



# AFTER-LIFE CONSERVATION PLAN

*Integral recovery of the Bonelli's Eagle  
population in Spain*

Recuperación integral de la población española de  
águila de Bonelli

LIFE12 NAT/ES/000701



25 years of EU supporting Nature,  
Environment and Climate Action through **LIFE**

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## BACKGROUND

### SITUATION PRIOR TO LIFE BONELLI

For more than 30 years, measures have been taken to ensure the legal protection and environmental management of natural spaces, and through the application of European Directives which have favoured the Bonelli's eagle. The measures which most directly benefited raptors were those related to their legal protection through the transposition and application of European Directives (on Habitats and Birds) and the application of legislation and standards concerning the modification of overhead power lines. All these measures focused chiefly on reducing the causes of mortality (direct persecution and modification of power lines), lessening disturbance in breeding areas (nest surveillance, regulation of sports and leisure activities) and certain actions aimed at improving habitats (recovery of prey species).

Since 2005, however, the Bonelli's eagle population has declined, particularly on the outer reaches of its range, and has even experienced local extinctions.

In 2006, the Bonelli's eagle population in Spain was estimated to stand at around 750 pairs (Del Moral, 2006<sup>1</sup>), representing 75% of the entire population of the species in Europe. 80% of the Iberian population is located in the south of the peninsula.

As for its conservation status, a negative population trend has been observed in those parts furthest afield from the area with the densest population (the southern Mediterranean seaboard region). If this trend continues, the north of Aragon, Navarre, the Autonomous Community of the Basque Country, Castile-León, Madrid and north-eastern part of Castile-La Mancha could find themselves bereft of the Bonelli's eagle in the coming decades (Del Moral, 2006).

The main threats to the species can be summarised as follows:

**Electrocution:** electrocution, particularly on distribution power lines, is the main cause of mortality in the species. It affects both young birds that are dispersing and breeding adults, the impact on population dynamics of the loss of one of a pair proving more serious.

**Direct persecution:** poisoning and shooting have traditionally been among the main causes of mortality in the species, especially in eastern areas. Although this situation has fortunately improved in recent years, offences of this kind are still committed against the Bonelli's eagle.

**Drowning and collision:** collision can occur against any type of overhead cable (e.g. railway catenaries, vineyard trellising structures) and at wind farms near breeding grounds. Drowning is not rare either, especially among young inexperienced birds, although it can also cause death in adults.

**Homogenisation of the habitat due to human action or abandonment:** such homogenisation leads to the loss of the prey species' habitats and, therefore, a drop in the trophic resources available, which may limit the productivity of the species and even, in extreme cases, the abandonment of breeding areas. Changes of this kind are often due to agricultural intensification and the demise of traditional farming methods.

**Human disturbance in nesting areas:** associated with recreational and leisure activities (hiking, adventure sports such as climbing and canyoning, etc.) and productive activities (quarries, farming, etc.).

The delicate situation of the species explains why no fewer than 8 LIFE projects directly related to the Bonelli's eagle (*Hieraetus fasciatus*) have been implemented in different regions of Spain, together with another project in Portugal, in the last few years.

<sup>1</sup> Del Moral, J.C. (ed.) 2006. El águila perdicera en España. Población en 2005 y método de censo (The Bonelli's eagle in Spain. Population in 2005 and census method). SEO/BirdLife. Madrid.

## OBJECTIVES, ACTIONS AND RESULTS OF LIFE BONELLI

The chief objective of LIFE BONELLI has been to **recover the Spanish population of the Bonelli's eagle through a joint programme applied to diverse populations within the species' range on the Iberian Peninsula and the Balearic Islands.**

**In order to achieve this objective, LIFE BONELLI has focused on reinforcing the population in Madrid, Alava and Navarre, and reintroducing the species to Mallorca.** Work has also been performed to meet the following specific objectives:

- To reduce the risk of collision and electrocution in areas in which this problem may still represent a constraining factor and in new areas identified during the Project.
- To create favourable habitats in breeding areas abandoned by the species by eliminating disturbance and threats, preventing large-scale changes to the landscape as a result of the desertion of traditional practices and maintaining the populations of prey species.
- To keep an international inventory of breeding pairs in captivity in order to optimise resources and genetic variability.

In order to achieve these objectives, the project has carried out the actions listed in the following table:

<b>A</b>	<b>A1.</b> Study of the potential of the sites selected to implement the interventions. <b>A2.</b> Discussions to establish areas for collaboration and partnerships.
<b>C</b>	<b>C1.</b> Maintenance of traditional livestock farming practices. <b>C2.</b> Maintenance and/or recovery of prey populations. <b>C3.</b> Reduction of disturbance and causes of mortality. <b>C4.</b> Population reinforcement measures. <b>C5.</b> Monitoring of breeding pairs and removal of eaglets from nests. <b>C6.</b> Increase in the Bonelli's eagle breeding pool and production of young birds.
<b>D</b>	<b>D1.</b> Monitoring of reintroduced birds. <b>D2.</b> Monitoring of the populations of prey species. <b>D3.</b> Ecosystem and economic-impact assessment.
<b>E</b>	<b>E1.</b> Communication plan. <b>E2.</b> Knowledge management. <b>E3.</b> Specific outreach campaigns for hunters, climbers, etc. <b>E4.</b> "Bonelli, living nature" outreach and awareness-raising campaigns.
<b>F</b>	<b>F1.</b> Project management and coordination. <b>F2.</b> Networking with other projects. <b>F3.</b> External financial audit. <b>F4.</b> AFTER-LIFE plan.

The conservation actions have been carried out in 5 Autonomous Communities: Madrid, Balearic Islands, Autonomous Community of the Basque Country, Andalusia and Autonomous Community of Navarre. Captive breeding centres in France have also taken part.

The implementation of the **LIFE BONELLI Project** has allowed the participants to share **the different types of work and methodologies through which to boost the Bonelli's eagle population in Spain** and check their **efficiency**.

**Actions A1 and A2** have made it possible to select the most ideal locations for the reinforcement work (specific conservation actions), on the one hand by identifying those sites with the greatest potential to accommodate the species and on the other by establishing areas of collaboration and partnership with the political and social actors involved in land management.

**Actions C1-C6** have helped to set in motion the conservation work planned for each territory: improvement of the prey species' habitats (Navarre) through maintenance of traditional farming practices (**C1 and C2**); reduction of the causes of mortality through the modification of overhead power lines, adaptation of pools to prevent drowning, prevention of fatal competition with the Golden eagle and improved survival of the species in the early stages of the liberation (**C3**). Correction of the disturbance caused by human activities (climbing, hunting, public use, etc.) has been developed and worked on in actions **A2 and E3** through conversations and agreements with the key actors in the areas of intervention. One of the most relevant actions, reintroduction and population reinforcement (**C4**), has included both breeding in captivity and the rehabilitation of injured individuals for subsequent release. This action has led to the reintroduction of the species in Mallorca (25 individuals) and reinforcement of the population in Madrid (36 individuals), Navarre (23 individuals) and Álava (8 individuals). Monitoring breeding pairs in Andalusia, tracking wild specimens with GPS tags and removing eaglets for later liberation in the release areas (**C5**) and action **C6** have made it possible to produce an accurate census of captive breeding programmes in Europe and the Middle East, and ensure better communication and sharing of experiences and resources. As a result, a complete inventory of potential captive parents has been obtained and a methodology for the captive breeding of the species has been designed.

**LIFE BONELLI** has developed specific tasks to **assess the impact of the project** in different areas: in addition to monitoring all the individuals released since the start of the project on a daily basis (**action D1**), efforts have also been made to monitor the prey species (**D2**) and the impact the project has had in both economic terms and regarding ecosystem services has been assessed (**action D3**).

In general, the initial results of monitoring the individuals released have been very positive. It will be necessary to monitor on a more continuous basis and over a longer period in order to arrive at more specific conclusions and assess the effectiveness of the measures implemented in the project, so this will be one of the main tasks of the After-LIFE Plan.

**LIFE BONELLI** has also carried out **specific dissemination, communication and awareness-raising work** (actions **E**), developing its own tools; such as the project **website** and its **social profiles** ([www.lifebonelli.eu](http://www.lifebonelli.eu)), a **general leaflet** on the project, **information panels** at the action sites, **e-newsletters**, etc., and organising specific activities to reach different target audiences (political actors, technical personnel, productive and social sectors in the different territories, etc.). All this work has been necessary **to improve the social perception of the species**, especially in the local areas of the different autonomous communities in which work has been performed.

The **E** actions have also included **specific undertakings for the technical dissemination of the project results**. In addition to the aforementioned channels (website, newsletters, leaflet), articles have been published in **technical-scientific journals**, some **18 presentations** have been made at Spanish and international seminars and conferences and, to complete the project, **LIFE BONELLI organised an End-of-Project Seminar** in September 2017 with the participation of speakers and benchmark experiences in Europe with which contact has been maintained during the project (**F2**).

Also in the line of technical dissemination, as a result of the evaluation of the work carried out and the

methodologies used, and analysis of the results of the project interventions as a whole, the "**Proceedings and Conclusions of the Final Seminar**" (action E3), which will serve as technical informational material when the project has been completed, have been published.

## CURRENT SITUATION AND CONSERVATION PRIORITIES

### CURRENT SITUATION OF THE BONELLI'S EAGLE IN THE SPATIAL SPHERE OF ACTION

The Natura 2000 network areas (SCIs, SACs and SPAs) in which the LIFE BONELLI conservation actions have been carried out are listed in the following table:

BALEARIC ISLANDS	MADRID	BASQUE COUNTRY	NAVARRRE
<ul style="list-style-type: none"> <li>• SPA Costa Brava, Mallorca (ES0000073)</li> <li>• SPA Mountains of Artà (ES22000027)</li> <li>• SPA From Teix to Puig de ses Fites (ES0000440)</li> <li>• SPA From Alfabia to Biniarroi (ES0000441)</li> <li>• SCI Puig de la Bauça (ES5310079)</li> <li>• SPA Cinals de la Serra (ES5310027)</li> <li>• SPA From Serra de l'Esperó to Penyal Alt (ES0000442)</li> <li>• SCI Es Galatzó-s'Esclop (ES5310008)</li> <li>• SCI Na Borges (ES5310029)</li> <li>• SCI From Cala de Ses Ortigues to Cala Estellencs (ES5310078)</li> <li>• SCI Randa (ES5310101)</li> <li>• SCI Mountains of Pollença (ES5310092)</li> </ul>	<ul style="list-style-type: none"> <li>• SPA Holm oak woods of the Rivers Alberche and Cofio (ES0000056)</li> <li>• SPA Cliffs and Ledges of the Rivers Manzanares and Jarama (ES0000142)</li> </ul>	<ul style="list-style-type: none"> <li>• SPA and SAC Southern Sierras of Álava (ES0000246)</li> <li>• SPA and SAC Valderejo-Sierra de Arcena (ES0000245)</li> </ul>	<ul style="list-style-type: none"> <li>• SPA Arbaiun-Leire (ES0000482) and SAC Sierra de Leire and Gorge of Arbaiun (ES00000125)</li> <li>• SPA Caparreta (ES0000151)</li> <li>• SPA Peña de Etxauri (ES0000150)</li> <li>• SAC Middle stretch of the River Aragón (ES22000030)</li> </ul>

The preparatory work for the evaluation of the potential of the Natura 2000 sites and the selection of the release sites in the different autonomous communities proved fundamental when it came to implementing the LIFE BONELLI conservation measures. These preparatory actions, together with the collaboration and partnership actions with local authorities, landowners, livestock farmers, hunters and climbers led to:

**An increase in the surface area of the habitats of the Bonelli's eagle's prey species and improvement in their conservation status** in Navarre:

Location	Intervention surface area (ha)	Surface area cleared of scrub (ha)	Method	Year
Lumbier/Irunberri	95	9.4	Scrub cleared to create and recover landscape mosaic	2015
Gallipienzo/Galipentzu	40	10.15	Scrub cleared to create and recover landscape mosaic	2015
Vidaurreta/Bidaurreta*	60	14	Scrub cleared to create and recover landscape mosaic	2015/2016

\*Funded through Obra Social La Caixa, this intervention was not included in the Project.

The scrub clearing work has favoured, among others, the secondary grassland habitat with *Bromus erectus* and *Brachypodium retusum* included in European natural habitat 6210 (priority habitat when the presence of orchids is significant).

Scrub clearing and the creation of clearings has led to an improvement of habitats which has not only benefited the prey species of the Bonelli's eagle, but has also meant an improvement for other species (invertebrates, mammals and, especially, birds), many of which are listed at regional, state and/or European level. The increase in the mosaic formed by varying degrees of grassland and scrub is also the typical habitat of the red-backed shrike (*Lanius collurio*), the ortolan bunting (*Emberiza hortulana*), the tawny pipit (*Anthus campestris*), the woodlark (*Lullula arborea*) and several species of corvids, all of which are also potential prey for the Bonelli's eagle.

**Maintenance and recovery of the Bonelli's eagle's prey species:** the work performed is closely related to the previous action. It has been carried out in both Álava and Navarre, and has consisted of: the construction, maintenance and monitoring of pigeon lofts, sowing and the construction of a supplementary feeding point (rabbit enclosure).

CONSTRUCTION, MAINTENANCE AND MONITORING OF PIGEON LOFTS					
Location	Characteristics	Year	No. of individuals	Progress	Maintenance
NAVARRRE Gallipienzo/Galipentzu	Autoclave-treated wooden structure measuring 3x6 m. Includes perches, nest boxes, feeders and drinkers.	2014 and 2017	Initial batch: 100 rock pigeons from Castile-León. Second batch: the population was replenished with 104 individuals after a predator got in.	The initial batch has stabilised at approximately 40 individuals with an average monthly replenishment of 18-20 individuals. The second batch, housed in 2017, is in the process of stabilisation.	Since it was first housed, the population has been monitored on a monthly basis to supply it with food and water, and to ring and register new nestlings.
ÁLAVA	Autoclave-treated wooden structure measuring 4x4 m. with a maximum height of 5 m. Includes perches, nest boxes, feeders and drinkers	2016-2017	13 pairs from Antoñana were housed.	The pairs housed produced 11 eggs in the first lay. In June 2017, there were around 50 pigeons inside the loft and so it was decided that it should be opened. There are currently 29 individuals and 9 eggs.	Maintenance is carried out by the Provincial Council of Álava in collaboration with the population of Antoñana

SOWING				
Location	Surface area sowed (ha)	Species	Method	Year
Gallipienzo/Galipentzu	7.12 (50 kg/ha)	50% sainfoin 45% barley 5% pea	Ploughing, sowing and rolling	Autumn 2015
Gallipienzo/Galipentzu	3.5	100% sunflower	Harrowing and sowing	Spring 2016

Collaboration with local entities and hunters has meant, in the case of Gallipienzo, improvements to habitats to maintain and recover the prey species over a larger area.

Although these areas are not in Natura 2000, they are very often frequented by several species of raptors, including the Bonelli's eagle.

