Bearded Vulture European Endangered Species Programme (EEP): Annual report 2015

By Dr. Alex Llopis [1 3] & Dr. Hans Frey [2 3]

[1] *Centre de Fauna Vallcalent, Ptda. Vallcalnet 63, 25199 Lleida, Spain.*
Phone number +34 657 47 3378 a.llopis@4vultures.org
[2] *Verein EGS-Eulen und Greifvogelschutz, Untere Hauptstraße 34, 2286 Haringsee, Austria.*
Phone number +43 2214 84014 h.frey@4vultures.org
[3] *Vulture Conservation Foundation (VCF), Wuhrstrasse 12. CH-8003 Zurich, Switzerland*

SUMMARY

During 2015 a new record could be achieved inside the EEP: 26 fledglings. In total 36 bearded vulture pairs laid 58 eggs, from which 33 hatchlings could be obtained and 26 surviving juveniles. 15 of these were released in the 3 on-going reintroduction projects (Alps, Grands Causses and Andalusia), and 11 were added to the breeding network. Of the 26 offspring, 18 came from the specialized captive breeding centers, and 8 from Zoos.

Four new founders have reproduced for the first time with success. Two of them are from the Pyrenees. With them, we could increase the number of Pyrenean reproducing birds inside the EEP to three individuals.

Thanks to the great breeding success finally the surplus of 11 females could be reduced.

Eight birds have been transferred during the year 2015 being possible to establish seven new pairs. Further four more have been transferred and they are waiting to receive their partner in 2016.

One new zoo, Amnéville Zoo (France), expressed interest to collaborate with the bearded vulture EEP.

Thanks to the financial support from EEP zoos and other organizations, the VCF managed to secure an effective EEP coordination and keep the specialized breeding center Vallcalent in Catalonia open at least for 2015 - we thank you for your support, without this the future of the bearded vulture in Europe would look bleaker!

Furthermore the new advisory service for the EEP could be developed and implemented during 2015 – customised and targeted visit to zoos to improve husbandry conditions. One zoo have been visited by Alex Llopis without any extra charge and four received advice via email how to ameliorate the housing conditions by each zoo respectively. The goal of these visits/advice is to increase the average death age at the zoos (now is 16.2 years old to 27.1 years in the specialized breeding centers), and to maximize breeding and productivity, as well as animal welfare.

First signs of this improvement could be registered. The EEP has lost only 4 birds during the year and the most remarkable was the high average death age of 35.75 years.

INTRODUCTION

The international Bearded Vulture breeding network (EEP – European Endangered Species Programme) is a VCF-coordinated network of zoos, animal parks, captive breeding centers and private collections aiming to breed this species in captivity for conservation purposes. Since 1978, a total of 464 young Bearded Vultures have been successful bred, and 250 of those have been reintroduced in the wild, in three projects - the flagship Bearded Vulture reintroduction project in the Alps, the project in Andalusia (Spain) and also the one on the Grands Causses/Baronnies/Vercors (Corridor project, France). The last one is now included in the framework of the LIFE project GypConnect. The VCF´s final goal is to restore the species across its former range in Europe, and establish an European Bearded Vulture meta-population, with connections between the current European autochthonous isolated populations (Pyrenees, Corsica and Crete) with the reintroduced populations, in a continuum that goes from northern Africa (Morocco) to Asia (Turkey & the Caucasus).

By the end of 2015 the EEP included 37 zoos (mainly European), 3 large (red spots) and 2 smaller (green spots) specialized captive breeding centers, and 3 private keepers, keeping a total of 156 birds.

The distribution of the captive stock over many Zoos lowers bulk risks, e.g. epidemic diseases.

