

Aquila a-LIFE

Action C.2

REFORZAMIENTO POBLACIONAL C.2.2 Reintroduction in Sardinia



ISPRA

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LIFE PROJECT “AQUILA a-LIFE” (LIFE16 NAT/ES/000235)

BONELLI’S EAGLE (*Aquila fasciata* Vieillot, 1822) REINTRODUCTION IN SARDINIA

Azione C.2.2: Reintroduction in Sardinia. Report 2022, E. Raganella Pelliccioni, M. Di Vittorio, V. Avramo, R. Nardelli, L. Serra, F. Spina.

According to a formal agreement with ISPRA, Forestas Agency set up the cage.

Thanks to Dr Marco Muzzeddu and L. Mandas for vet assistance during translocation.

The content of this report does not reflect the official opinion of the European Union. Responsibility for the information and views expressed in this report lies entirely with the authors.

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RESUMEN

For the last year, the new cage set within the municipality of Montresta, S. Maria di Bosa site, was used for hacking. In 2022 the hacking season started on the 5th of May with the arrival of 5 eaglets (Maria, Malvasia, Sunesa, Bandineddu, Zirone) all from wild nests in Andalucia. On 19th of June, other two chicks – coming from a seizure realized by Carabinieri CITES in Sicily - arrived in Cagliari in the night. They were tagged and ringed in the Carabinieri CITES office at the harbor of Cagliari with the support of Grefa and Anthus and the day after (20th June 2022) they were released in the aviary in Bosa.

During hacking, as usual, the birds were fed with quails (Common quail *Coturnix coturnix*, and the smaller Japanese quail, *Coturnix japonica*). The daily ration provided changed according to the weight of the prey and age/sex of the eagles also considering that prey consumption strongly decreased in the hottest days. All prey items were carefully checked by Forestas vets before being delivered to the eagles; eagles were fed with approx. 1,5 quail/eagle/day (or quails equivalent) on average.

Although the Spanish eagles seemed particularly restless and keen to leave the aviary on the 10th of June, they slowly left it: between 5.52 and 8:19 all the Spanish eagles left the aviary. Carabinieri CITES of Olbia, Forestas and Ispra were present the day of the release. Before leaving, some eagles perched on the aviary's door. In the few days following the release, some of them came for the night in the aviary (Malvasia). The arrival of the Sicilian eagles tied most of the Spanish eagles to the release site, attracted by the new eagles but probably also by the food inside the cage. The Sicilian eagles spent 20 days inside the aviary, and they were released in nature on 11th July. The door was open at 4.40 in the morning and approximately one hour later three Spanish eagles perched on the aviary and on the feeding platforms surrounding the aviary. The Sicilian eagles left the aviary at 6:12 and 6:19 in the morning. Present on the day of release were the CITES Carabinieri who had carried out the seizure, ISPRA, Anthus and Forestas.

1. LOCATION OF THE HACKING CAGE

For the last year, the new cage set within the municipality of Montresta, S. Maria di Bosa site, was used for hacking. The cage stands within an area patrolled by Forestry Corp and owned by the agricultural school of Bosa, being its working area. It has been managed by Forestas as well.

Access to the area is restricted and limited to authorized persons. From June to October, the Forestry corp is present daily in the site. Nevertheless, both during day and night, we kept four camera traps along the main tracks towards the cage and one inside the cage. Four out of five were enabled for GSM transmission of photos, so that to get info in real time about any suspicious presence in the aviary surroundings. These camera traps didn't detect any intrusion by humans. Occasionally, the presence of wild boar (*Sus scrofa*), pine marten (*Martes martes*) was recorded. More often cows belonging to the school, roamed around the cage. We also detected hunting dogs around the cage a few times.

The cage was built up according to technical instructions from Grefa and it is very similar to that of Crastazza. Two feeding platforms were available inside the aviary as well as two drinking points. Overall three inspection windows with tinted glasses were available, two in the nest and one in the main cage. In the nest, where chicks were present, two camera traps were also set, recording three min videos every ten minutes.

Outside the cage, as usually, six feeding platforms, provided with camera traps, were set up as well as a drinking point. A water catchment— also use for agricultural purposes - was however present very close to the cage (Fig.1).