CONSTRUCTION OF A SUPPLEMENTARY FEEDING POINT (RABBIT ENCLOSURE)				
Location	Characteristics	Year	No. of individuals	Maintenance
Lumbier/Irunberri	Enclosed area measuring 15 x 15 m. with treated wooden posts and rabbit wire, including shelters, feeders, drinkers and perches.	2016	At least 20 a month	Supply of food and water on a weekly basis planned

In Mallorca, indirectly and as a result of a LIFE Bonelli dissemination and good practices action with hunters, several rabbit breeding and high density points consisting of artificial warrens protected by security fencing have been set up by hunters on the island to restock the rabbit population on different properties in a controlled fashion. This favours both hunters and the predators which depend on them.

**Reduction of disturbance and the causes of mortality in Álava, Madrid, Mallorca and Navarre.** The following actions have been carried out:

Location	Type of modification	Description	Year
MALLORCA	Modification of overhead lines	263 pylons modified	2013-2017
MADRID	Modification of overhead lines	206 pylons modified	
ÁLAVA	Modification of overhead lines and anti-collision devices	8 pylons and four spans (0.8 km) modified	2015 and 2017
MALLORCA, MADRID , ÁLAVA AND NAVARRE	Discussions with key actors (hunters, climbers) in the areas of action to reduce disturbance		2013-2017
NAVARRA, MADRID AND MALLORCA	Various measures to reduce mortality in the early stages of release	See Action C4 of the final report of the LIFE project	2014-2017
NAVARRA AND MALLORCA	Floating platforms fitted in pools		2015-2016

**Regarding the reintroduction of individuals:** the individuals reintroduced at the different sites during the Project have either been bred in captivity or consisted of recovered individuals or eaglets extracted from nests. This last action, carried out in Andalusia, has included the monitoring of nests, the selection of the nests from which to extract the eaglets and, finally, their removal.

Captive breeding has been carried out at three breeding centres (GREFA in Madrid and UFSC and LPO in France), with the following results:

CAPTIVE BREEDING							
Year	Centre	Pairs formed/with lay	Eggs	Infertile	Aborted	Hatched	Released
2014	UFCS-Vendée	4/4	-	-	-	4	0
	UFCS-Ardeche	2/2	-	-	-	1	0
	GREFA	12/3	8	4	0	4	4
2015	UFCS-Vendée	4/4	14	4	0	*10	9
	UFCS-Ardeche	2/2	9	5	2	2	**2
	GREFA	14/5	12	8	0	4	***4
2016	UFCS-Vendée	4/4	14	0	0	****14	11
	UFCS-Ardeche	2/2	4	0	3	*****1	0
	GREFA	16/6	18	13	2	3	3
2017	UFCS-Vendée	4/4	15	3	1	11	11
	UFCS-Ardeche	2/2	4	3	0	1	1
	GREFA	16/6	14	10	1	3	3

\*the individual 15/1380 (Vimy) could not be released due to abnormal behaviour.

\*\*the individual 15/0590 (Albali) was recaptured after release due to flight defects.

\*\*\*the individual 15/0414 (Babil) was recaptured due to sight problems.

\*\*\*\*Two individuals died prior to relocation and one individual was irrecoverable due to abnormal behaviour.

\*\*\*\*\*The individual died prior to relocation.

CAPTIVE BREEDING 2014-2017					
Centre	Eggs	Infertile	Aborted	Hatched	Released
UFCS-Vendée	54	12	4	39	31
%			0.09	0.91	
UFCS-Ardeche	26	13	8	5	4
%			0.61	0.39	
GREFA	52	35	3	14	13
%			0.18	0.82	
<b>TOTAL</b>	<b>132</b>	<b>60</b>	<b>15</b>	<b>58</b>	<b>48</b>
%			0.21	0.79	

58 individuals have been obtained from the captive breeding programmes at the French centres (UFCS/LPO) and the GREFA centre over the four breeding seasons since the LIFE Bonelli project started, of which it has been possible to release 48. The other 10 either died before they were taken to the release points or were declared irrecoverable as a result of different problems adapting to the environment.

Additionally, the Wildlife Recovery Centre of Andalusia and the GREFA Recovery Centre, in collaboration with other Spanish centres (Autonomous Community Ministries of the Environment, Local Administration and Land Management of the Regional Governments of Andalusia, the Valencian Community, Catalonia and Castile-la Mancha), have managed to recover the injured birds listed in the following table:

RECOVERY OF INJURED INDIVIDUALS										
Name	Sex	YOB	Date admitted at origin	Origin	Transfer date	REC.	PVC	Release date	Destination	Method
Dodiel	M	2012	01/07/2012	CREA-CEGMA Marismas del Odiel (Huelva)	14/11/2013	13/3400	B[55W]	08/01/2014	Mallorca	Acclimatisation
Dílar	F	2013	12/08/2013	CREA El Blanqueo (Granada)	23/04/2014	14/0446	B[5AN]	19/11/2014	Mallorca	Acclimatisation
Daimiel	F	2013	01/10/2013	CRF El Chaparrillo (Ciudad Real)	09/04/2014	14/0273	B[5A7]	06/10/2014	Mallorca	Acclimatisation
Estepa	F	2014	29/06/2014	CREA El Blanqueo (Granada)	23/09/2014	14/3812	B[5AJ]	27/01/2015	Mallorca	Acclimatisation
Frax	M	2013	18/09/2015	CREA San Jerónimo (Sevilla)	18/02/2016	16/0099	R[000]	01/03/2016	Mallorca	Acclimatisation
Alacant	M	2016	10/07/2016	CRF El Saler (Valencia)	29/07/2016	16/4715	NG[300]	22/08/2016	Madrid	Acclimatisation
Gandía	F	2017	11/10/2016	CRF El Saler (Valencia)	27/03/2017	17/0302	R[016]	4/5/2017	Mallorca	Acclimatisation
Grazalema	F	2017	11/05/2017	Nido de Órgiva (Granada)	Removed from nest at GREFA	17/0896	R[029]	24/10/2017	Mallorca	Acclimatisation

Table summarising **individuals rehabilitated** at the GREFA Centre.

Eaglets have mainly been removed from nests in Andalusia. Four eaglets fatally affected by trichomonas or physical problems have also been rescued from nests in Albacete (2 individuals introduced in Navarre in 2014), Girona and Tarragona (individuals released in Mallorca in 2016). The eaglets removed from nests in Andalusia are listed here:

REMOVAL OF EAGLETS FROM NESTS IN ANDALUSIAN TERRITORIES					
PROVINCE	Territories monitored	Territories held	Breeding pairs	Eaglets flying the nest	Eaglets removed
<b>Year 2014</b>					
Almería	18	15	14	21	2
Granada	11	10	8	12	1
Jaén	16	12	7	13	2
Málaga	24	19	13	19	1
<b>Total</b>	<b>69</b>	<b>56</b>	<b>42</b>	<b>65</b>	<b>6</b>
<b>2015</b>					
Almería	18	15	14	24	3
Granada	14	13	12	19	2
Jaén	21	15	10	15	2
Málaga	39	33	19	28	3
<b>Total</b>	<b>92</b>	<b>76</b>	<b>55</b>	<b>86</b>	<b>10</b>
<b>2016</b>					
Almería	6	6	6	8	1
Granada	17	16	11	20	3

REMOVAL OF EAGLETS FROM NESTS IN ANDALUSIAN TERRITORIES					
PROVINCE	Territories monitored	Territories held	Breeding pairs	Eaglets flying the nest	Eaglets removed
Jaén	15	12	9	16	2
Málaga	24	22	14	18	2
<b>Total</b>	<b>62</b>	<b>56</b>	<b>40</b>	<b>62</b>	<b>8</b>
<b>2017</b>					
Almería	11	10	9	13	0
Granada	20	16	13	23	5
Jaén	17	14	7	11	2
Málaga	43	39	18	27	1
<b>Total</b>	<b>91</b>	<b>79</b>	<b>47</b>	<b>74</b>	<b>8</b>
<b>TOTAL 2014-2017</b>					<b>32</b>

Table summarising eaglets removed from nests in Andalusia.

The individuals from captive breeding, recovery or removal from nests have been reintroduced in Madrid, Navarre, the Basque Country and Mallorca:

**25** birds have been **REINTRODUCED** on the Island of Mallorca by means of acclimatisation enclosures (sub-adults and adults) and hacking (fledglings):

REINTRODUCTION OF THE BONELLI'S EAGLE IN MALLORCA								
Name	Sex	YOB	Provenance	Origin	Record	PVC	Release date	Method
Dodiel	M	2012	Andalusia	CREA-CEGMA Marismas del Odiel	13/3400	B[55W]	08/01/2014	Acclimatisation
Dalía	F	2014	Andalusia	Nest	14/0410	B[56C]	29/04/2014	Hacking
Dana	F	2014	Andalusia	Nest	14/0411	B[569]	29/04/2014	Hacking
Darwin	M	2014	Captivity	GREFA	14/0106	B[55A]	29/04/2014	Hacking
Dante	M	2014	Captivity	GREFA	14/0105	B[557]	29/04/2014	Hacking
Daimiel	F	2013	Castile-LM	CRF El Chaparrillo	14/0273	B[5A7]	30/09/2014	Acclimatisation
Dílar	F	2013	Andalusia	CREA El Blanqueo	14/0446	B[5AN]	19/11/2014	Acclimatisation
Estepa	F	2014	Andalusia	CREA El Blanqueo	14/3812	B[5AJ]	27/01/2015	Acclimatisation
Enix	F	2015	Andalusia	Nest	15/0467	B[5F0]	24/04/2015	Hacking
Estepona	F	2015	Andalusia	Nest	15/0442	B[5F4]	24/04/2015	Hacking
Escorial	M	2015	Captivity	GREFA	15/0157	B[5F1]	24/04/2015	Hacking
Elmo	M	2015	Captivity	GREFA	15/0156	B[5F3]	24/04/2015	Hacking
Estero	M	2015	Andalusia	Nest	15/0446	R[001]	27/05/2015	Hacking
Era	M	2015	Andalusia	Nest	15/1108	R[003]	03/06/2015	Hacking
Frax	M	2013	Andalusia	CREA San Jerónimo	16/0099	R[000]	01/03/2016	Acclimatisation
France	M	2016	Captivity	UFCS-Vendée	16/0478	R[009]	27/04/2016	Hacking
Freila	F	2016	Andalusia	Nest	16/0482	R[005]	27/04/2016	Hacking
Finistérre	M	2016	Captivity	UFCS-Vendée	16/0479	R[006]	27/04/2016	Hacking
Fresnedilla	F	2016	Captivity	GREFA	16/0179	R[008]	27/04/2016	Hacking
Faín	F	2016	Andalusia	Nest	16/0480	R[004]	27/04/2016	Hacking
Fuenfría	F	2016	Captivity	GREFA	16/0180	R[007]	27/04/2016	Hacking

REINTRODUCTION OF THE BONELLI'S EAGLE IN MALLORCA								
Name	Sex	YOB	Provenance	Origin	Record	PVC	Release date	Method
Fluvià	M	2016	Catalonia	CRFS Torreferrusa	16/2446	R[014]	17/06/2016	Acclimatisation
Figueres	M	2016	Catalonia	CRFS Torreferrusa	16/2447	R[015]	17/06/2016	Acclimatisation
Thorens	M	2016	Captivity	UFCS-Vendée	16/2888	V[152]	04/04/2017	Acclimatisation
Gandía	F	2016	Valencia	CRFS El Saler	17/0302	R[016]	04/05/2017	Acclimatisation

All of them except Fluvià and Figueres were equipped with GPS and VHF (land) transmitters at GREFA by a technical specialist from the Ministry of the Environment, and taken from there to the island of Mallorca.

Monitoring of individuals introduced to Mallorca, both within the framework of LIFE BONELLI and in previous projects, has shown that the species survives well on the island and a small breeding population has been established. A milestone was marked in 2014 when the first territorial pair to settle there managed to have a chick. From then until 2017, a total of 10 eaglets born in the wild in 4 different territories have flown the nest and a total of 6 pairs showing territorial behaviour have been recorded.

The populations have been **REINFORCED** in Madrid, Navarre and Alava by means of hacking, with the following results:

- **Madrid:** a total of **36 individuals**, all young birds from captive breeding at the French and GREFA centres, and removed from nests in Andalusia, except Alacant (juvenile male from the El Saler Wildlife Recovery Centre, Valencia), have been released.

POPULATION REINFORCEMENT IN MADRID								
Name	Sex	YOB.	Provenance	Place of origin	Record	PVC	Release date	Method
Sua	F	2014	Andalusia	Nest	14/0735	B[5A4]	30/05/2014	Hacking
Rómulo	M	2014	Captivity	GREFA	14/0320	B[5A6]	04/06/2014	Hacking
Haza	F	2014	Andalusia	Nest	14/0976	B[559]	04/06/2014	Hacking
Remo	M	2014	Captivity	GREFA	14/0344	B[55C]	04/06/2014	Hacking
Zahara	M	2014	Captivity	UFCS-Ardeche	14/1615	B[5AA]	18/06/2014	Hacking
Játar	M	2014	Andalusia	Nest	14/1098	B[55U]	18/06/2014	Hacking
Argonne	F	2015	Captivity	UFCS-Vendée	15/0340	V[100]	04/05/2015	Hacking
Verdun	F	2015	Captivity	UFCS-Vendée	15/0339	V[101]	04/05/2015	Hacking
Polopos	M	2015	Andalusia	Nest	15/0440	V[103]	04/05/2015	Hacking
Álora	F	2015	Andalusia	Nest	15/0450	V[102]	04/05/2015	Hacking
Coín	M	2015	Andalusia	Nest	15/0447	V[104]	04/05/2015	Hacking
Turón	M	2015	Andalusia	Nest	15/0444	V[105]	08/05/2015	Hacking
Bélmez	M	2015	Andalusia	Nest	15/1113	B[5FL]	08/06/2015	Hacking
Yser	F	2015	Captivity	UFCS-Vendée	15/1379	V[137]	08/06/2015	Hacking
Albalí <sup>(1)</sup>	M	2015	Captivity	UFCS-Ardeche	15/0590	V[107]	08/06/2015	Hacking
Bedmar	M	2015	Andalusia	Nest	15/1112	B[5FJ]	13/06/2015	Hacking
Flandres	F	2015	Captivity	UFCS-Vendée	15/1382	V[106]	24/06/2015	Hacking
Marne	F	2015	Captivity	UFCS-Vendée	15/1383	V[108]	24/06/2015	Hacking
Adra	M	2016	Andalusia	Nest	16/0698	V[156]	07/05/2016	Hacking
Arenas	F	2016	Andalusia	Nest	16/0697	V[155]	14/05/2016	Hacking

Ojén	M	2016	Andalusia	Nest	16/0704	V[147]	14/05/2016	Hacking
Javie	M	2016	Captivity	UFCS-Vendée	16/0613	V[110]	14/05/2016	Hacking
Lans	F	2016	Captivity	UFCS-Vendée	16/0443	V[109]	14/05/2016	Hacking
Alcalá	M	2016	Andalusia	Nest	16/0923	V[159]	18/05/2016	Hacking
Alacant	M	2016	Valencian C.	CRF El Saler	16/4715	NG[300]	15/08/2016	Acclimatisation
Thorens <sup>(2)</sup>	M	2016	Captivity	UFCS-Vendée	16/2888	V[152]	15/08/2016	Acclimatisation
Alcaudete	M	2017	Andalusia	Nest	17/0537	V[157]	25/04/2017	Hacking
Machota	F	2017	Captivity	GREFA	17/0286	V[163]	29/04/2017	Hacking
Alameda	F	2017	Captivity	GREFA	17/0285	V[170]	29/04/2017	Hacking
Aldáyar	M	2017	Andalusia	Nest	17/0532	V[180]	14/05/2017	Hacking
Touvent	M	2017	Captivity	UFCS-Vendée	17/0657	V[171]	14/05/2017	Hacking
Blue	M	2017	Captivity	UFCS-Ardeche	17/0719	V[173]	14/05/2017	Hacking
Colomera	F	2017	Andalusia	Nest	17/0714	V[172]	14/05/2017	Hacking
Noalejo	M	2017	Andalusia	Nest	17/1061	V[153]	23/05/2017	Hacking
Ortegicar	F	2017	Andalusia	Nest	17/1426	V[174]	28/05/2017	Hacking
Vega	F	2017	Andalusia	Nest	17/1651	V[167]	03/06/2017	Hacking

(1) Albalí had to be recaptured in the first few days after release due to imprinting problems.

