who aim to protect game animals and livestock (Brochet et al. 2016; Murgatroyd et al. 2019). In Austria, Czech Republic, France, Hungary and Slovakia, where shooting accounted for a large proportion of red kite deaths, the practice is often linked to traditional hunting activities (Mañosa 2002), despite protection under the French Code de l'environnement (articles L424-1 to L424-16, French Republic, 2006) and specific legislation in Austria, Czech Republic, Hungary and Slovakia. The difficulty in monitoring vast rural areas makes it challenging to trace and prosecute offenders, adding to the persistence of this problem across Europe (Murgatroyd et al. 2019). Destruction of GPS tags after illegal killings by the offenders further complicates quantification of this threat (Panter et al. 2025), therefore likely underestimating its true contribution to mortality (Panter et al. under review).

An analysis conducted using sales data from the German website eBay.de estimated that over 248 raptor traps of a specific model are sold annually, while only around 10 related persecution cases are officially reported each year. Based on the assumption that each trap is used at least once for illegal purposes, the analyst concluded that approximately 96% of such cases go undetected (Hirschfeld, 2022). This result outlines the gap of knowledge about illegal bird persecution activities. However, the detection rate is clearly dependent on the monitoring and enforcement efforts and circumstantial criteria. A low number of reported bird persecution cases does not necessarily indicate an absence of the problem but may instead reflect the low level of attention the problem receives (BirdLife International and EuroNatur, 2025).

8 Conclusion & Recommendation

From the 3,554 tagged birds a total of 1,623 died so far. Of these, a total of 1,594 individuals (1,480 red kites, 13 black kites, 14 booted eagles, 17 honey buzzards, 32 imperial eagles, 8 ospreys, 30 white-tailed eagles) died in the respective country where we also detected bird persecution within our sample. The first results of the LIFE EUROKITE project show, that 320 (20.08 %) of the tagged birds (293; 19.80 % red kites, 3; 23.08 % black kites, 1; 7.14 % booted eagles, 2; 11.76 % honey buzzards, 12; 37.50 % imperial eagles, 1; 12.50 % ospreys, 8; 26.67 % white-tailed eagles) were victims of illegal activities in 24 countries (10/01/2025). Poisoning (n= 238; 74.38 % of illegal activities) was by far the most common illegal act that caused the death of these tagged birds. The most commonly used poison was Carbofuran which is banned in the EU since 2008. The second most common illegal act that caused the death of these tagged birds was shooting (n = 66; 20.63 % of illegal activities). In only 8 cases a conviction was achieved for bird persecution.

Due to varying numbers of tagged individuals and differing red kite population densities across countries, the results may vary considerably. Consequently, these findings do not allow for conclusions regarding the statistical frequency of illegal activities relative to red kite density in any given country.

Weak enforcement, lack of evidence for successful prosecutions, and gaps in policy implementation allow these pressing conservation issues to continue in Europe (Brochet et al. 2016, Brochet et al. 2019). Future conservation efforts should actively involve policymakers and prioritize stronger law enforcement in rural areas, education on the dangers of poison baits, and improved evidence collection to enable successful prosecution of offenders. Additionally, they should promote or mandate the disposal of banned substances and strictly regulate access to those still permitted for other uses. Collaborations between law enforcement, conservationists, and the public are necessary to combat illegal activities (e.g., LIFE Against Bird Crime LIFE17 GIE/NL/000599; Silva et al. 2018). Here, GPS tracking data can be highly informative and allow detection and prosecution (Panter et al. 2025).

To make real progress against bird persecution, a stronger political commitment across countries is essential. International frameworks like the CMS and the Bern Convention encourage states to develop and implement National Action Plans with measurable goals and timelines (BirdLife International and EuroNatur, 2025).

A beacon of hope comes from Scotland where the 2024 act “Wildlife Management and Muirburn (Scotland) Act 2024” (Scottish Parliament, 2024) will hopefully allow to tackle illegal raptor persecution more easily. Based on our experience, we believe that awareness campaigns along with stricter enforcement and more severe penalties may lead to a shift in behaviour away from illegal persecution and accidental poisoning of wildlife. (Panter et al. in preparation)

To reinforce legal deterrence, national laws should not only be harmonized but also come with penalties that reflect the severity of the crime. Minimum sentencing guidelines and regular reviews of their effectiveness would ensure that violations are consistently punished across borders (BirdLife International and EuroNatur, 2025).