BREEDING RESULTS 2015

Specialized captive breeding centers

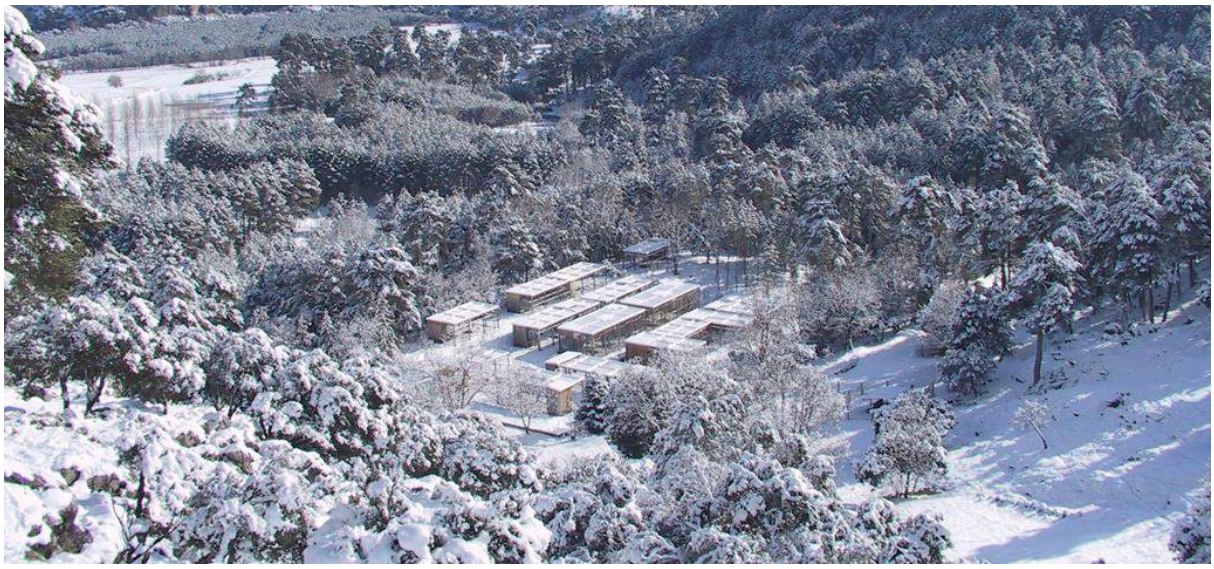
- Richard Faust Bartgeier Zuchtzentrum Haringsee (RFZ)

The RFZ, headquarters of the EEP and with a captive stock at end of the year of 27 birds, is specialized in the reproduction of founder birds. During the breeding season 2015 seven pairs laid. Three of these are experienced old breeding pairs. A fourth is an adult pair composed by a founder female. Two other pairs reproduced for the first time with success. And the seventh, is a young pair which laid for the first time. All together produced 12 eggs and from them eight chicks hatched. Unfortunately two of these died. One died by hatching with the yolk sack not absorbed. The second

died a day after hatching. The chick was wrong positioned in the egg and the yolk sack was partially not absorbed. From the six nestlings, three were released (1 in Grands Causses and 2 in the Alps).

- Centro de Cría de Guadalentín (CCG)

The CCG, with a captive stock of 22 birds, is the basis of the Andalusia Bearded Vulture reintroduction project. Thanks to the transfer of one experienced adult male to Guadalentín before breeding season started, the number of pairs could be increased to six. In three of the pairs it was necessary to remove one of the partners. One the males had to be removed because it started to be aggressive against the female and didn't take care of the chick. The other two pairs the females had to be removed because they didn't allow the males to incubate the clutch. From the 11 laid eggs eight chicks hatched and all fledged. Six nestlings were used for the Andalusia reintroduction project.



The Guadalentín Breeding Centre is situated in the heart of the N.P. from Cazorla at 1300m a.s.l.