(2) Thorens was recaptured.

- **23 individuals have been released in Navarre during the Life Bonelli period.**

POPULATION REINFORCEMENT IN NAVARRE								
Name	Sex	YOB.	Provenance	Place of origin	Record	PVC	Release date	Method
Iñar	M	2014	Castile-LM	Nest	14/0547	B[55H]	13/05/2014	Hacking
Txara	F	2014	Castile-LM	Nest	14/0546	B[55L]	13/05/2014	Hacking
Filabres	F	2014	Andalusia	Nest	14/0605	AM[5A0]	13/05/2014	Hacking
Sielva	M	2015	Captivity	GREFA	15/0415	V[131]	27/05/2015	Hacking
Babil <sup>(1)</sup>	M	2015	Captivity	GREFA	15/0414	V[134]	27/05/2015	Hacking
Artois	M	2015	Captivity	UFCS-Vendée	15/0734	V[133]	27/05/2015	Hacking
Craonne	M	2015	Captivity	UFCS-Vendée	15/0733	V[135]	01/06/2015	Hacking
Ardenne	M	2015	Captivity	UFCS-Vendée	15/0732	V[136]	01/06/2015	Hacking
Vercors	M	2016	Captivity	UFCS-Vendée	16/0614	V[149]	18/05/2016	Hacking
Arrangoiti	F	2016	Captivity	UFCS-Vendée	16/0615	V[151]	18/05/2016	Hacking
Júpiter	M	2016	Andalusia	Nest	16/0700	V[148]	18/05/2016	Hacking
Archianne	M	2016	Captivity	UFCS-Vendée	16/0442	V[150]	18/05/2016	Hacking
Rapacero	M	2016	Andalusia	Nest	16/0703	V[158]	18/05/2016	Hacking
Irumberri	M	2016	Captivity	UFCS-Vendée	16/1193	V[168]	17/06/2016	Hacking
Ibarra	F	2016	Captivity	UFCS-Vendée	16/1191	V[169]	17/06/2016	Hacking
Gayán	M	2017	Captivity	UFCS-Vendée	17/0659	V[510]	25/05/2017	Hacking
Uñesa	M	2017	Captivity	UFCS-Vendée	17/1158	V[509]	25/05/2017	Hacking
Pastoriza	M	2017	Captivity	UFCS-Vendée	17/1159	V[511]	25/05/2017	Hacking
Azbone	M	2017	Captivity	UFCS-Vendée	17/0658	V[508]	25/05/2017	Hacking
Ugasti	M	2017	Captivity	UFCS-Vendée	17/1160	V[507]	25/05/2017	Hacking
Zangoza	F	2017	Captivity	UFCS-Vendée	17/1161	V[506]	25/05/2017	Hacking
Ongay	M	2017	Captivity	UFCS-Vendée	17/2072	V[513]	25/06/2017	Hacking
Onsella	F	2017	Captivity	UFCS-Vendée	17/2074	V[512]	25/06/2017	Hacking

(1) Babil had to be recaptured in the first few days after release due to sight problems.

- A total of **8 individuals** have been released in **Álava**.

POPULATION REINFORCEMENT IN ÁLAVA								
Name	Sex	YOB.	Provenance	Place of origin	Record	PVC	Release date	Method
Soila	F	2015	Captivity	UFCS-Vendée	15/1381	V[146]	16/06/2015	Hacking
Oteo	M	2015	Captivity	UFCS-Ardeche	15/1606	V[145]	16/06/2015	Hacking
Istora	F	2016	Captivity	GREFA	16/0338	V[185]	27/05/2016	Hacking
Korres	M	2016	Captivity	UFCS-Ardeche	16/1192	V[186]	27/05/2016	Hacking
Gaube	M	2017	Captivity	UFCS-Vendée	17/2075	VD(188)	28/06/2017	Hacking
Mati	M	2017	Captivity	UFCS-Vendée	17/2073	VD(189)	28/06/2017	Hacking
Iber	F	2017	Captivity	GREFA	17/0610	VD(187)	05/06/2017	Hacking
Huntza	F	2017	Nest	Andalusia	17/1427	VD(181)	05/06/2017	Hacking

In summary, **92 Bonelli's eagles** have been released during the project:

YEAR	METHOD	ORIGIN	MALLORCA	MADRID	NAVARRRE	ÁLAVA	TOTAL
2014	hacking	Breeding	2	3			5
		Removal	2	3	1		6
		Rescue*			2		2
	Acclimatisation	Rehabilitation	3				3
total			7	6	3	0	16
2015	hacking	Breeding	2	6	5	2	15
		Removal	2	3			5
		Rescue**	2	3			5
	Acclimatisation	Rehabilitation	1				1
total			7	12	5	2	26
2016	hacking	Breeding	4	2	5	2	13
		Removal	2	4	1		7
		Rescue**			1		1
	Acclimatisation	Breeding		1			1
		Rescue***	2				2
		Rehabilitation	1	1			2
total			9	8	7	2	26
2017	hacking	Breeding		4	8	3	15
		Removal		6		1	7
		Rescue					1
	Acclimatisation	Breeding					
		Rescue					
Rehabilitation	2					2	
total			2	10	8	4	24
<b>TOTAL</b>			<b>25</b>	<b>36</b>	<b>23</b>	<b>8</b>	<b>92</b>

(\*) Individuals with serious lesions caused by trichomonas rescued from a nest in Albacete and transferred by the Regional Government of Castile-La Mancha.

(\*\*) Individuals with serious lesions caused by trichomonas rescued from a nest in Andalusia.

(\*\*\*) Individuals with various physical problems rescued from nests in Girona and Tarragona by the Regional Government of Catalonia.

**Regarding the monitoring of the Bonelli's eagle:** this LIFE project has worked a great deal to monitor the species within its spatial scope of action. This work has focused on the individuals released, the breeding pairs, sub-populations in the release areas and eaglets hatched in the wild. The results have been:

- Wild pairs have been monitored in the **Community of Madrid** over the breeding seasons 2014-17. The existence of two pairs in the community and

two others in neighbouring territories has been confirmed. The total productivity of these four pairs in 2017 consisted of two eaglets hatched and one which flew the nest, and 2 eaglets hatched and 2 flying the nest in 2017.

- The breeding population has been monitored in **Navarre** from 2014 to 2017. The only breeding territory in Navarre is shared with La Rioja. The entire Bonelli's eagle population has been monitored, integrating monitoring of the historical breeding grounds with analysis and definition of the preferred settlement areas of non-territorial Bonelli's eagles in Navarre in the non-breeding period. This monitoring has verified that a pair (from reintroduction in 2015 and 2016) has been established in Lumbier. Although they have not reproduced, they have begun to build a nest. The risks and threats to which the species is exposed in these areas have also been identified. A strategy and intervention protocol to attract and secure non-territorial individuals in Navarre has also been defined.
- The breeding population has been monitored in **Alava** from 2014 to 2017. An eaglet hatched in 2016 in the Álava territory, shared with Burgos, as a result of the arrival of a female released in Navarre in 2014 in the area, previously commanded by a single male.

This action has also included plans to tag wild individuals in Andalusia, Madrid and the central region with GPS transmitters to find out more about demographic relationships between populations in the Iberian metapopulation. Nestlings and wild adults captured have been equipped with GPS transmitters.

- To date, 12 wild individuals tagged in Madrid and neighbouring provinces -3 individuals in 2014, 5 individuals in 2015, 2 individuals in 2016 and 2 individuals in 2017- have been monitored, 9 nestlings and 3 adults. 13 nestlings have been equipped with GPS transmitters: 4 individuals in 2015, 5 in 2016 and 4 in 2017.
- Although not initially planned, 11 eaglets born of the pairs created among the individuals released in the project have also been tagged due to the success of the action.

In addition to the wild individuals tagged, the BONELLI project has permitted daily GPS monitoring of the individuals reintroduced, a total of 92. This has allowed us to calculate and analyse survival rates, causes of mortality, phenology, use of space during juvenile dispersion, philopatry rates, etc. For more information, see the article on *Use of space in the Bonelli's eagle (*Aquila fasciata*): Survival, Dispersion and Settlement during the Life Bonelli Project*. Included in the proceedings of the final seminar (final technical LIFE Bonelli publication).

The species' main juvenile settlement areas on the Peninsula (areas of Toledo, Cadiz, Ciudad Real, upper Ebro Valley, Almeria and the boundary between Zamora and Valladolid) and the Balearic Islands have been defined.

The recovery of the locally extinct population on the island of Mallorca has been registered and territories have been recovered and new breeding pairs have been formed on the peninsula:

	TERRITORIOS FORMADOS	TERRITORIOS ACTIVOS	TERRITORIOS PRODUCTORES	POLLOS NACIDOS
ÁLAVA	1			
MALLORCA	7	6	4	11
MADRID	2	2		
NAVARRA	1	1		
BURGOS	1		1	2
CASTILLA-LA MANCHA	3	3		
<b>TOTAL</b>	<b>15</b>	<b>12</b>	<b>5</b>	<b>13</b>

**Regarding the Bonelli's eagle in Spain**, it can also be considered that progress has been made in:

- Common criteria for the classification, characterisation and assessment of the territories required to identify and implement properly the management measures which need to be applied.
- After the project, it has been possible to test the efficiency of different types of work and methodologies to breed the Bonelli's eagle in captivity, new release techniques to boost its population in Spain, and the techniques and tools used to monitor the individuals tagged (Geospatial Database).
- Handling and management systems tested. For different problems, pressures and conservation statuses of the Bonelli's eagle's territories. Worthy of note are the criteria and methodologies for the identification and modification of overhead power lines and adaptation of pylons, and techniques for the elimination of other causes of death.
- Interaction and collaboration with local actors, whose activity is linked to these territories (livestock management, hunting, crop farming, climbing).
- Interaction and collaboration with private agents, especially electricity companies and the establishment of agreements for the modification of overhead power lines.
- Appreciation of the species, especially on the part of the local population and institutions with powers in the area of land management.

## CONDITIONING FACTORS OF THE AFTER-LIFE PLAN

- Most of the sites are in Natura 2000 network spaces (they SCIs or SACs, and SPAs).
- A lot of the Natura 2000 network spaces have approved management plans, meaning that protection of the species and its habitats is legally backed. In the case of Navarre, these documents include specific recommendations and regulations aimed at the recovery of the Bonelli's eagle and its habitats. Also in Madrid, these documents contain measures for the recovery of the species in these protected areas. Foral Order 612/2001, of 28 September, approving the Management Plan for the bird "Bonelli eagle's" (*Aquila fasciata*) in Álava, is applicable in the entire province and particularly in the potential areas of distribution in the Special Protection Areas (SPAs) of Sierra Salvada (ES0000244), Valderejo-Sierra de Arcena (ES0000245) and the Southern Sierras

of Álava (ES0000246). In Mallorca, the Viability Plan of the recently settled population establishes management guidelines for its conservation.

- Support of the public authorities with competences in the management of the Natura 2000 network: public officials, rangers. Also support from other institutions such as public enterprises and research centres.
- Budgetary availability for the reintroduction of specimens and monitoring of the individuals introduced.
- The existence in Navarre of regional government aid and other investments related to the Natura 2000 network is worthy of note. These cover, among other things, the modification of overhead power lines, habitat improvement in hunting reserves, forestry work in the Natura 2000 network to manage scrub and create grassland.
- Up-to-date information available about the species.
- The establishment of common identification, characterisation and management criteria leads to better management of the species and better resources for its promotion.
- Existence of collaboration experiences with electricity distribution companies for the modification of overhead power lines. In Mallorca, the criteria for the modification of power lines have improved significantly thanks to positive collaboration between LIFE BONELLI and ENDESA, and work has been carried out on good terms with the company's technicians and executives in the Balearic Islands to modify hazardous pylons. Provincial Council technicians met up with technical staff from IBERDROLA in Álava in 2015 to analyse the modifications proposed pylon by pylon, how they should be carried out and what kind of material should be used in order to make them more effective.
- The first steps have been taken towards the implementation of agreements and joint or shared responsibility experiences for the conservation of the species (collaboration agreements, land stewardship, etc.). The agreements entered into by the Village Council of Gallipienzo and the Navarrese Hunters' Associations are a case in point.
- Negative impacts caused by sports-recreational structures and activities on cliffs and in their vicinity have been identified (and in some cases corrected).
- Resolutions for the regulation of leisure and sporting activities on cliffs with environmental values have been produced.
- Awareness about the importance of conserving the Bonelli's eagle has been raised among the local population and the authorities involved in land management.

## INDICATORS OF LONG-TERM PROGRESS AND MEASUREMENT UNITS

The following list of indicators will allow the After-Life Plan to assess the progress made in the field of conservation.