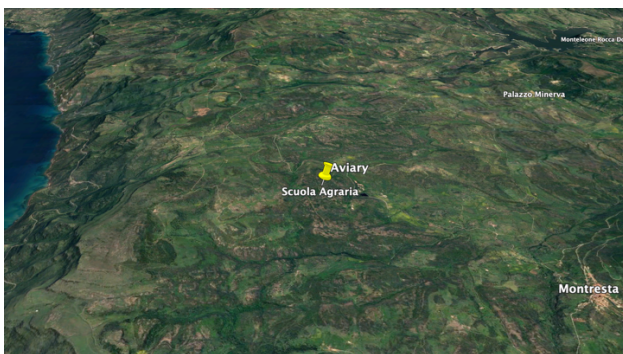


Fig. 1 From the left: the aviary (top) and its location (bottom). The water tank close to the aviary is visible on the right of the cage. Top right: feeding platforms outside the cage

2. INDIVIDUAL HISTORIES

In 2022 the hacking season started on the 5th of May with the arrival of 5 eaglets (Maria, Malvasia, Sunesa, Bandineddu, Zirone) all from wild nests in Andalusia. (Tab.1). All the eagles were tagged by Grefa before their translocation with E-obs GPS-GSM devices, which were set observing the same sampling schedule applied for the other released eagles. They were also marked with colored metal rings with individual alphanumeric codes, readable in the field (base color yellow with black inscriptions). Upon arrival, they were also ringed with metal rings issued by the Italian ringing center ISPRA (Fig. 2). In 2022 hacking season only chicks from Spain were expected since it was not possible to allocate resource in captures of chicks in Sicily. However, at the end of April, news came of the seizure of two chicks in Porto Empedocle, Sicily. The two chicks were stolen from a wild nest, patrolled by the GTR monitoring team who soon alerted the authorities. Thanks to the investigative activity of the Carabinieri Forestali of the Palermo CITES Unit and the Carabinieri of Porto Empedocle, a few hours after the robbery from the nest, the poacher was identified and the two chicks - aged around 40 days - secured. Unfortunately, their return in the natal area was not possible; therefore, ISPRA in a letter to the regional Government formally declared its willingness to include the two chicks in the reintroduction programme going on in Sardinia. The chicks were hosted in the recovery center of Ficuzza where they progressed in physical development and recovered from the stress condition following the robbery. After the completion of the bureaucratic formalities related to the seizure, ISPRA was authorized to get the two chicks, that arrived in Cagliari on 19th of June, in the night (Fig. 3 and annex I). They were tagged and ringed in the Carabinieri CITES office at the harbor of Cagliari with the support of Grefa and Anthus and the day after (20th June 2022) they were released in the aviary in Bosa.



Fig.2 Left, ringing the eagles from Spain at the hacking site (Grefa and Anthus). Right, veterinary checking before tagging and ringing the sicilian chicks (Grefa, Anthus, Forestas)



Fig. 3 Seized chicks from Sicily, few minutes following the seizure (top) and in Carabinieri CITES office in Cagliari, upon their arrival in Sardinia

Overall, three siblings were released (Abbaluchente and Posada; Yorgi and Bonaria; Isabella and Nieddu).