To inform the public and the political decision makers about this topic and to make the effects of illegal activities more understandable (e.g., the chain reaction of a single poisoning bait), more

work to raise awareness is necessary. Therefore a “European day against criminal poisoning of wildlife” on 1st March has been launched in Europe (www.stopwildlifepoisoning.eu/).

Addressing cross-border persecution requires enhanced cooperation between states. Mechanisms for intelligence-sharing, coordinated investigations, and joint enforcement efforts, such as through the European Union Agency for Law Enforcement Cooperation (EUROPOL), International Criminal Police (INTERPOL) and the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) should be strengthened. Moreover, partnerships with the hunting and agricultural sectors can foster dialogue and align interests in combating Bird crimes (BirdLife International and EuroNatur, 2025).

A systematic data collection of bird persecution in the whole of Europe should be managed by the European Union or one of its organizations. This could help to identify hotspots and take specific actions on a European or regional level. Additionally, toxicological analysis should be systematic and comparative between the different countries, as in some laboratories only a few toxins are tested.

Finally, improved monitoring and transparent international reporting are urgently needed. Support for national data collection systems, especially in under-resourced countries, along with common reporting standards, would provide a clearer picture of the scope of bird persecution and help guide policy responses more effectively (BirdLife International and EuroNatur, 2025).

Existing strategies like the Rome Strategic Plan 2020-2030 or the CMS Preventing Poisoning Working Group (PPWG) (based on Resolution 10.26 established under the Scientific Council) must be pursued further and more vigorously.

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List of tagged individuals included in the Crime Report

Booted eagle

BE_0005 ..... Part 18 - Spain

Black kite

BK_0001 ..... Part 21 - Outside Europe
BK_0003 ..... Part 21 - Outside Europe
BK_0015 ..... Part 18 - Spain

Honey buzzard

HB_0008 ..... Part 21 - Outside Europe
HB_0036 ..... Part 21 - Outside Europe

Imperial eagle

IE_0002 ..... Part 2 - Austria
IE_0005 ..... Part 10 - Hungary
IE_0007 ..... Part 5 - Czech Republic
IE_0009 ..... Part 10 - Hungary
IE_0014 ..... Part 20 - Turkey
IE_0019 ..... Part 2 - Austria
IE_0033 ..... Part 10 - Hungary
IE_0049 ..... Part 2 - Austria
IE_0050 ..... Part 10 - Hungary
IE_0063 ..... Part 2 - Austria
IE_0066 ..... Part 5 - Czech Republic
IE_0069 ..... Part 2 - Austria