### Population assessment indicators

- Number of breeding pairs in captivity and number of eaglets bred at the project centres
- Number of specimens of the Bonelli's eagle reintroduced
- Number of specimens of the Bonelli's eagle setting up territory
- Number of pairs of the Bonelli's eagle setting up territory
- Number of pairs of the Bonelli's eagle formed
- Number of chicks born of pairs formed by reintroduced individuals
- Survival rates by age

### Risk assessment indicators

- Number of pylons modified
- Kilometres of overhead power lines modified
- No. of deaths due to anthropogenic causes (electrocution, collision, shooting and drowning)
- Impact of livestock farming: positive/negative; controlled/uncontrolled
- Impact of recreational and sporting activities: controlled/uncontrolled
- Non-natural mortality rates and causes

### Habitat assessment indicators:

- Prey species abundance indices (pigeon, rabbit, partridge, corvids, etc.)
- Biodiversity: vegetation structure: favourable/unfavourable
- Biodiversity: surface area of habitats of Community interest and species habitats created or improved

### Social impact assessment indicators:

- Land ownership: ha of public and private property
- Joint responsibility agreements on conservation of the species: land stewardship, collaboration, etc.
- Social appreciation of the sites/habitats: No. of people taking part in management and communication actions
- Number of entities in the support network

**SWOT ANALYSIS**

WEAKNESSES	THREATS
<ul style="list-style-type: none"> <li>• Need to continue updating the information on the presence and distribution of the species.</li> <li>• 4 years are not enough to restore the population of an apex predator species like the Bonelli's eagle.</li> <li>• The Bonelli eagle's is particularly vulnerable to electrocution due to its perching habits and size.</li> </ul>	<ul style="list-style-type: none"> <li>• Budgetary cuts in the amounts allocated to conservation work within public administrations.</li> <li>• The need for the "long-term" to verify results in actions with endangered species.</li> <li>• Existence of uncontrollable variables.</li> <li>• Vast number of overhead power lines that need to be modified in the species' distribution area.</li> <li>• Persistence of the species' negative image in the rural environment.</li> </ul>
STRENGTHS	OPPORTUNITIES
<ul style="list-style-type: none"> <li>• Criteria and methodologies tested.</li> <li>• Extensive knowledge of the species and its situation in the LIFE project area.</li> <li>• Action based on consensus throughout the territory.</li> <li>• Team with great technical capacity and experience which can transfer its knowledge to other new sites where the species needs to be strengthened (Sardinia, Aragón, Galicia, etc.).</li> <li>• Team-consortium with its own and external resources to ensure the continuity of work to conserve the species.</li> <li>• Bonelli's eagle support network already established.</li> </ul>	<ul style="list-style-type: none"> <li>• LIFE funding.</li> <li>• Other sources of funding available.</li> <li>• Local entities and the general public willing to collaborate and commit.</li> <li>• Electrical companies' interest in collaborating.</li> <li>• Good relations between the team, entities and key actors in land management: hunters' associations, ornithological societies, administration, etc.</li> </ul>

## AQUILA a-LIFE AND ITS RELATIONSHIP WITH THE BONELLI AFTER-LIFE PLAN

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A new LIFE Project (AQUILA a-LIFE16 NAT/ES/000235) has been in progress since October 2017 to help extend the presence of the species in the western Mediterranean and complement the recovery work included in the BONELLI After-LIFE plan. To achieve this overall objective, the following objectives have been defined for the Aquila a-LIFE Project:

- To increase the number of territorial pairs in areas in which the species has traditionally been present in the centre and north of the Iberian peninsula and on Sardinia.
- To reduce the risk of the Bonelli's eagle and other bird species dying as a result of electrocution in their natural range, both inside and outside protected areas.
- To conduct a thorough assessment of the conservation status of the Mediterranean meta-population of the Bonelli's eagle, evaluating the effectiveness of the measures implemented with regard its recovery and defining the following steps with all the relevant actors.
- To engage hunters and other sectors in the recovery and management of the Bonelli's eagle through joint participation in management to increase acceptance of the species.
- To assess the impact of the reintroduction of an apex predator, such as the Bonelli's eagle, on ecosystem functions on a Mediterranean island.
- To reduce the risk of the Bonelli's eagle and other birds dying by drowning in irrigation pools or livestock ponds, or by colliding with wires in trellised vineyards.
- To increase the competitiveness of the Bonelli's eagle against the Golden eagle in its traditional breeding territories.
- To increase society's respect for Bonelli's eagle in particular and raptors in general.

It should be noted that the end of LIFE BONELLI (30/09/2017) coincides with the start of Aquila a-LIFE (1/10/2017); two projects with the same objective "the recovery of the Bonelli's eagle" and the same territories, Sardinia joining the group in a-Aquila. This lends continuity to certain actions which require a longer period than that of a single LIFE Project, as is the case with the recovery and reintroduction of a species.

Several of the actions undertaken in LIFE BONELLI will be continued in Aquila a-LIFE, so this After-LIFE Plan includes those actions which seek to ensure that the interventions carried out in LIFE BONELLI are followed up and their effectiveness secured, but do not form part of this second LIFE project to recover the Bonelli's eagle.

## BONELLI AFTER-LIFE CONSERVATION PLAN

The BONELLI After-LIFE Plan consists of a set of measures to lend continuity to and advance the work carried out during the project to **recover the Spanish population of the Bonelli's eagle**.

It is based on the experience gained during the project and an evaluation of the work performed and results obtained, which include:

- The definition of common criteria for the classification, characterisation and assessment of the territories required to identify and implement properly the management measures which need to be applied.
- After the project, it has been possible to test the efficiency of different types of work and methodologies to breed the Bonelli's eagle in captivity and boost its population in Spain, and the techniques and tools used to monitor the individuals tagged (Geospatial Database).
- Handling and management systems tested. For different problems, pressures and conservation statuses of the Bonelli's eagle's territories. Worthy of note are the criteria and methodologies for the identification and modification of overhead power lines and adaptation of pylons, and techniques for the elimination of other causes of death.
- The effects of disseminating the results have demonstrated the importance of these activities for the promotion of the work performed and the importance of conserving the species.

The participation of **11 entities** with different competences in the relevant territories is foreseen for the implementation of these interventions.

BALEARIC	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
-Consorci per a la Recuperació de la fauna de les Illes Balears (COFIB, Consortium for the Recovery of the fauna of the Balearic Islands). -Fundación Natura Parc (FNP, Nature Park Foundation) -Govern de las Illes Balears (GIB, Government of the Balearic Islands)	-Consejería de Medio Ambiente y Ordenación del Territorio de la Comunidad de Madrid (CAM, the Community of Madrid's Autonomous Ministry of the Environment and Land Planning) -Grupo de Rehabilitación de la Fauna Autóctona y su hábitat (GREFA, Group for the Rehabilitation of Indigenous Fauna and its Habitat)	- Consejería de Medio Ambiente, Administración Local y Ordenación del Territorio de la Junta de Andalucía (Consejería MAyOT, the Regional Government of Andalusia's Autonomous Ministry of the Environment, Local Administration and Land Planning)	-Diputación Foral de Álava (DFA, Provincial Council of Álava)	-Gobierno de Navarra (GN, Government of Navarra)  -Gestión Ambiental de Navarra (GAN-NIK, Environmental Management of Navarra)	-Ligue pour la Protection des Oiseaux (LPO, Bird Protection League)  - Union Française des Centres de Sauvegarde de la Faune Sauvage (UFCS, French Union of Wildlife Preservation Centres)

## OBJECTIVES

The Plan aims to achieve a number of ultimate and operational objectives.

- The **Ultimate Objectives** refer to the goals to achieve in the long term (beyond the After-LIFE period). They are related to the main problems detected in the conservation of the Bonelli's eagle.
- The **Operational Objectives** refer to the short- and medium-term goals (period: October 2018 to October 2022) which favour accomplishment of the ultimate objectives. Each Measure in the Plan is associated with a specific Operational Objective.

ULTIMATE OBJECTIVES	OPERATIONAL OBJECTIVES
Reduction of disturbance and causes of mortality.	<ul style="list-style-type: none"> <li>• To prevent disturbance and risk of death by electrocution and other causes. To analyse the information generated.</li> <li>• To prevent and reduce threats caused by traditional and new practices (hunting, tourism, etc.).</li> </ul>
Recovery of habitat for the Bonelli's eagle	<ul style="list-style-type: none"> <li>• To continue the work to improve habitats.</li> <li>• To follow up the actions carried out in the Project focusing on the prey species.</li> <li>• To maintain and recover prey populations.</li> <li>• To maintain traditional livestock farming practices.</li> <li>• To survey new sites.</li> </ul>
Population reinforcement	<ul style="list-style-type: none"> <li>• To guarantee the continuity and improvement of captive breeding actions.</li> </ul>
Monitoring of released birds	<ul style="list-style-type: none"> <li>• To ensure the monitoring of the individuals released and setting up territory during the project.</li> </ul>
Guarantee access to the information and promotion of awareness and involvement in the conservation of the Bonelli's eagle.	<ul style="list-style-type: none"> <li>• To ensure access to the information generated in the project and during the After-Life period.</li> <li>• To carry out specific awareness-raising and engagement actions.</li> </ul>
Management of the After-LIFE plan	<ul style="list-style-type: none"> <li>• To ensure coordination in the implementation of the After-LIFE actions through meetings.</li> <li>• To record the work carried out.</li> <li>• To ensure adequate maintenance of the material generated in LIFE BONELLI</li> </ul>

## ACTION SITES

The After-LIFE actions will be carried out at the sites of the LIFE BONELLI Project:

BALEARIC ISLANDS	MADRID	BASQUE COUNTRY	NAVARRRE
<ul style="list-style-type: none"> <li>The entire island of Mallorca</li> </ul>	<ul style="list-style-type: none"> <li>SPA Holm oak woods of the Rivers Alberche and Cofio (ES0000056)</li> <li>SPA Cliffs and Ledges of the Rivers Manzanares and Jarama (ES0000142)</li> </ul>	<ul style="list-style-type: none"> <li>SPA Southern Sierras of Álava (ES0000246)</li> <li>SPA Valderejo-Sierra de Arcena (ES0000245)</li> </ul>	<ul style="list-style-type: none"> <li>SPA and SAC Sierra de Leire and Gorge of Arbaiun (ES00000125)</li> <li>SPA Caparreta (ES0000151)</li> <li>SPA Sierra de Etxauri (ES0000150)</li> <li>SAC Middle stretch of the River Aragón (ES2200030)</li> </ul>

The study of new sites with suitable habitats for the presence of the Bonelli's eagle is included in the measures of the After-life Plan. Here are a few:

BALEARIC ISLANDS	MADRID	BASQUE COUNTRY	NAVARRRE
<ul style="list-style-type: none"> <li>The entire island of Mallorca</li> </ul>	<ul style="list-style-type: none"> <li>SPA Reedbeds and riverside copses of Aranjuez (ES0000119)</li> <li>SCI Meadows, slopes and moors in the southeast of Madrid (ES3110006)</li> <li>SCI Basin of the River Manzanares (ES3110004); includes the SPA Monte del Pardo (ES0000011) and Soto de Viñuelas (IS0000012)</li> <li>SCI Basin of the River Guadarrama (ES3110005)</li> </ul>	<ul style="list-style-type: none"> <li>SPA Southern Sierras of Álava (ES0000246)</li> <li>SPA Valderejo-Sierra de Arcena (ES0000245)</li> </ul>	<ul style="list-style-type: none"> <li>SAC Sierra de Lokiz (ES2200022)</li> <li>SAC Sierra de Codés (ES2200029)</li> <li>SAC and SPA Peña Izaga (ES0000127)</li> <li>SAC Gypsum Land in Estella's Ribera region (ES2200031)</li> <li>SAC Sierra de Ugarra (ES2200026)</li> <li>SAC Lower Reaches of the Aragón and Arga (ES2200035)</li> <li>SAC Peñadil, Montecillo and Monterey (ES2200042)</li> <li>SAC Bardenas Reales (ES2200037)</li> </ul>

The Plan also includes a series of measures to favour the habitats of prey species and connectivity between Natura 2000 spaces (modification of power lines) which extend the action zone beyond these sites.

## HABITATS AND SPECIES

The actions carried out in the LIFE BONELLI project aimed to recover the Bonelli's eagle and its habitats. However, both the work performed in the LIFE projects and its continuity in the After-LIFE Plan have direct positive implications for several habitats and animal and plant species included in European Directives.

In the case of Navarre, (SPA and SAC Sierra de Leire and Gorge of Arbaiun (ES00000125), SPA Caparreta (ES0000151), SPA Peña de Etxauri (ES0000150) and SAC Middle stretch of the River Aragón (ES2200030)), the actions aimed at improving the prey species' habitat will lead to an

improvement, chiefly, in the Secondary grasslands with *Bromus erectus* and *Brachypodium retusum*, (Habitat 6210, a priority habitat when the presence of orchids is significant).

The work to improve the habitats of the prey species and reduce threats (modification of overhead power lines and other nuisances generated by hunting, livestock management and public use) is, in turn, going to favour many other species associated with rocky areas and grass- and shrubland:

Species favoured by the modification of overhead power lines	Species favoured by adapting ponds	Species favoured by the management and control of hunting, climbing and other public-use activities
<b>birds</b>	<b>birds</b>	<b>birds</b>
<i>Aquila chrysaetos</i>	<i>Aquila chrysaetos</i>	<i>Aquila chrysaetos</i>
<i>Bubo bubo</i>	<i>Bubo bubo</i>	<i>Bubo bubo</i>
<i>Caprimulgus europaeus</i>	<i>Gyps fulvus</i>	<i>Falco peregrinus</i>
<i>Circaetus gallicus</i>	<i>Hieraaetus fasciatus</i>	<i>Gypaetus barbatus</i>
<i>Falco peregrinus</i>	<i>Neophron percnopterus</i>	<i>Gyps fulvus</i>
<i>Gypaetus barbatus</i>	<i>Pyrrhocorax pyrrhocorax</i>	<i>Hieraaetus pennatus</i>
<i>Gyps fulvus</i>		<i>Hieraaetus fasciatus</i>
<i>Hieraaetus fasciatus</i>		<i>Neophron percnopterus</i>
<i>Hieraaetus pennatus</i>		<i>Pyrrhocorax</i>
<i>Lanius collurio</i>		<b>mammals</b>
<i>Lullula arborea</i>		<i>Myotis myotis</i>
<i>Milvus migrans</i>		<i>Pipistrellus pipistrellus</i>
<i>Milvus milvus</i>		<i>Tadarida teniotis</i>
<i>Neophron percnopterus</i>		<i>Miniopterus schreibersii</i>
<i>Pernis apivorus</i>		
<i>Pyrrhocorax</i>		
<i>Buteo buteo</i>		
<i>Falco tinnunculus</i>		
<i>Ciconia ciconia</i>		
<i>Corvus corax</i>		
<i>Aquila adalberti</i>		
<i>Aegyptius monachus</i>		

In Mallorca, the work to reduce threats (modification of overhead power lines and other nuisances generated by hunting and public use) is, in turn, going to favour many other species affected by electrocution and direct persecution:

Species favoured by the modification of overhead power lines	Species favoured by adapting ponds	Species favoured by raising awareness among hunters and other public users
<b>birds</b>	<b>birds</b>	<b>Birds</b>
<i>Covus corax</i>	<i>Milvus milvus</i>	<i>Covus corax</i>
<i>Falco tinnunculus</i>	<i>Hieraaetus pennatus</i>	<i>Falco tinnunculus</i>
<i>Larus michahellis</i>	<i>Falco peregrinus</i>	<i>Larus michahellis</i>
<i>Hieraaetus pennatus</i>	<i>Falco tinnunculus</i>	<i>Hieraaetus pennatus</i>
<i>Milvus milvus</i>	<i>Buteo buteo</i>	<i>Milvus milvus</i>
<i>Tyto alba</i>		<i>Tyto alba</i>
<i>Falco peregrinus</i>		<i>Falco peregrinus</i>
<i>Pandion haliaetus</i>	<b>Amphibians</b>	<i>Pandion haliaetus</i>
<i>Buteo buteo</i>	<i>Bufo viridis balearicus</i>	<i>Buteo buteo</i>
<i>Columba palumbus</i>		<i>Bubulcus ibis</i>
<i>Bubulcus ibis</i>		<i>Egretta garzetta</i>
<i>Egretta garzetta</i>		<i>Aegyptius monachus</i>
<i>Aegyptius monachus</i>		<i>Ciconia ciconia</i>
<i>Ciconia ciconia</i>		<i>Gyps fulvus</i>