Year	Release site	Name	Origin	Sex	Birth date	Arrival date	Release in nature	Release age (days)
2018	Tepilora RP	Abbaluchente	LPO	F	04/05/2018	29/06/2018	20/08/2018	108
2018	Tepilora RP	Helmar	LPO	M	05/05/2018	29/06/2018	20/08/2018	107
2018	Tepilora RP	Posada	LPO	F	07/05/2018	29/06/2018	20/08/2018	105
2018	Tepilora RP	Tepilora ¹	LPO	F	09/05/2018	29/06/2018	20/08/2018	103
2018	Tepilora RP	Nurasè	Grefa	F	29/05/2018	24/07/2018	20/08/2018	83
2018	Tepilora RP	Saccaia	Andalucia	F	10/04/2017	15/07/2018	21/12/2018	
2019	Tepilora RP	Muscatoglio	Andalucia	M	02/03/2019	27/04/2019	15/06/2019	109
2019	Tepilora RP	Artaneddu	Andalucia	M	27/02/2019	27/04/2019	15/06/2019	112
2019	Tepilora RP	Prenna	Andalucia	F	25/02/2019	27/04/2019	15/06/2019	114
2019	Tepilora RP	Illiorai	Andalucia	M	11/03/2019	27/04/2019	15/06/2019	100
2019	Tepilora RP	Pratterì	Grefa	M	09/03/2019	27/04/2019	15/06/2019	102
2019	Tepilora RP	Battore	Sicily	M	17/03/2019	12/05/2019	15/06/2019	94
2019	Tepilora RP	Ichnusa	Valencia	F	19/03/2019	13/07/2019	26/07/2019	129
2019	Tepilora RP	Inoche	Grefa	F	19/04/2019	13/07/2019	26/07/2019	98
2020	Tepilora RP	Mantzena ²	Grefa	M		04/08/2020	02/09/2020	
2020	Tepilora RP	Dure ²	Grefa	M		04/08/2020	02/09/2020	
2020	Tepilora RP	Sadonna	Andalucía	F	14/04/2020	04/08/2020	02/09/2020	141
2020	Tepilora RP	Arcantzèlu	Grefa	M	02/05/2020	04/08/2020	02/09/2020	123
2020	Tepilora RP	Zoseppe	Grefa	M	14/04/2020	04/08/2020	02/09/2020	141
2020	Tepilora RP	Minnena	Grefa	F	05/05/2020	04/08/2020	02/09/2020	120
2020	Tepilora RP	Arroyto	LPO	F	29/04/2020	04/08/2020	02/09/2020	126
2021	Tepilora RP	Lia	Sicily	F	18/03/2021	16/05/2021	01/08/2021	136
2021	Tepilora RP	Prisco	Sicily	M	23/03/2021	16/05/2021	01/08/2021	131
2021	Tepilora RP	Nino	Sicily	M	30/03/2021	16/05/2021	01/08/2021	124
2021	Tepilora RP	Yorgi	Grefa	M	07/04/2021	05/06/2021	01/08/2021	116
2021	Tepilora RP	Babbu Mannu	Grefa	M	11/04/2021	05/06/2021	01/08/2021	114
2021	Tepilora RP	Bonaria ³	Grefa	F	09/04/2021	05/06/2021	01/08/2021	112
2022	S. Maria di Bosa	Maria	Grefa	F		05/05/22	10/06/2022	
2022	S. Maria di Bosa	Bandeddu	Andalucía	M	17/02/22	05/05/22	10/06/2022	110
2022	S. Maria di Bosa	Sunesa	Andalucía	F		05/05/22	10/06/2022	
2022	S. Maria di Bosa	Zirone	Andalucía	F	27/02/22	05/05/22	10/06/2022	100
2022	S. Maria di Bosa	Malvasia	Andalucía	F	27/02/22	05/05/22	10/06/2022	100
2022	S. Maria di Bosa	Isabella	Sicily	F	01/03/22	20/06/2022	11/07/2022	132
2022	S. Maria di Bosa	Nieddu	Sicily	M	01/03/22	20/06/2022	11/07/2022	132

Tab. 1 List of the Bonelli's eagles hacked from the beginning of the project in Crastazza (2018-2021, NU) and Bosa (2022, OR). Colored rings are yellow with black inscriptions. Eagles were also fitted with metal rings and GPS-tags.

¹ Recaptured on 13/9/2018 and released again on 26/9

² The two adult males were recaptured on 16th and 15th September respectively. A17 was release again on 29th October but died after 15 days.

³ Recaptured on 12/8/21 with broken femur. Released after surgery (16/8/21) on 25/9/21

Chicks from Spain remained in the nest only a few days since they appeared to be restless in that restricted space. When the two Sicilian chicks arrived, the Spanish ones have been already released in nature.

The last chicks were put in the nest but not closed inside, so that they were free to use the nest or the whole aviary since their arrival (Fig. 4).



Fig. 4 Isabella soon after been released in the nest

As usually, the name for all the eaglets was chosen by Forestas team who built up the hacking cage. Overall, the distribution of the released eagles in terms of gender and origin was fairly balanced (Tab. 2).

		ORIGIN		tot
		Captive	Wild	
GENDER	F	8	10	18
	M	6	8	14
	tot	14	18	32

Tab. 2 Distribution of released eagles in relation to gender and origin

3. HACKING AND RELEASE

3.1 Feeding

During hacking, as usual, the birds were fed with quails (Common quail *Coturnix coturnix*, and the smaller Japanese quail, *Coturnix japonica*). The daily ration provided changed according to the weight of the prey and age/sex of the eagles also considering that prey consumption strongly decreased in the hottest days. All prey items were carefully checked by Forestas vets before being delivered to the eagles; eagles were fed with approx. 1,5 quail/eagle/day (or quails equivalent) on average.

During both nest and aviary occupancy stages, the animals were monitored during the day to check food consumption by all of them; they were fed daily, but food was adjusted in relation to the degree of consumption of previously given preys. All of them fed mainly in the morning, while in the hot hours of the day all activities remarkably decreased.