- Centre de Fauna Vallcalent (CFV)

The CFV was built to create a Pyrenean genetic reserve. Four from the 11 birds housed there are from the Pyrenees. One of these four Pyrenean birds is Kirma, the famous mandible injured female. She was recovered in 2012 with a severe diagnosis - total loss of sensitivity of its left leg, large necrosis area at the distal part of the third finger of its left foot, and that horrific beak injury (see photo below). It is suspected that Kirma suffered from electrocution in a power line that caused those injuries to the left limb. She underwent a total of 40 physiotherapy sessions to recover the sensitivity of the affected leg – these included manual manipulation, electrotherapy and laser to stimulate the regeneration of necrotic tissue and restore mobility and sensitivity of the affected extremity. In 2015 she laid for the first time. For more information see http://www.4vultures.org/2015/02/12/on-kirma-and-commitment-to-a-cause-how-intensive-care-and-a-lot-of-expertise-rehabilitated-a-severely-injured-bearded-vulture-back-into-breeding/

During 2015 two pairs laid 4 eggs, from which 3 nestlings hatched.

Kirma by incubating her first single clutch laid on the 18th of January 2015.

The two imprinted males, stimulated by their human carer, helped to incubate and one of them reared successfully one of the chicks. Unfortunately the second imprinted male didn't adopt the chick (he stopped a few days before with the incubation) and the chick had to be transferred to Ostrava zoo for adoption. Two chicks were released in the Alps and the chick from Kirma included in the captive network. Additionally, mating attempts could be observed in further two young pairs.

- Breeding center Asters (Conservatoire d´Espaces Naturels Haute Savoie)

This is a small breeding center with a captive stock of 6 birds. In 2015 only one pair produced a double clutch. Unfortunately both eggs failed. Additionally a new young pair could be observed mating for the first time.

- Breeding center in Arth-Goldau (Natur und Tier Park Goldau)

This small breeding center is keeping 3 pairs. One pair laid a double clutch and the other two only one egg. Two chicks hatched but unfortunately one died after 12 days intensive care by the zoo staff. The survived chick was released in the Swiss Alps.

☞ **Summary** 19 breeding pairs in the specialized captive breeding centers laid 33 eggs. 18 offspring were successfully reared, 9 males and 9 females, while 3 hatchlings died.

Richard Faust Centre (Austria)

Zoos, animal parks & private collections

- Zoos & animal parks

The Zoos play a crucial role in the EEP and in the conservation of bearded vultures**.** Although the success rate is on average lower than in the specialized breeding centers, they still contribute substantially to the number of young birds raised annually. Furthermore, by maintaining a captive stock distributed in several separate locations, we decrease the risks (for example in case of epidemic diseases). In addition, by showing this species as well as publicizing the *in-situ* conservation efforts to large audiences in several countries, they contribute significantly to raise public awareness about the species. The zoos help to build core support for vulture conservation that would otherwise be impossible to achieve.

During the breeding season 2015 7 zoos (La Garenne, Liberec, Nuremberg, Ostrava, Tierpark Friedrichsfelde and Yerevan zoos, and the Recovery Center Torreferrussa) produced 7 fledglings (4 males and 3 females). Yerevan zoo (new founder couple) and Recovery Center Torreferrussa (male new founder) produced for the first time a chick. Especially greater importance is the founder male

from Torreferrussa because he is a Pyrenean bird. In Ostrava zoo for the first time the younger pair could rear their own chick.

The breeding success in Ostrava zoo and in Torreferrussa could be achieved thanks to following strictly the EEP coordinators recommendations and the established protocol. New breeding pairs have no rearing experience and this requires several controls of the chick in the nest. However numbers of nest controls with additional feeding have to be adjusted to the needs of the chick, but as low as possible for not disturbing too much the breeding pair by entering in the cage. This could provoke the abandonment of the chick.

The pairs in Academie de Fauconnerie du Puy du Fou, Almaty, Berlin (Zoo Berlin), Chomutov, Riga, Schönbrunn and Tallinn failed to produce a young.

The very old pairs in Prague and Wuppertal didn't lay eggs.

- ☞ **Summary** 15 breeding pairs in the zoos laid 22 eggs. From the 22 eggs, 9 hatched and 7 offspring were successfully reared (4 males and 3 females). Three of them have been released (1 Grands Causses and 2 in the Alps) and 4 kept for the EEP.

- Private collections:

Two pairs from two private collections (England and Monticello, Italy) laid three eggs. All three hatched but unfortunately the only first chick hatched in England survived.