<i>Gyps fulvus</i>		
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## MEASURES AND INTERVENTION GUIDELINES BY OBJECTIVES

ULTIMATE OBJECTIVES	OPERATIONAL OBJECTIVES	BONELLI AFTER-LIFE MEASURES
<p><b>01. Reduction of disturbance and causes of mortality.</b></p>	<p>01.1 To prevent disturbance and risk of death by electrocution and other causes. To analyse the information generated.</p> <p>01.2 To prevent and reduce threats caused by traditional and new practices (hunting, tourism, etc.).</p>	<p>M1. Check and monitor the pylons modified with LIFE funding and pylons identified as hazardous in LIFE BONELLI.</p> <p>M2. Modify overhead power lines in Andalusia and Mallorca.</p> <p>M3. Treat the injured specimens arriving at the Recovery Centres.</p> <p>M4. Monitor and maintain escape systems installed in ponds and install in new ponds.</p> <p>M5. Perform necropsies and monitor the causes of mortality.</p> <p>M6. Study the impact of recreational and sporting activities on cliffs and their vicinities on the conservation of cliff-nesting birds. Proposals for intervention.</p> <p>M7. Remove existing climbing facilities from Navarre's Nature Reserves.</p> <p>M8. Establish an intervention protocol to ensure that hunting drives do not interfere with the nesting of cliff-nesting species.</p>
		MEASURES INCLUDED IN LIFE AQUILA

		<p>M0 Diagnose the electrocution of birds in Spain and proposals for resolution.</p> <p>M0 Correct electricity supply infrastructures dangerous to the Bonelli's eagle.</p> <p>M0 Minimise other threats.</p> <p>M0 Monitor the populations to learn about use of space and threats.</p>
<p><b>02. Recovery of habitat for the Bonelli's eagle.</b></p>	<p>02.1 To continue the work to improve habitats.</p> <p>02.2 To follow up the interventions carried out in the Project focusing on the prey species.</p> <p>02.3 To maintain and recover prey populations.</p> <p>02.4 To maintain traditional livestock farming practices.</p>	<p>M9. Increase the surface area of grasslands by clearing scrub.</p> <p>M10. Carry out periodic censuses of the presence of prey species in the areas improved (2 per year).</p> <p>M11. Maintain and improve the agreements reached to carry out habitat improvement interventions to increase prey populations.</p> <p>M12. Continue with the interventions to support livestock farming in accordance with the planning documents (Management Plans) at the Natura 2000 sites selected in Navarre.</p>
		<p>MEASURES INCLUDED IN LIFE AQUILA</p>
		<p>M0. Select release locations.</p> <p>M0. Participatory conservation strategy with key sectors.</p>

<b>03. Population reinforcement.</b>	03.1 To guarantee the continuity and improvement of captive breeding actions.	M13. Continue to coordinate the group of experts IMRBE. M14. Keep an international inventory of breeding pairs in captivity in order to optimise resources and genetic variability. M15 Release any individuals that may be available from recovery centres in Mallorca using the acclimatisation facility and keep the acclimatisation in a good state of repair while opportunities for release exist.
		MEASURES INCLUDED IN LIFE AQUILA
		M0 Continue managing the availability of birds for release. M0 Continue with the population reinforcement work.
<b>04. Monitoring of the birds released.</b>	04.1 To ensure monitoring of the wild population and the individuals released during the LIFE BONELLI project.	M16. Continue with the annual monitoring of the Bonelli's eagle population carried out until now. M17. Provide veterinary assistance by taking samples from eaglets marked by other projects.
		MEASURES INCLUDED IN LIFE AQUILA
		M0 Monitor the populations to learn about use of space and threats.

<p><b>05. Guarantee access to the information and promotion of awareness and involvement in the conservation of the Bonelli's eagle.</b></p>	<p>04.1 To ensure access to the information generated in the project and during the After-Life period.</p> <p>04.2 To carry out specific awareness-raising and engagement actions.</p>	<p>M18. Maintain and update the website.</p> <p>M19. Disseminate the results of the project, also through other channels; at scientific-technical and informative levels.</p> <p>M20. Carry out awareness-raising and involvement activities to favour shared management in the different territories.</p> <p>M21. Develop awareness-raising and environmental education programmes with specific audiences (school community, etc.).</p>
		<p>MEASURES INCLUDED IN LIFE AQUILA</p>
		<p>M0 Consolidate social eagle support groups.</p> <p>M0 Communication strategy.</p> <p>M0 Environmental education campaign on the importance of the Bonelli's eagle.</p>

## 01. REDUCTION OF DISTURBANCE AND CAUSES OF MORTALITY

**01.1 To prevent disturbance and risk of death by electrocution and other causes. To analyse the information generated.**

**M1.** Check and monitor the pylons modified with LIFE BONELLI funding and pylons identified as hazardous.

Period:	2018-2022
Budget	5.040€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM	Consejería MAYOT	DFA	GN GAN-NIK	LPO

### Current situation

Electrocution on overhead power lines is the main cause of non-natural death in the Bonelli's eagle. We know that it affects the pre-adult segment of bird of prey populations during dispersion, but it also has an impact on breeding adults, thereby seriously affecting the viability of the populations.

In Navarre, the Government had already modified more than 4,500 pylons in the 12 years prior to the Project. Also in Mallorca, Álava and Madrid, previous efforts had been made to modify lines, both through other LIFE projects and other public initiatives.

LIFE BONELLI has included a specific action to analyse and minimise the risk of electrocution in the project's reintroduction and reinforcement areas in Mallorca, Álava and Madrid.

Electrocution accounts for at least 42% of all deaths, and this figure rises to 50% when the deaths of individuals in the release stage (still not adapted to living in the wild) are factored out.

LIFE BONELLI has focused on drawing up risk maps and adapting hazardous overhead power lines in Mallorca, Álava and Madrid to prevent electrocution, and also collision in the case of Álava. 263 pylons have been modified in Mallorca; 206 pylons in Madrid; and 8 pylons and 4 spans in Álava.

### AFTER-LIFE actions

It is essential to check the modifications carried out with LIFE BONELLI funds to evaluate the effectiveness and durability of the techniques used. Therefore, the proposal is to "inspect and monitor the pylons modified with LIFE funding every two years (2019 and 2021)".

In the case of Navarre, this action refers to all the pylons modified by the Government of Navarre before the LIFE BONELLI project.

Likewise, the hazardous lines identified in the work carried out in the LIFE BONELLI project will be monitored: "Determination of electricity lines which pose a threat to the conservation of the Bonelli's eagle (*Aquila fasciata*)".

### Deliverables

- Monitoring reports on pylons modified and identified: 2019 Report and 2021 Report on Mallorca, Madrid, Álava and Navarre.

<b>M2. Modify overhead power lines in Andalusia and Mallorca</b>	<b>Period:</b>	<b>2018-2022</b>
	<b>Budget</b>	<b>750.000€</b>

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAyOT	DFA	GN GAN-NIK	LPO

### Current situation

Electrocution is the main cause of mortality in the species. The modification of overhead power lines, according to technical criteria which ensure the durability and safety of the work, is the only way to minimise this problem.

Andalusian Order of 4 June 2009<sup>2</sup> defines the priority areas for breeding, feeding, dispersion and concentration of the bird species included in the Andalusian List of Endangered Species, which includes the Bonelli's eagle.

Over the last few years, Andalusia has taken action to modify the power lines located in the scope of application of this order.

The Autonomous Community has recently begun an internal review of the areas defined in the Order of 4 June. The areas are expected to be reviewed and extended to include the dispersion areas of the Bonelli's eagle.

During the LIFE BONELLI project, synergies have been sought, above all, with government bodies and the electricity companies in order to secure more funds for the modification of the power lines identified and characterised as hazardous in the LIFE BONELLI actions. In Mallorca, agreements have been reached with the electricity companies (in this case ENDESA) to modify overhead power lines through the AVILINEA programme. In Álava, Navarre and Madrid, with Iberdrola.

### AFTER-LIFE actions

In Andalusia, investments will be made to modify electricity lines beyond the areas defined in the aforementioned Order, covering the species' dispersion areas.

In Mallorca, the Government of the Balearic Islands is going to include the modification of overhead power lines in its budgets through the AVILINEA programme, implemented in conjunction with ENDESA (the only electricity distribution company on the archipelago). In order to implement the plan, the Balearic Government is going to continue to use, among other things, the electrocution risk map developed as part of LIFE BONELLI as a reference. The Government of the Balearic Islands and ENDESA are going to bear the cost of this action down the middle.

The Government of the Balearic Islands is also going to continue to inspect hazardous pylons and analyse how hazardous they are in order to submit the data to the Avilinea Programme so they can be modified through the IEPA programme (Inventory of overhead power lines hazardous to birds), which got under way in mid-2017.

<sup>2</sup> Order of 4 June 2009, by which the priority areas for breeding, feeding, dispersion and concentration of the bird species included in the Andalusian List of Endangered Species are defined and providing for the publication of the existing protection areas in the Autonomous Community of Andalusia in which the measures to protect birds against collision with and electrocution on high-voltage overhead power lines shall apply.

Plans exist to modify overhead power lines in Madrid, Navarre and Álava through the LIFE AQUILA PROJECT (Action C5).

GREFA will be in charge of modifying overhead power lines in the centre of the Peninsula (Madrid, north of Castile-la Mancha and south of Castile-León) during the AQUILA a-LIFE project. The aim is to join forces and obtain funds with the electricity companies and the Ministry of the Environment.

### **Deliverables**

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- List of overhead power line modification projects carried out.
- List of pylons modified per year 2018-2022 by Avilinea in areas critical to the Bonelli's eagle population introduced in Mallorca.

<b>M3. Treat the injured specimens arriving at the Recovery Centres</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>15.900€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>COFIB</b>	<b>GREFA</b>	<b>Consejería MAyOT</b>	<b>DFA</b>	<b>GN GAN-NIK</b>	<b>LPO</b>	

### **Current situation**

Throughout the project, the Recovery Centres in the different territories in LIFE BONELLI have dealt with all those individuals injured or needing veterinary care for different reasons. Both eagles found injured in the wild and eaglets needing treatment, rehabilitation, etc., during the hacking period from within the LIFE BONELLI area and from other territories (from other rehabilitation centres: Castile-La Mancha, Catalonia and the Valencian Community) have been received.

The Recovery Centres belonging to the COFIB in the Balearic Islands, the Regional Government of Andalusia, GREFA in Madrid and those managed by the Government of Navarre and the Provincial Council of Álava have carried out this work within the framework of the LIFE BONELLI project (2013-2017).

The GREFA Wildlife Recovery Centre, which is more specialised in each and every one of the stages necessary in the process (hospitalisation, diagnostic tests and veterinary care, comprehensive rehabilitation based on muscle development, feeding, physiotherapy, encouragement to hunt, etc.), has played a significant role in the work carried out to rehabilitate injured birds.

### **AFTER-LIFE actions**

These Recovery Centres: COFIB, Regional Government of Andalusia, GREFA, Government of Navarre and the Regional Council of Álava are going to continue to carry out this work during the AFTER-LIFE period. They will continue to ensure that all the individuals arriving at their facilities receive care so they can be returned to the wild or they will keep them there for other purposes (breeding, etc.).

The most specialised care and rehabilitation work will continue to be carried at the GREFA centre.

The AQUILA a-LIFE project plans to continue with the veterinary care and rehabilitation of the individuals introduced into the areas of this project which suffer injuries (action C1.2).

### **Deliverables**

- Clinical records detailing the treatment of Bonelli's eagles at each centre.
- Report on the recovery of Bonelli's eagles at GREFA (2022).

### **Additional guidelines**

## 01. REDUCTION OF DISTURBANCE AND CAUSES OF MORTALITY

**01.2 To prevent and reduce threats caused by traditional and new practices (hunting, tourism, etc.).**

**M4. Monitor and maintain escape systems installed in ponds**

Period: 2018-2022  
Budget 20.000€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM	Consejería M <sup>A</sup> yOT	DFA	GN GAN-NIK	LPO

### Current situation

Of the seven factors of mortality and four types of disturbance most frequent for the Bonelli's eagle in Spain (excluding electrocution), one incident of drowning has been recorded in an irrigation pond in Mallorca.

During the LIFE BONELLI period, different escape systems have been tried out and demonstrated in pools and irrigation ponds to prevent birds and other wildlife species from getting trapped and drowning.

In Navarre, 1 escape system has been installed in the pond of Ibarra in the SPA "ARBAIUN-LEIRE" (ES0000482) and SAC "SIERRA DE LEIRE AND GORGE OF ARBAIUN" (ES0000125). The system consisted of installing floating wooden islands.

### AFTER-LIFE actions

Although AQUILA A-LIFE includes plans to fit out other ponds, it is considered essential to ensure the maintenance and good operation of the systems installed as part of LIFE BONELLI. Consequently, the AFTER-LIFE Plan includes measures to monitor and maintain the systems installed.

In addition to maintaining their purpose, monitoring will allow us to assess their effectiveness, given their experimental nature.

In Navarre, in addition to the systems installed as part of LIFE BONELLI and to be installed in AQUILA (modification of 3 livestock pools - measure in the SAC/SPA ARBAIUN-LEIRE Management Plan), there exist plans to install structures of this type in other ponds and pools located in historical or potential territories for the Bonelli's eagle but where reintroduction of the species is not going to take place.

The AFTER-LIFE Project intends to install wildlife escape systems in ponds made with waterproof plastic located in Natura 2000 spaces in which the Bonelli's eagle features among the key elements to conserve: SAC "Sierra de Lokiz" (ES2200022) and the Nature Reserve of Basaura (RN-15); and SAC "Sierra de Codés" (ES2200029) and the Nature Reserve "Peñalabeja" (RN-19). The management plans for these spaces include measures for the installation of wildlife escape systems in livestock pools.

### Deliverables

- Monitoring report.
- System installation reports

### Additional guidelines

<b>M5. Perform necropsies and monitor the causes of mortality</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>22.625€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>COFIB</b>	<b>CAM GREFA</b>	<b>Consejería MAyOT</b>	<b>DFA</b>	<b>GN GAN-NIK</b>	<b>LPO</b>	

### Current situation

Both prior to and during the LIFE BONELLI project, the regional governments and entities in the different autonomous communities participating in the project have analysed the dead Bonelli's eagles found in each territory, performing necropsies and looking into the cause of mortality.