After release, no live preys were put on the platforms outside the cage, as in the previous years. This decision is related to the risk of attracting golden eagles and crows visiting the area, as well as to animal welfare issues, difficult to deal with. However, as observed, this choice doesn't seem to have affected in any way the hunting ability or the post-release survival of the released eagles. Feeding platforms were supplied with fresh meat every one or two days, according to GREFA protocol, and were frequented only by eagles, later in the season also by other species, like the hooded crow (*Corvus cornix*) and raven (*Corvus corax*). Feeding platforms were refurbished during the night to lower any form of disturbance after release. Nevertheless, between the first and the second release, the two eagles inside the cage showed sign of distress when operators moved in front of the cage to refurbish feeding platforms. Therefore, a new feeding platform was set behind the cage and the four ones in front of it were abandoned. This new platform was soon used by the released eagles (Fig. 5).



Fig. 5 Use of the feeding platform behind the aviary

3.2 Behavior in the cage

As already observed during the hacking of the previous years, the 2022 eagles showed scarce interactions between them. Conversely, the vocalization activity was common among almost all the

birds, except for the male. This behavior, together with the flapping movements, increased with time. The nest was scarcely used from the Spanish individuals, while Sicilian ones spent a lot of time perching on the trunk inside it. Sunesa, Malvasia, Zirone often grabbed and climbed the cage, sometime in response to an external disturbance (strong noises, human voices etc.), but also in absence of it. This activity increased while approaching the release date. The Spanish eagles remained in the surroundings of the release area after the arrival of the Sicilian ones. As already observed the last years, the presence of chicks inside the cage represents a powerful attraction for the for the eagles already released, who spent a good part of their day perching on the cage or in the surroundings. Sometimes they showed strong interest in coming into the cage itself forcing the upper net and producing a noise which however didn't frighten the two inside the cage who were quite interested in the behavior of those outside.

3.3 Release in nature

Although the Spanish eagles seemed particularly restless and keen to leave the aviary, notably Malvasia, on the 10th of June they slowly left it.

Soon after the aviary was opened, two eagles – Maria and Bandeddu - perched on the aviary's door, which once open forms a sort of balcony (Fig. 6), while the other three moved on the highest perch in the aviary. Between 5.52 and 8:19 all the eagles left the aviary, the first and last being Sunesa and Malvasia respectively. Carabinieri CITES of Olbia, Forestas and Ispra were present the day of the release. Before leaving, other eagles perched on the aviary's door. In the few days following the release, some of them came for the night in the aviary (Malvasia).

Zirone and Maria left the release area after few days (17 and 18 June respectively), while the other stayed longer and used the feeding platforms. As happened when they were in the aviary, after the release they maintained an alert attitude, soon leaving the platforms or moving in case of unusual noise.

The arrival of the Sicilian eagles tied most of the Spanish eagle to the release site, attracted by the new eagles but probably also by the food inside the cage.

The Sicilian eagles spent 20 days inside the aviary, and they were released in nature on 11th July. The door was open at 4.40 in the morning and approximately one hour later three Spanish eagles perched on the aviary and on the feeding platforms surrounding the aviary. Nieddu left the aviary first, at 6.12. Isabella left at 6.19, after some minutes of deep restless. These last eagles stayed in the release site longer than ever. Nieddu left on 1/11 after few exploration movements, while Isabella is still frequenting the aviary, where she is fed by Forestas. Present on the day of release were the CITES Carabinieri who had carried out the seizure, ISPRA, Anthus and Forestas.



Fig. 5 Eagles perching on the aviary's door on the day of release

ANNEX I Some of the press reports about the seizure of the two Sicilian chicks and their release in Sardinia

≡ AGRIGENTO NOTIZIE

CRONACA

Operazione anti-bracconaggio, sequestrati due esemplari di “Aquila del Bonelli”: denunciato empedoclino

Intervento dei carabinieri forestali del Nucleo Cites di Palermo insieme ai militari della stazione di Porto Empedocle: gli animali erano detenuti senza titoli autorizzativi e in una struttura fatiscente

Agrigento

Porto Empedocle, lieto fine per i 2 piccoli di Aquila di Bonelli sottratti ai bracconieri

Giugno 27, 2022

15



CRONACA **in evidenza**
PORTO EMPEDOCLE – Operazione antibracconaggio, sequestrate 2 aquile del Bonelli: denunciato

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Porto Empedocle, lieto fine per i due piccoli di Aquila di Bonelli sottratti ai bracconieri - Giornale di Sicilia - Trasferiti al sicuro in Sardegna per essere successivamente liberati. Grazie ai Carabinieri per esserci sempre! [@Carabinieri_](#)



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