- ☞ **Summary** 2 breeding pairs laid 3 eggs. From them three hatched and only one offspring survived (1 male).

So in total, in 2015 36 pairs laid a total of 58 eggs, which resulted in 26 surviving juveniles. 15 of these were released, and 11 were added to the breeding network (see Table 2 in Annex I – Offspring in 2015).

Young Bearded Vultures from the EEP just after their release in the Swiss Calfeisen Valley. Currently there are approximately 200-250 Bearded Vultures in the Alps. This reintroduction project represents one of the most successful wildlife comebacks in recent history, and is based on the successful work of the EEP.

Problems within the Bearded Vulture EEP

- Hand rearing and flight shows

As we had mentioned in the last EEP annual reports, during the last year's flight shows have become popular in several European zoos/parks. Consequently the demand for Bearded Vultures - **an Endangered Species -** for flight shows has increased. Almost 20 bearded vultures have been lost to the EEP due to flight shows, either directly (used for flight shows) or indirectly (breeding pairs producing descendants for these purposes). And all these descendants are human-imprinted and not able to reproduce or use for releases.

Consequently the VCF suggested signing an agreement with all our partners, about the destination of the birds and their descendants – only for the breeding program EEP or for release, and not for other activities like flight shows. Additionally, to improve the effectiveness of the management, it was proposed in the agreement that the property of the descendants should be transferred to the VCF before they are transferred to a third institution. This gives the VCF the possibility to sign the same agreement with the third institution. The aim of the VCF is for all our Partners to sign this agreement until the end of 2015. Until now 90% of all our Partners have signed this agreement, and 100% of all Partners are following strictly the EEP guidelines.

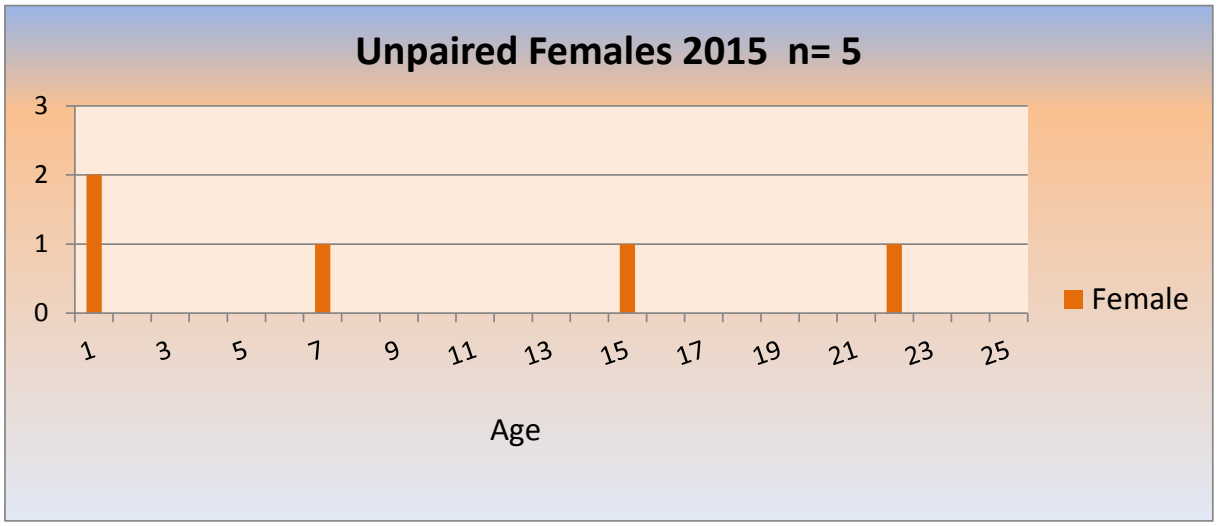
We would like to take this opportunity to thank all our many partners who have shown their confidence and signed the agreement.