### AFTER-LIFE actions

This AFTER-LIFE Plan intends to continue with actions to analyse the causes of mortality of the Bonelli's eagle on the Iberian Peninsula. Necropsies will be carried out and work will continue to analyse the causes of mortality.

In Navarre, the Dept. of Rural Development, the Environment and Local Government will be in charge of managing and funding the actions required to continue to carry out analysis in collaboration with GAN-NIK.

In Mallorca, the Government of the Balearic Islands (Species Protection Service) is the competent body and will manage and fund this action, which will be carried out by COFIB (public consortium).

GREFA intends to continue with analysis of the causes of mortality of the species in the centre of the peninsula and Andalusia. The activity will be covered by its own funds and private and public aid and subsidies (regional and/or state).

Álava will carry out analysis at the Martiola wildlife recovery centre, managed by the Provincial Council of Álava.

The AQUILA a-LIFE project provides for necropsies and monitoring of the causes of death of the individuals introduced through the project. GREFA will be responsible for the coordination of the necropsies of individuals released in the AQUILA a-LIFE project (LIFE16 NAT/IS/000235).

The AQUILA a-LIFE project also aims to satellite tag eaglets in the wild population or born of individuals released in the LIFE Bonelli project to look further into the causes of mortality.

### Deliverables

- Necropsy reports, clinical records and register of the causes of death of the Bonelli's eagles arriving at the recovery centres.

### Additional guidelines

**M6. Study the impact of recreational and sporting activities on cliffs and their vicinities on the conservation of cliff-nesting birds.**  
**Proposals for intervention**

Period: 2018-2022  
 Budget 7.455,76€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAYOT	DFA	GN GAN-NIK	LPO

### Current situation

Some traditional activities, such as hunting, and other newer ones related to leisure or sports may have a negative effect if they are conducted on or near cliffs during the breeding seasons of the Bonelli's eagle and other cliff-nesting birds.

LIFE BONELLI has worked to detect, prevent and, if appropriate, correct the impacts of these activities on the species.

### AFTER-LIFE actions

In Navarre, the Bonelli AFTER-LIFE Plan aims to conduct a study to find out and analyse the impact that these new leisure and sporting activities have or may have on the conservation of the Bonelli's eagle. The study should also include a resulting proposal of actions to prevent and correct the impacts. In order to implement this action, the involvement and consensus of society in general and the local population in particular (local authorities, associations, productive sectors, etc.) is of the utmost importance.

In Navarre, this study is going to cover different spaces included in the Natura 2000 network, both within and outside the spatial scope of the LIFE BONELLI project. These spaces have management plans with actions which include studies on the impact of recreational and sporting activities on cliffs and their vicinities on the conservation of cliff-nesting birds. The study will cover:

- In the Life Bonelli area: SAC "Sierra de Leire and Gorge of Arbaiun" (ES0000125), SPA "Arbaiun-Leire" (ES0000482) and the Nature Reserves of the "Gorge of Arbayun" (RN-16), "Cliffs of La Piedra and San Adrian (RN-24) and "The Gorge of Lumbier" (RN-25).
- Outside the spatial scope of Life Bonelli: SAC "Sierra de Codés" (ES2200029) and the Nature Reserve of "Peñalabeja" (RN-19); SAC and SPA "Peña Izaga" (ES0000127); SAC "Sierra de Lokiz" (ES2200022) and the Nature Reserve of "Basaura" (RN-15).

In Álava, the Provincial Council's Department of Natural Heritage, the entity which manages the Natura 2000 network in the territory, will also extend this study to cover different Natura 2000 Protected Areas, given that the preventive regime in the management plans for these spaces indicates that "the managing body, i.e. the current Department of Natural Heritage of the Provincial Council of Álava, must be previously informed as to organised leisure and sporting activities for groups inside the SAC." The record of all these sporting and leisure activities will permit identification of the areas under greatest pressure and regulation of possible disturbance to the species in question.

### Deliverables

- Study of the impact of sports and leisure activities on cliffs and proposed interventions in Navarre.
- Rock-climbing area study and his impact of rupicola populations in Álava
- Regulation of photography in Natura 2000 Protected Areas in Álava.
- Regulation of climbing in Natura 2000 Protected Areas in Álava.

### Additional guidelines



## M7. Remove existing climbing facilities from Navarre's Nature Reserves

Period: 2018-2022  
Budget \*\*€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería M <sup>A</sup> yOT	DFA	GN GAN-NIK	LPO

### Current situation

One leisure and sporting activity which may have a negative impact on the conservation of the Bonelli's eagle and other cliff-nesting species is climbing.

LIFE BONELLI was conducted at the same time as a complex process to regulate this activity in Navarre which is still ongoing. Although the Life Bonelli Project planned to work together with the sector to develop "good practices" to make climbing compatible with the conservation of the species, this work was carried out by the Government of Navarre because it involved a larger territorial scope and its objectives included the conservation of rupicolous plant and animal species and habitats.

### AFTER-LIFE actions

While awaiting completion of this regulation and the circumstances to start awareness-raising and involvement actions with the sector, the AFTER-LIFE Plan includes the removal of different types of climbing equipment illegally installed in Nature Reserves. These Nature Reserves are included in the Natura 2000 network and their management plans (already approved) expressly prohibit the existence of such facilities on and near certain cliffs, and propose the removal of the existing climbing equipment.

### Deliverables

- Report on the removal of climbing equipment.

### Additional guidelines

**M8. Establish a protocol for intervention to ensure that hunting drives do not interfere with the nesting of cliff-nesting species**

Period: 2018-2022  
Budget 0€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAYOT	DFA	GN GAN-NIK	LPO

### Current situation

Another leisure and sporting activity which may have a negative impact on the conservation of the Bonelli's eagle and other cliff-nesting species is hunting. Hunting drives can disturb the birds during the nesting season.

In Navarre, there are management documents (Natura 2000 Space Management Plans) that include the implementation of this measure.

### AFTER-LIFE actions

In Navarre, this "protocol of intervention to ensure that hunting drives do not interfere with the nesting of rupicolous species" is to be developed for application in different areas included in the Natura 2000 network, both within and outside the spatial scope of the Life Bonelli project:

- In the Life Bonelli area: SAC "Sierra de Leire and Gorge of Arbaiun" (ES0000125), SPA "Arbaiun-Leire" (ES0000482) and the Nature Reserves of the "Gorge of Arbayun" (RN-16), "Cliffs of La Piedra and San Adrian (RN-24) and "The Gorge of Lumbier" (RN-25).
- Outside the spatial scope of Life Bonelli: SAC "Sierra de Codés" (ES2200029) and the Nature Reserve of "Peñalabeja" (RN-19); SAC and SPA "Peña Izaga" (ES0000127); SAC "Sierra de Lokiz" (ES2200022) and the Nature Reserve of "Basaura" (RN-15).

### Deliverables

- Intervention protocol.

### Additional guidelines

## 02. RECOVERY OF HABITAT FOR THE BONELLI'S EAGLE

### 02.1 To continue the work to improve habitats.

#### M9. Increase the surface area of grasslands by clearing scrub

Period: 2018-2022  
Budget 1.285.726,45€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAyOT	DFA	GN GAN-NIK	LPO

#### Current situation

Important work has been carried out in the framework of the LIFE BONELLI project to improve the habitat for the Bonelli eagle's in different territories.

In Navarre, the work to improve the habitat has been carried out at several sites in the municipalities of Lumbier and Gallipienzo, and has been possible thanks to the agreement reached with the local authorities, hunters' associations and local farmers.

A total of 30 ha have been cleared of scrub as a result of these interventions, meaning an improvement in habitat quality (landscape mosaic) over an area of up to 295 ha.

Scrub clearance work has also been carried out over these years through other sources of funding, such as, for example, the work financed by Obra Social La Caixa in the SAP Etxauri, in the locality of Bidaurreta, one of species' historical territories in Navarre. Improvement work has been performed in this locality, including scrub clearance in order to improve the habitat for the prey species and, consequently, the Bonelli's eagle.

Another source of funding which has permitted scrub clearance in the historical territories of the Bonelli's eagle in Navarre has come from the aid made available by the Rural Development Programme. This aid has subsidised scrub clearance promoted by local authorities and private individuals over a surface area of 350 ha.

Most of the areas with potential as Bonelli's eagle territories are included in the Natura 2000 network: SAC Sierra de Leire and Gorge of Arbaiun (ES0000125), SAC Middle stretch of the River Aragón (ES2200030), SAC Sierra de Lokiz (ES2200022), SAC Sierra de Codés (ES2200029), SAC Sierra de Ugarra (ES2200026) and SAC Peña Izaga (ES0000127). The planning documents for these areas include a set of conservation measures which involve scrub clearance actions to improve the conservation status of plant and animal species and their habitats.

#### AFTER-LIFE actions

In Navarre, the conservation of the habitats created in the LIFE BONELLI project will be ensured through the collaboration with Hunters' Associations and farmers which got under way in the LIFE project. In the case of Gallipienzo, the Hunters' Association will be in charge of keeping the habitats generated in the LIFE BONELLI project in a good state of conservation. More specifically, there is an undertaking to continue to sow the areas of land where growing plants got under way with the BONELLI project. This work will be included in the Game Species Improvement Plan for Gallipienzo Village Council's public reserve and will be funded by the Government of Navarre. In Lumbier, the agreement reached with the local livestock farmer includes a commitment on his part to maintain the areas cleared in the LIFE BONELLI project through extensive grazing and, where necessary, mechanical scrub clearance.

Also in Navarre, the Government of Navarre will continue to prioritise scrub clearance work promoted by local authorities and individuals at sites located in the species' historical territories and potential territories in the Natura 2000 network. This work will be subsidised through the Rural Development

Programme. The planning documents for these areas include scrub clearance action in order to improve the conservation status of the wild plant and animal species.

Habitat restoration projects will be implemented in public land through public forest funds from Andalucía Government and in private land through collaboration agreements.

The AQUILA LIFE Project plans to carry out further scrub clearance and habitat improvement work in those areas where population reinforcement actions are planned or it has been possible to get the species to adopt territory. GAN-NIK will promote the implementation of this work through the land stewardship action.

### **Deliverables**

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- Annual summary report of the scrub clearance work carried out.

### **Additional guidelines**

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- To promote agreements with local authorities, hunters' associations and local farmers to ensure the maintenance of cleared areas, if possible by using them for livestock (see measure 11 of this Plan).

## 02. RECOVERY OF HABITAT FOR THE BONELLI'S EAGLE

### 02.2 To follow up the interventions carried out in the Project focusing on the prey species.

**M10. Carry out periodic censuses of the presence of prey species in the areas improved (2 per year)**

Period: 2018-2022  
Budget 3.971,2€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAyOT	DFA	GN GAN-NIK	LPO

#### Current situation

In Navarre, the Hunting Management Plans of the municipalities involved in the project were reviewed in 2014 within the framework of the LIFE BONELLI project to assess the conservation status of the game species in those areas in which measures to improve habitats were being implemented (Gallipienzo and Lumbier).

In 2015, the most suitable indicators were defined in each area to assess the demographic evolution of the populations of prey species. For the partridge, male singers were to be mapped using listening stations. For the rabbit, burrows and latrine areas would be counted over transects. For the rock pigeon, the establishment or not of a colony outside the pigeon loft was to be assessed.

The monitoring of the rabbit populations in both Gallipienzo and Lumbier has consisted of counting latrine areas along transects previously defined in desk studies. These have been designed to include areas where habitat improvement work has been carried out and others where no type of action has taken place. The transects have been repeated twice a year, in spring and autumn.

In addition, the monitoring and maintenance of rabbit population has been realized that was introduced to the supplementary feeding point built in Lumbier.

At both locations, monitoring through the listening technique has been carried out to locate partridge courtship grounds in those areas where scrub clearance and sowing work has been carried out.

Since the pigeon loft was set up, the development and productivity of the colony has been monitored. Although to date it has not been possible to confirm whether a colony has been established outside the loft, specific data have been obtained on the colony's restocking capacity. Since the pigeon loft was opened, the newly hatched chicks have been ringed and the total number of pigeons has been counted every 15-20 days.

#### AFTER-LIFE actions

In Navarre, this action has been performed during the LIFE BONELLI project without external funding and the same methodology is to be used in the AFTER-LIFE Plan. Plans exist to continue with the rabbit transects and male partridge mapping. The rock pigeon populations will also be monitored as part of the same action.

Futhermore, the monitoring and maintenance of rabbit population that was introduce to the supplementary feeding point located in Lumbier.

In Álava, the Provincial Council of Álava carries out the routine monitoring of prey species and will be responsible for carrying out this After-LIFE action.

#### Deliverables

- Report on the development of the populations of prey species in the regions under study.

#### Additional guidelines

**M11. To maintain and improve the collaboration established to carry out work to recover populations of prey species**

Period: 2018-2022  
Budget 42.800€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAYOT	DFA	GN GAN-NIK	LPO

**Current situation**

From the very start of the project, LIFE BONELLI saw the need to open up channels of collaboration and partnership with political and social actors working in or with interests related to the conservation of the Bonelli's eagle in the areas where the conservation actions were going to be carried out: mainly local authorities, landowners, farmers and hunters...

The involvement of local authorities and stakeholders in habitat improvement actions, prey species population improvement and monitoring actions, release site selection actions, etc., has contributed not only to the sustainability of these actions; but has also meant that the project's outreach and awareness-raising objectives have reached the local populations as a whole more comprehensively.

Hunters' associations and the owners of hunting grounds (Councils and private landowners) have also been contributing to the conservation of this and other species for years by producing and implementing hunting use and development plans.

Such close collaboration between hunters, local councils, private landowners, technicians and local populations is gradually strengthening with time and will continue to do so in the coming years through both AQUILA LIFE and this AFTER-LIFE Plan, because in addition to the technical work still being carried out with European funding (LIFE), other local initiative interventions to improve habitats for the Bonelli's eagle and its prey are foreseen in coordination with the technical teams (M10 of this document).

Thanks to the LIFE BONELLI PROJECT, the following collaboration agreements have been reached:

Gallipienzo: With the Gallipienzo Hunter's Association (Club Deportivo de Caza San Zoilo) to improve and conserve the habitats of prey species and reduce risks and disturbance to which the Bonelli's eagle is exposed (should a breeding pair be formed).

Lumbier: with the local sheep farmer for the improvement and conservation of the habitat for prey species, with the Hunters' Association (Asociación Deportiva de Cazadores de San Babil) to maintain the areas cleared of scrub and prevent disturbance to Bonelli's eagles which hold territory.

In Álava, agreements have been reached with the local inhabitants to maintain the Antoñana pigeon loft. Agreements with hunting reserves are currently being made to increase rabbit populations.

**AFTER-LIFE actions**

In Navarre, this Plan intends to continue and improve the collaboration established during the LIFE project in Gallipienzo (Club Deportivo de Caza San Zoilo) and Lumbier (Asociación Deportiva de Cazadores de San Babil and local farmer), and promote new agreements to implement new actions and projects with the same objectives which it is hoped will be carried out in the AFTER-LIFE period (habitat improvement -M10-, improvement of populations of prey species -M12-, livestock farming support -M13-, involvement in communication actions -M18 to M21-, etc.).