Osprey

OS_0016 ..... Part 15 - Portugal

Red kite

RK_0001 ..... Part 2 - Austria
RK_0004 ..... Part 10 - Hungary
RK_0005 ..... Part 5 - Czech Republic
RK_0007 ..... Part 2 - Austria
RK_0010 ..... Part 17 - Slovakia
RK_0011 ..... Part 11 - Italy
RK_0012 ..... Part 17 - Slovakia
RK_0014 ..... Part 11 - Italy
RK_0015 ..... Part 17 - Slovakia
RK_0020 ..... Part 11 - Italy
RK_0022 ..... Part 17 - Slovakia
RK_0025 ..... Part 5 - Czech Republic
RK_0029 ..... Part 2 - Austria
RK_0033 ..... Part 2 - Austria
RK_0036 ..... Part 11 - Italy
RK_0039 ..... Part 2 - Austria
RK_0044 ..... Part 5 - Czech Republic
RK_0045 ..... Part 4 - Croatia
RK_0049 ..... Part 2 - Austria
RK_0055 ..... Part 5 - Czech Republic
RK_0056 ..... Part 5 - Czech Republic
RK_0058 ..... Part 11 - Italy
RK_0059 ..... Part 5 - Czech Republic
RK_0060 ..... Part 5 - Czech Republic
RK_0062 ..... Part 9 - Greece
RK_0066 ..... Part 5 - Czech Republic
RK_0069 ..... Part 2 - Austria
RK_0080 ..... Part 5 - Czech Republic
RK_0084 ..... Part 15 - Portugal
RK_0110 ..... Part 5 - Czech Republic
RK_0113 ..... Part 2 - Austria
RK_0115 ..... Part 5 - Czech Republic
RK_0118 ..... Part 16 - Serbia
RK_0121 ..... Part 8 - Germany
RK_0123 ..... Part 5 - Czech Republic
RK_0125 ..... Part 5 - Czech Republic
RK_0132 ..... Part 7 - France
RK_0135 ..... Part 18 - Spain
RK_0140 ..... Part 7 - France
RK_0145 ..... Part 7 - France
RK_0148 ..... Part 8 - Germany
RK_0156 ..... Part 7 - France
RK_0160 ..... Part 3 - Belgium
RK_0162 ..... Part 7 - France
RK_0163 ..... Part 7 - France
RK_0165 ..... Part 7 - France
RK_0168 ..... Part 18 - Spain
RK_0172 ..... Part 18 - Spain
RK_0175 ..... Part 7 - France
RK_0180 ..... Part 7 - France
RK_0196 ..... Part 8 - Germany
RK_0199 ..... Part 7 - France
RK_0201 ..... Part 5 - Czech Republic
RK_0206 ..... Part 21 - Outside Europe
RK_0212 ..... Part 10 - Hungary
RK_0216 ..... Part 18 - Spain
RK_0218 ..... Part 5 - Czech Republic
RK_0223 ..... Part 5 - Czech Republic

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RK_0238	.....	Part 7 - France
RK_0243	.....	Part 2 - Austria
RK_0244	.....	Part 7 - France
RK_0250	.....	Part 19 - Switzerland
RK_0259	.....	Part 18 - Spain
RK_0262	.....	Part 18 - Spain
RK_0271	.....	Part 17 - Slovakia
RK_0273	.....	Part 5 - Czech Republic
RK_0291	.....	Part 18 - Spain
RK_0296	.....	Part 7 - France
RK_0332	.....	Part 2 - Austria
RK_0339	.....	Part 8 - Germany
RK_0344	.....	Part 8 - Germany
RK_0345	.....	Part 15 - Portugal
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RK_0349	.....	Part 8 - Germany
RK_0355	.....	Part 5 - Czech Republic
RK_0357	.....	Part 15 - Portugal
RK_0358	.....	Part 5 - Czech Republic
RK_0364	.....	Part 5 - Czech Republic
RK_0366	.....	Part 5 - Czech Republic
RK_0371	.....	Part 15 - Portugal
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RK_0706	.....	Part 18 - Spain
RK_0717	.....	Part 18 - Spain
RK_0724	.....	Part 18 - Spain
RK_0730	.....	Part 18 - Spain
RK_0736	.....	Part 19 - Switzerland
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RK_0802	.....	Part 7 - France
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RK_3086 ..... Part 7 - France
RK_3088 ..... Part 7 - France
RK_3136 ..... Part 18 - Spain
RK_3141 ..... Part 18 - Spain
RK_3142 ..... Part 18 - Spain
RK_3173 ..... Part 8 - Germany
RK_3183 ..... Part 18 - Spain
RK_3206 ..... Part 18 - Spain
RK_3242 ..... Part 15 - Portugal

White-tailed eagle

WE_0008 ..... Part 5 - Czech Republic
WE_0013 ..... Part 5 - Czech Republic
WE_0015 ..... Part 10 - Hungary
WE_0026 ..... Part 10 - Hungary
WE_0028 ..... Part 10 - Hungary
WE_0049 ..... Part 8 - Germany
WE_0153 ..... Part 6 - Denmark
WE_0161 ..... Part 8 - Germany


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The TB Raab GmbH was commissioned to implement the LIFE EUROKITE project after a pan-European public tender.

Project partner (Associated Beneficiary)

Co-financier

This project is co-financed by the LIFE Nature Programme of the European Union

Cooperation partner

This project is co-financed by the LIFE Nature Programme of the European Union