Using birds from the Bearded Vulture EEP for flight presentations means these birds are lost for the EEP breeding network. The Bearded Vulture EEP is one of the best managed, and a real showcase of how zoos are contributing to real conservation of an endangered species. We should strive to correct these bad practices – birds from an EEP should not be hand reared and/or involved in flight shows.

The final aim of the Bearded Vulture EEP is to produce chicks suitable for release, capable to survive in the wild without human help and able to reproduce when they arrive to their sexual maturity. Only natural reared chicks fulfil this aim.

- Sex ratio

Thanks to the wonderful breeding success in 2015 the number of lone females could be reduced significantly from 11 to 5. Nevertheless there is a lack of adult males for females which are in reproducing age.



Transfers, additions, new partners, deaths

During 2015 8 birds were transferred (6 males and 2 females) with the objective to build 7 new pairs. Parc Animalier des Pyrénnées, Helsinki, ZooBotanico Jerez and Novosibirsk zoos, and Vallcalent received a male. Prague zoo received a female and Cordoba zoo a new young pair.

Further four more birds have been transferred (1 male and 3 females). The young male from La Garenne zoo has been sent to RFZ, waiting to be sent later to Monticello. The female pair from Cordoba zoo was sent to Guadalentín. One of these females together with a male from 2015 should be sent soon to Nikolaev zoo. And an adult female from Asters centre has been transferred to Parc des Oiseaux, waiting for a male from 2016.

One of the nest controls from Vallcalent chick under the supervision of his father (Lleida, Spain).

From the 26 available chicks, 11 were added into in the EEP network: 7 males and 4 female. Three chicks are the first descendants of 4 new founders. The female from Yerevan zoo, is a descendant from a Caucasian founder pair. The father of the male from Torreferrussa is coming from the Pyrenees and the mother of the male from Vallcalent is the mandible injured bird from the Pyrenees.

Bearded vulture EEP: results for 2015

During 2015 Amnéville zoo expressed interest to collaborate with the Bearded vulture EEP. After exposing the rules of the EEP and their goals, Amnéville zoo signed the EEP collaboration agreement, and it was visited by VCF staff to discuss if one of their raptors facilities could be used for a pair of bearded vulture or building a new aviary. It was decided to use a huge aviary (8m wide x 10.5m large and 6m high) from the birds of prey collection, located at the end of a corridor without exit -where a pair of white headed vultures was housed-, giving the potential future bearded vulture pair the quietness necessary for welfare and breeding success. Beginning winter 2015, the Park started with rebuilding of the aviary under the supervision of the EEP coordinator and respecting completely the guidelines for housing bearded vultures in captivity.

Amnéville zoo: inside view of the potential aviary for holding a couple of Bearded vultures.

During 2015 we lost 4 birds (2 males and 2 females).

On the 8th of January the ±49 year's old founder female, BG 132, died because of senile decay in the Centro de Cría Guadalentín, Spain. The female was blind since several years and her last successful reproduction was in 2005. The female together with her partner arrived in 1973 at the Dresden zoo both with an adult plumage and were located in a big facility together with other birds of prey. The pair showed reproduction display but never laid a clutch. In 1987 egg remains could found on the ground. Afterwards the pair was transferred in an aviary only for them. Since them the female laid yearly and 8 chicks could be produce before the male died. Then she was transferred to Guadalentín were the last chick could be produced with another male.

The old founder male from La Garenne zoo was found dead in his cage on the 2nd of February on the same day its last chick hatched from the egg that had been laid by the female partner on the 10th December 2014. The male had an age of 45+ years. He arrived as juvenile in 1972 to La Garenne. In 1978 he received a founder female, BG 035. Pair bonding occurred immediately and the following year (1979) they start to breed. Between 1979 and 1995 this pair produced 33 eggs, from which 19 chicks hatched and 13 survived. 10 were included in the breeding network (2 of them are still alive) and 3 were released in the Alps. Unfortunately in 1995 the female BG 035 died, but it was immediately replaced by another female, BG130. Three years later they started to reproduce. Between 1998 and 2015 the pair had laid 20 eggs, from which 12 chicks hatched, and all of them survived. Nine of these have been released and 2 used for captive breeding (one still alive). In total BG034 produced 25 chicks.