This action also covers other Natura 2000 areas and, consequently, other stakeholders.

The AQUILA LIFE project aims to identify and formalize "voluntary collaboration agreements" in the areas of action defined in the project, mainly the specific release areas.

In Álava, the agreements reached with local residents regarding the maintenance and monitoring of the pigeon loft will be maintained. The track to the loft will also be improved through provision of the inert material required.

### **Deliverables**

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- Collaboration agreements.
- forest path project
- Management of dovecote

### **Additional guidelines**

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Encourage agreements between technicians and local populations to advance in actions related to habitat improvement, recovery and monitoring of prey species, etc.

**M12. Continue with the interventions to support livestock farming in accordance with the existing planning documents**

Period: 2018-2022  
Budget €

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAYOT	DFA	GN GAN-NIK	LPO

### Current situation

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The interventions to support livestock farming carried out in the spatial scope of the LIFE BONELLI project have focused on the management of Mediterranean scrubland. This action has been implemented in Navarre and the result is shown in measure 9 of this Plan.

### AFTER-LIFE actions

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The plan is to continue along the same line of work in the AFTER-LIFE period, as proposed in measure M10 of this plan. Direct actions to support livestock farming to improve productivity and ensure its maintenance (Mediterranean scrubland management, construction of infrastructures, etc.) are also foreseen.

The implementation of at least two interventions is proposed (pilot experience, experiment...) in the spatial scope of action of the Bonelli project or nearby Natura 2000 areas with potential to host the species.

According to relationship between this action and M9 action, the project budget of both actions was calculated together.

Most of the areas with the potential to contain Bonelli's eagle territories are included in the Natura 2000 network and their planning documents list a series of conservation measures which include interventions to support livestock farming in order to improve the conservation status of the plant and animal species associated with grazing land.

### Deliverables

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- Projects

### Additional guidelines

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## 03. POPULATION REINFORCEMENT

### 03.1 To guarantee the continuity and improvement of captive breeding actions.

M13. Continue to coordinate the group of experts IMRBE

Period: 2018-2022  
Budget €

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAYOT	DFA	GN GAN-NIK	LPO-UFCS

#### Current situation

There are different captive breeding programmes for the Bonelli's eagle in Europe and the Middle East. Different entities are also likely to have captive birds without necessarily having them for breeding purposes. LPO-UFCS and GREFA have been working on the exchange of experiences and information, and also the coordination of the group of experts (IMRBE - *International Mobilization for the support of European programs concerning the reinforcement of Bonelli's Eagle*) on the captive breeding of the Bonelli's eagle, which was formed in December 2010 at a European seminar organised by LPO-UFCS in France. GREFA also forms part of this group of experts.

#### AFTER-LIFE actions

During the AFTER-LIFE period, LPO-UFCS is going to continue to coordinate the group of experts (IMRBE - *International Mobilization for the support of European programs concerning the reinforcement of Bonelli's Eagle*).

GREFA will assist in this coordination, serving as a bridge with other Spanish centres with Bonelli's eagles and other regions in the Mediterranean basin with which GREFA maintains constant communication concerning the species.

The aim is to pool captive breeding centres whose aim is eaglet production for possible population reinforcement or reintroduction projects in the Mediterranean basin.

#### Deliverables

- Report on meetings and contacts with groups of experts.

#### Additional guidelines

## M14. Keep an international inventory of breeding pairs in captivity in order to optimise resources and genetic variability

Period: 2018-2022  
Budget €

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería MAgOT	DFA	GN GAN-NIK	LPO-UFCS

### Current situation

In February 2014, LPO-UFCS proposed that a survey be conducted to compile an inventory of potential Bonelli's eagle parents in captivity and identify the breeding methods adopted at each of the captive breeding centres. The questionnaire was made available to the different beneficiaries of the LIFE programme and the Bonelli's eagle captive breeding centres in Europe and the Middle East. It was also used to make an inventory of the breeding adults and all the birds held in captivity and to collect all the relevant information on these and the pairs formed in captivity (their history, origin, age, behaviour. ..).

All this information needs to be updated regularly to place it at the disposal of the heads of all the Bonelli's eagle captive breeding centres in Europe. The ultimate goal of this inventory is to improve the exchange of experiences and knowledge, make parent pairs more available and produce more young at those breeding centres whose objective is reintroduction or the reinforcement of wild populations.

From the data collected, GREFA and LPO-UFCS have produced an updated report on the number of captive Bonelli's eagles, pairs and breeding pairs. This report also analyses the two methods with the best chance of success when it comes to breeding the "socially monogamous" Bonelli's eagle in captivity. This methodology describes the requirements necessary to form a breeding pair and the rearing conditions required to enhance production of young fledglings so they are eligible for release into the wild.

For its part, GREFA will continue to collect data on individuals at other collaborating centres both in Spain and the rest of Europe.

### AFTER-LIFE actions

During the AFTER-LIFE period, LPO-UFCS will continue to update the international inventory of breeding pairs. Meanwhile, GREFA and LPO-UFCS will continue to update developments in captive breeding methods.

The methodological guide on reproduction and captive breeding created by GREFA and LPO-UFCS will be distributed to the centres with Bonelli's eagles to encourage them to start breeding and subsequently participate in reintroduction or population reinforcement programmes.

### Deliverables

- Updated inventory.
- Report of developments in captive breeding methods.

### Additional guidelines

## M15. Release of rehabilitated individuals

Period: 2018-2022  
An. Budget 3.265€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería M <sup>A</sup> yOT	DFA	GN GAN-NIK	LPO

### Current situation

Thanks to the LIFE BONELLI project, Mallorca now has a self-sustaining population. It is even increasing slightly. The study which COFIB commissioned from the University of Barcelona, however, recommends that more individuals from rehabilitation centres should be released. The release of individuals of this kind requires less work than that of fledglings using the hacking method.

One Bonelli's eagle is currently being rehabilitated in Álava and will be taken to GREFA at a later stage: "Iber", an individual reintroduced in the LIFE BONELLI project in 2017 which had to be recaptured.

### AFTER-LIFE actions

During the After-life period, COFIB will continue to maintain the release infrastructure in Mallorca (which basically consists of the acclimatisation cage) so that rehabilitated individuals can be transferred there from recovery centres for release should any become available.

The acclimatisation work will be carried out by COFIB and IBANAT personnel with the collaboration of volunteers and Environment officers.

As soon as the Sardinia team is ready to release rehabilitated individuals (in 2018 or 2019), the birds available will most probably be sent there. When this occurs, COFIB will dismantle the installation and store it in case it is needed at some point in the future to release individuals belonging to the Mallorcan population following rehabilitation.

### Deliverables

- Annual report on individuals released in Mallorca.

### Additional guidelines

## 04. MONITORING THE BONELLI'S EAGLE POPULATION

### 04.1 To ensure monitoring of the wild population and the individuals released during the LIFE BONELLI project

**M16. Continue with the annual monitoring of the Bonelli's eagle population**

Period: 2018-2022  
Budget 194.535€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB	CAM GREFA	Consejería M <sup>A</sup> yOT	DFA	GN GAN-NIK	LPO

#### Current situation

During the LIFE BONELLI project, the project partners and collaborators have monitored the wild Bonelli's eagle population and tracked the eagles released as part of the project on an annual basis in their respective areas of action.

In Navarre, this tracking and monitoring has been carried out within the LIFE project actions and has relied on the external assistance and active participation of the Government of Navarre's Dept. of Rural Development, the Environment and Local Administration's forestry rangers.

In Mallorca, tracking has always been of the birds released in the project or reintroduced as part of the previous pilot experiences, there being no wild population to start with. The work has been carried out by COFIB with the collaboration of IBANAT staff, volunteers and Environment officers.

In Álava, tracking and monitoring has been carried out thanks to the external assistance and participation of the Provincial Council's Environmental Department's forestry rangers.

In Madrid, both tracking and monitoring has been carried out by GREFA with the collaboration of the Community of Madrid, which has paid for downloading the GPS data, and has covered the entire territory of the Autonomous Community of Madrid and neighbouring provinces, mainly Toledo and Guadalajara (Castile-La Mancha).

#### AFTER-LIFE actions

Navarre intends to continue with the annual monitoring of the Bonelli's eagle population carried out by the Government through the Dept. of Rural Development, the Environment and Local Administration. This monitoring covers the wild population, both breeding and otherwise. The tracking of the birds tagged with satellite transmitters in the LIFE project will be continued by GAN-NIK through the commission from the Department of the Environment.

In Mallorca, the Government of the Balearic Islands will continue to track the movements of the tagged birds by satellite and cover the cost of downloading the data from them when the LIFE BONELLI project ends (a total of 16). It will also monitor the breeding population: location of nests and monitoring of reproduction (the nestlings will not be marked). This work will be performed by IBANAT staff (public enterprise) or other collaborators, such as volunteers and Environment officers.

The Provincial Council will continue to monitor the wild population in Álava.

GREFA intends to continue to track the Bonelli's eagles in the centre of the peninsula and Andalusia

(action foreseen in the AQUILA a-LIFE project. LIFE16 NAT/ES/000235).

The marking of possible eaglets born to wild pairs or individuals released by the LIFE Bonelli project is part of action C3. Monitoring the populations to learn about use of space and threats in AQUILA a-LIFE.

### **Deliverables**

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- Wild population monitoring reports.

### **Additional guidelines**

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<b>M17. Provide veterinary assistance by taking samples from eaglets marked by other projects</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>3.000€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>COFIB</b>	<b>GREFA</b>	Consejería MAYOT	DFA	GN GAN-NIK	LPO	

### Current situation

COFIB veterinarians have taken samples from eaglets hatched on Mallorca and these have been marked by LIFE BONELLI. The samples were sent to GREFA, because that is where the individuals' samples have been tested.

During the LIFE BONELLI period, the GREFA centre has provided the veterinary assistance needed to take samples from the eaglets marked as part of conservation projects focusing on the species other than the LIFE project.

### AFTER-LIFE actions

During the AFTER-LIFE period, the veterinary assistance needed to take samples from the eaglets marked in the Mallorcan countryside by AQUILA LIFE will be carried out free of charge by COFIB. Likewise, GREFA will continue to test the samples and send the results to COFIB.

### Deliverables

- Results of the samples taken from Mallorcan eaglets by COFIB and tested by GREFA.

### Additional guidelines

## O5. GUARANTEE ACCESS TO THE INFORMATION AND PROMOTION OF AWARENESS AND INVOLVEMENT IN THE CONSERVATION OF THE BONELLI'S EAGLE

### 05.2 To carry out specific awareness-raising and engagement actions

M18. Maintain and update the website

Period: 2018-2022  
Budget 10.650€

BALEARIC ISLANDS	MADRID	ANDALUSIA	BASQUE COUNTRY	NAVARRRE	FRANCE
COFIB FNP	CAM GREFA	Consejería MAyOT	DFA	GN GAN-NIK	LPO

#### Current situation

The website [www.lifebonelli.org](http://www.lifebonelli.org) was created during the BONELLI project. It remained active over the four years that the project lasted and will remain so for another 5 years. On the date of completion of the project (September 2017), it had registered 33,839 visitors and almost 103,093 page views.

For its part, LPO created a specific website on the conservation of the Bonelli's eagle and has kept it up-to-date since April 2016 at the following address: <http://rapaces.lpo.fr/aigle-bonelli>. It mainly focuses on the captive breeding of the species and its reintroduction in Spain as part of the LIFE Bonelli project. This website will be regularly updated by LPO and UFCS.

#### AFTER-LIFE actions

In addition to remaining active during the AFTER-LIFE period for consultation of the information and documentation generated during the LIFE BONELLI project, the website will continue to compile all the information produced on the species by the project partners and other agencies. This will feature in the VIRTUAL LIBRARY and other sections, such as the GALLERIES (photo and video), PRESS AREA, etc.

The website is not only a means through which to disseminate the specific results of the BONELLI project; it is also an informative tool to raise awareness regarding the importance of recovering the species from a scientific, cultural and social point of view.

The website, together with the social profiles created, will also be the primary communication tool used to publicise the actions carried out in the After-life plan.

The costs associated with this work refer to domain renewal and website hosting over the next 5 years. They will be borne by GREFA, the partner responsible for this action.

LPO will continue to update the website [Http://rapaces.lpo.fr/aigle-bonelli](http://rapaces.lpo.fr/aigle-bonelli) during the AFTER-LIFE period.

The other partners will provide news on the AFTER-LIFE actions carried out to feed the website.

#### Deliverables

- Number of website visitors and page views per year between 2018 and 2022.

#### Additional guidelines

<b>M19. Disseminate the results of the project, also through other channels; at scientific-technical and informative levels</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>615€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>COFIB</b>	<b>CAM GREFA</b>	<b>Consejería M<sup>A</sup>yOT</b>	<b>DFA</b>	<b>GN GAN-NIK</b>	<b>LPO</b>	

### Current situation

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A great deal of information and reference documentation about the management of the species has been generated in the framework of the BONELLI project. For the most part, this is specialised, technical documentation, but briefer, more visual, simpler materials (such as the Layman's report) which anybody interested in the subject can understand have also been produced.

### AFTER-LIFE actions

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The aim of this measure in the AFTER-LIFE Plan is to disseminate all the documentation/information generated so that it can be of use to and serve as reference material for other project management teams, local authorities, farmers, local populations, etc.

Both the information generated during the project and that generated as a result of the measures in this AFTER-LIFE Plan will be made available through different channels for dissemination and consultation purposes. In addition to the dedicated BONELLI website, there are also plans to use other local and regional structures so that it can reach different types of audiences: visitor centres linked to nature reserves, nature interpretation centres, environmental education classrooms, tourism offices, local and specialised libraries, etc.

The partners taking part in this Measure will distribute the materials generated in the project (Layman's Report, Manual of Good Practices, Proceedings of the Final Seminar, promotional materials, etc.) and publicise the website.

The scientific information generated (movements of the eagles, details of individuals released, pairs formed, etc.) will also be made available to any public or private research body which needs them for analysis purposes (final bachelor's degree projects, final master's degree projects, PhD theses, etc.).

### Deliverables

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- Annual report on the information, communication and dissemination work.
- Copies of scientific work carried out by other research bodies using data from LIFE BONELLI.

### Additional guidelines

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- Encourage attendance at seminars and conferences related to the conservation of the Bonelli's eagle.
- Encourage visits to other related projects and host visits to the project sites as an example of Good Practices in the management and conservation of the species.

<b>M20. Carry out awareness-raising and involvement activities to favour shared management in the different territories</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>15.990€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>COFIB FNP</b>	<b>CAM GREFA</b>	<b>Consejería MAgOT</b>	<b>DFA</b>	<b>GN GAN-NIK</b>	<b>LPO</b>	

### Current situation

The outreach and awareness-raising activities aimed at the local populations and general (non-technical) public have played an important role in the LIFE BONELLI project, because one of the conservation problems for the target species is that it not very well known or appreciated. Consequently, there are plans to continue with activities of this kind during the AFTER-LIFE period.

During the LIFE BONELLI project, there have been talks, tours, campaigns directed at specific sectors (hunters...), etc., in all the project territories, but especially in Mallorca, with the creation and development of the Support Network "Bonelli. A living symbol of conservation".

In Navarre, the publication of the leaflet "Águila de Bonelli. Caza y Conservación. Una estrecha colaboración para que regrese a los valles prepirenaicos de Navarra" (Bonelli's Eagle. Hunting and Conservation. Close collaboration to make the species return to Navarre's pre-Pyrenean valleys), which describes the collaboration and commitment of the local population and, particularly, the hunting sector in the conservation of the species, is especially worthy of note.

### AFTER-LIFE actions

To continue with activities of this type, each entity will produce a work plan each year detailing the specific actions to be carried out and identifying the target groups with which it is interested in working.

There are plans to continue with activities of this kind during the AFTER-LIFE period:

- Celebration of European Natura 2000 Day, 21 May.
- Talks and guided tours of the Life Bonelli project sites so the entities and populations involved can see how the interventions they have participated in have developed.
- Attendance at a minimum of one symposium/conference per year by one of the LIFE project partners to present the results of the project.

### Deliverables

- Annual report on the information, communication and dissemination work.

### Additional guidelines

- Encourage guided tours and specific activities for the local populations and specific groups involved in the management of the species.
- Specific reports on the development of the agreements.

<b>M21. Develop awareness-raising and environmental education programmes with specific audiences</b>					<b>Period:</b>	<b>2018-2022</b>
					<b>Budget</b>	<b>14.500€</b>
<b>BALEARIC ISLANDS</b>	<b>MADRID</b>	<b>ANDALUSIA</b>	<b>BASQUE COUNTRY</b>	<b>NAVARRRE</b>	<b>FRANCE</b>	
<b>FN</b>	<b>CAM GREFA</b>	<b>Consejería MAyOT</b>	<b>DFA</b>	<b>GN GAN-NIK</b>	<b>LPO</b>	

### Current situation

Different activities have been carried out within the framework of the Bonelli project to raise awareness among specific audiences, such as hunters and the school community (in the case of Navarre and Mallorca) or businesses, electricity companies, ornithological groups, etc. (Support Network in Mallorca).

These activities have greatly supported the policies for the conservation of this specific species. Worked has been performed with key sectors to prevent death among the species (electricity companies and hunters), sectors related to conservation in the territories and sustainable use (municipalities, private farms, local government and forestry rangers) and sectors key to transmitting the need for the conservation of biodiversity to society (NGOs, private individuals, the tourism sector...).

Particularly worthy of note are the actions carried out in Mallorca with the Support Network, the celebration of the Day of the Eagle, sponsorships, work with volunteers and the tourism sector, etc.

### AFTER-LIFE actions

In view of the results obtained with the LIFE BONELLI project, it is considered essential to continue to perform actions of this kind in the future. For this reason, the implementation of this action has been included in AQUILA a-Life, which must accomplish the objective of maintaining and enriching the Network.

Therefore, in the case of Madrid, Mallorca and Álava, it can be considered that these actions will be carried out in the AFTER-LIFE period, but will be directed and funded by AQUILA a-Life.

In Navarre, the contact initiated in Bonelli will be maintained with schools in the spatial scope of the project. An annual activity programme to be implemented through the Gorge Interpretation Centre in Lumbier and directly with schools will be established.

Fundació Natura Parc has produced a video on the project with which different actions are expected to be performed during the BONELLI AFTER-LIFE period to highlight the importance of the species and the work carried out in the LIFE BONELLI project to specific groups. The video will also be translated into Italian for education/awareness-raising work in Sardinia, where the project actions carried out on the island of Mallorca are to be replicated in the AQUILA a-LIFE project.

### Deliverables

- Annual programme of activities with schools.
- Presentation of videos to groups/institutions/international competitions....

### Additional guidelines

## OVERALL BUDGET

An **annual investment of approximately 480.000€** is anticipated for the execution of the interventions in the BONELLI AFTER-LIFE Plan.

It should be pointed out that, as indicated in the descriptions of each Measure, some have no associated budget because they are considered part of the everyday work carried out by the regular teams which manage the sites.

This is an estimate and a budget of “minimums” (to ensure the execution of the basic interventions) because it is difficult to define the budget five years in advance in any detail. Consequently, the budget for the following year will be defined and the expected sources of funding will be specified in each case annually at the evaluation and planning meeting (see section on Monitoring).

		BALEARIC ISLANDS		MADRID		ANDALUSIA	BASQUE C.	NAVARRRE	FRANCE	TOTAL
		COFIB	FNP	COMM.	GREFA	R. GOV.	DFA	GN	LPO	
AFTER-LIFE BONELLI	2018	76.460 €	2.309 €		9.800€	350.000€	35.600€	27.999,53€		<b>502.168,53€</b>
	2019	76.460 €	2.309 €		9.800€	350.000€	10.800€	31.455,29€		<b>480.824,29€</b>
	2020	76.460 €	2.309 €		9.800€	350.000€	6.800€	27.999,53€		<b>473.368,53€</b>
	2021	76.460 €	2.309 €		9.800€	350.000€	6.800€	27.999,53€		<b>473.368,53€</b>
	2022	74.460€	2.309 €		9.800€	350.000€	6.800€	27.999,53€		<b>473.368,53€</b>

See the detailed budget for each measure / year / entity below.

Regarding the **sources of funding**, the entities involved undertake to provide for the annual budget required in order to implement the planned actions from their **own funds**. Nevertheless, other additional sources of funding will also be sought (Agreements with electricity companies, businesses, Obra Social la Caixa, etc.).

For the Balearic Islands, the figure given is the total forecast of expenditure to be made both by COFIB, as beneficiary partner of LIFE project, and the Government of the Balearic Islands (GIB), as the entity responsible for the plan to reintroduce the Bonelli’s eagle to Mallorca and participant in the actions of the LIFE Bonelli project, from which there exists a commitment to continue the actions to track/monitor individuals and modify overhead power lines during the AFTER-LIFE project. In agreement with ENDESA, the company which owns the power lines on Mallorca, modifications worth €50,000 will be made each year. This cost will be covered by GIB and ENDESA, each entity contributing 50%. This amount has also been included in the budget of the AFTER-LIFE project.



MEASURE	YEAR	BALEARIC ISLANDS		MADRID		R.GOV. ANDALUSIA	DFA	GAN-NIK G. NAVARRE	LPO FRANCE
		COFIB	FNP	COMMUN. MADRID	GREFA				
M1	2018	1.008	-	**	-		**	**	-
	2019	1.008	-	**	-		**	**	-
	2020	1.008	-	**	-		**	**	-
	2021	1.008	-	**	-		**	**	-
	2022	1.008	-	**	-		**	**	-
M2	2018	50.000	-		-	100.000	-	-	-
	2019	50.000	-		-	100.000	-	-	-
	2020	50.000	-		-	100.000	-	-	-
	2021	50.000	-		-	100.000	-	-	-
	2022	50.000	-		-	100.000	-	-	-
M3	2018	2.680	-	**	-	**	500	**	-
	2019	2.680	-	**	-	**	500	**	-
	2020	2.680	-	**	-	**	500	**	-
	2021	2.680	-	**	-	**	500	**	-
	2022	2.680	-	**	-	**	500	**	-
M4	2018	-	-	-	-	-	-	4.000	-
	2019	-	-	-	-	-	-	4.000	-
	2020	-	-	-	-	-	-	4.000	-
	2021	-	-	-	-	-	-	4.000	-
	2022	-	-	-	-	-	-	4.000	-
M5	2018	1.525	-	-	2.500	-	500	**	-
	2019	1.525	-	-	2.500	-	500	**	-
	2020	1.525	-	-	2.500	-	500	**	-
	2021	1.525	-	-	2.500	-	500	**	-
	2022	1.525	-	-	2.500	-	500	**	-

MEDIDA	AÑO	BALEARES		MADRID		JUNTA ANDALUCÍA	DFA	GAN-NIK G. NAVARRA	LPO FRANCIA
		COFIB	FNP	COMUN. MADRID	GREFA				
M6	2018	-	-	-	-	-	0	0	-
	2019	-	-	-	-	-	4.000	3.455,76	-
	2020	-	-	-	-	-	0	0	-
	2021	-	-	-	-	-	0	0	-
	2022	-	-	-	-	-	0	0	-
M7	2018	-	-	-	-	-	-	**	-
	2019	-	-	-	-	-	-	**	-
	2020	-	-	-	-	-	-	**	-
	2021	-	-	-	-	-	-	**	-
	2022	-	-	-	-	-	-	**	-
M8	2018	-	-	-	-	-	-	0	-
	2019	-	-	-	-	-	-	0	-
	2020	-	-	-	-	-	-	0	-
	2021	-	-	-	-	-	-	0	-
	2022	-	-	-	-	-	-	0	-
M9	2018	-	-	-	-	250.000	-	7.145,29	-
	2019	-	-	-	-	250.000	-	7.145,29	-
	2020	-	-	-	-	250.000	-	7.145,29	-
	2021	-	-	-	-	250.000	-	7.145,29	-
	2022	-	-	-	-	250.000	-	7.145,29	-
M10	2018	-	-	-	-	-	**	794,24	-
	2019	-	-	-	-	-	**	794,24	-
	2020	-	-	-	-	-	**	794,24	-
	2021	-	-	-	-	-	**	794,24	-
	2022	-	-	-	-	-	**	794,24	-

MEDIDA	AÑO	BALEARES		MADRID		JUNTA ANDALUCÍA	DFA	GAN-NIK G. NAVARRA	LPO FRANCIA
		COFIB	FNP	COMUN. MADRID	GREFA				
M11	2018	-	-	-	-	-	31.600	0	-
	2019	-	-	-	-	-	2.800	0	-
	2020	-	-	-	-	-	2.800	0	-
	2021	-	-	-	-	-	2.800	0	-
	2022	-	-	-	-	-	2.800	0	-
M12	2018	-	-	-	-	-	-	*	-
	2019	-	-	-	-	-	-	*	-
	2020	-	-	-	-	-	-	*	-
	2021	-	-	-	-	-	-	*	-
	2022	-	-	-	-	-	-	*	-
M13	2018	-	-	0	-	-	-	-	0
	2019	-	-	0	-	-	-	-	0
	2020	-	-	0	-	-	-	-	0
	2021	-	-	0	-	-	-	-	0
	2022	-	-	0	-	-	-	-	0
M14	2018	-	-	0	-	-	-	-	0
	2019	-	-	0	-	-	-	-	0
	2020	-	-	0	-	-	-	-	0
	2021	-	-	0	-	-	-	-	0
	2022	-	-	0	-	-	-	-	0
M15	2018	653	-	-	-	-	**	-	-
	2019	653	-	-	-	-	**	-	-
	2020	653	-	-	-	-	**	-	-
	2021	653	-	-	-	-	**	-	-
	2022	653	-	-	-	-	**	-	-

MEASURE	YEAR	BALEARIC ISLANDS		MADRID		R.GOV. ANDALUSIA	DFA	GAN-NIK G. NAVARRE	LPO FRANCE
		COFIB	FNP	COMMUN. MADRID	GREFA				
M16	2018	18.047		-	5.000	**	3.000	12.860	-
	2019	18.047		-	5.000	**	3.000	12.860	-
	2020	18.047		-	5.000	**	3.000	12.860	-
	2021	18.047		-	5.000	**	3.000	12.860	-
	2022	18.047		-	5.000	**	3.000	12.860	-
M17	2018	1.405		-	600	-	-	-	-
	2019	1.405		-	600	-	-	-	-
	2020	1.405		-	600	-	-	-	-
	2021	1.405		-	600	-	-	-	-
	2022	1.405		-	600	-	-	-	-
M17	2018	565	565	-	500	-	0	500	-
	2019	565	565	-	500	-	0	500	-
	2020	565	565	-	500	-	0	500	-
	2021	565	565	-	500	-	0	500	-
	2022	565	565	-	500	-	0	500	-
M19	2018	123		-	**	-	-	0	-
	2019	123		-	**	-	-	0	-
	2020	123		-	**	-	-	0	-
	2021	123		-	**	-	-	0	-
	2022	123		-	**	-	-	0	-
M20	2018	454	344	-	1.200	-	-	1.200	-
	2019	454	344	-	1.200	-	-	1.200	-
	2020	454	344	-	1.200	-	-	1.200	-
	2021	454	344	-	1.200	-	-	1.200	-
	2022	454	344	-	1.200	-	-	1.200	-
M21	2018	**	1.400	**	0	**	0	1.500	**
	2019	**	1.400	**	0	**	0	1.500	**
	2020	**	1.400	**	0	**	0	1.500	**
	2021	**	1.400	**	0	**	0	1.500	**
	2022	**	1.400	**	0	**	0	1.500	**

- \*included in the M9 action budget
- \*\*these actions will be developed with budget and internal staff

## MONITORING

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At least one **monitoring, evaluation and planning meeting** will be held each year.

These meetings may be virtual, using video-conference systems, although the possibility of face-to-face meetings and making the most of the journeys involved to see the work carried out in each territory *in situ* will be looked into.

Given that the aim of the meetings is to evaluate and plan the actions, the plan is to hold them in the last quarter of each year.

These monitoring meetings will address:

- Summary and evaluation of the work carried out.
- Annual deliverables.
- Overall analysis of results and conclusions.
- Proposed interventions for the following year, including budget and funding.
- Analysis of the extent to which the objectives of the Plan are achieved and fulfilment of the Progress Indicators established.

As a result of each monitoring meeting, a short progress report on the implementation of the Measures in the Plan and a document containing the proposals for the following year will be produced.

As Coordinator of BONELLI, GAN will call and direct these meetings, and issue the documents summarising them.

Coordinator will be appointed for each action. Each coordinator is responsible for the specific monitoring involved over the year: contact with technical staff in each territory, progress of the work, collection of information for annual evaluation and conclusions, etc.



8	Necropsy reports, clinical records and register of the causes of death of the Bonelli's eagles arriving at the recovery centres					●																						
9	Study of the impact of sports and leisure activities on cliffs and proposed interventions in Navarre.						●																					
10	Rock-climbing area study and his impact of rupicola populations in Álava						●																					
11	Regulation of photography in Natura 2000 Protected Areas in Álava.						●																					
12	•Regulation of climbing in Natura 2000 Protected Areas in Álava						●																					
13	•Report on the removal of climbing equipment.							●																				
14	•Intervention protocol.								●																			



22	•Report of developments in captive breeding methods.																											
23	•Annual report on individuals released in Mallorca.																											
24	•Wild population monitoring reports																											
25	•Results of the samples taken from Mallorcan eaglets by COFIB and tested by GREFA.																											
26	•Number of website visitors and page views per year between 2018 and 2022.																											
27	Annual report on the information, communication and dissemination																											
28	•Copies of scientific work carried out by other research bodies using data from LIFE BONELLI.																											