On the 14th of August the 24 years old founder female died because of an aspergillosis infection. Unfortunately exists only one descendant from this female located at the Beauval zoo.

Furthermore we lost a second bird because of an aspergillosis infection with an age of 21 years old. It was the famous imprinted male Gualay. He was paired with the responsible of the Vallcalent

Specialized Breeding Centre. During 11 breeding seasons, together with his keeper, he incubated 22 eggs and from them 15 chicks hatched. On average one chick/year was reared by the male alone, as it was possible to work with him side by side, and we had the opportunity to immortalize incredible detailed behaviours of this species, which has been regularly shared with all of you.

A few nice pictures from the human imprinted male Gualay breeding with his human partner.

The good news is that the losses in 2015 could be maintained to a low level -only four birds. Further the average age of death for 2015 is 35.75 years, higher if we compare with the average from the Specialized Breeding Centres and zoos (26.9 and 16.9 years respectively). This helped us reduce the number of birds needed to replace the losses and to increase the captive stock. The goal of the EEP is to arrive to 200 birds in the captive stock, which we are slowly achieving.

Outlook / News

- Aspergillosis continues being one of the main causes of death by bearded vultures in captivity.

It's well known that the pathogenicity of aspergillus spores decrease with altitude (over 900masl they lose completely their pathogenicity). That's why the bearded vulture, as a mountain species, has not developed an immune resistance against this kind of infection. And it is not surprising that Alpenzoo Innsbruck -the highest zoo in Europe 750masl-, nor Guadalentín Breeding centre -located in the middle of the Sierras de Cazorla (1300masl)-, have ever registered a bird with this kind of illness.

Contrary, as almost all zoos/centres are located in lower altitudes, aspergillosis infection is one of the biggest problems with this species. This can only be counteracted offering the birds the best housing conditions and food quality to improve their general fitness.

Being conscious about this situation, the Vulture Conservation Foundation is offering a new advisory service for the Bearded Vulture captive breeding network, to help ameliorate the housing conditions of this species.

- New advisory service offered by the VCF-EEP coordination

Thanks to the financial support of our sponsors, the VCF could employ Alex Llopis full time to enhance and improve the management of the EEP network. All our EEP partners can ask for help and support from Alex Llopis regarding any question related to keeping and taking care of the bearded

vultures. Additionally to this, Alex Llopis is available to visit your Zoo without any extra charge, and work with your bird curators on any aspect of bearded vulture husbandry. The VCF is only asking for the travel costs to be covered by the hosting zoo.

In 2015 one zoo requested for this new advisory service (Amnéville zoo) and five more were advised via email (Belgrade, La Garenne, Nikolaev, Nuremberg and Riga zoo).

Parc des Oiseaux, France. Several detailed photos of the new Bearded vulture aviary built during the winter 2014-15. Since April 2015 an adult female is waiting for his future partner.

Académie de Fauconnerie du Puy du Fou, France. Photos during the building of the new aviary. In April 2015 the adult pair were transferred to the new aviary.

Nuremberg zoo, Germany: during 2015 the large Bear enclosure has been modified for holding their own breeding pair. As soon breeding season finish the couple will be transferred to his new modified facility.

Parc Animalier La Garenne, Switzerland: in 2014 a three year project started with the reconstruction of the Parc which included a new aviary for their Bearded vulture. The cosntruction of this new facility started in 2015 and it's preview to receive the pair in spring 2016 after the breeding season.

Three of them (Amnéville, Belgrad and Riga zoo) received a full Advisory Service Report where all suggested improvements to ameliorate the housing conditions of the birds are described and justified. These Reports can be downloaded in our website http://www.4vultures.org/our-work/captive-breeding/bearded-vulture/.

Thanks to the good cooperation in the Bearded Vulture EEP, the goal to re-establish an European meta-population is getting closer.

We would like to thank our sponsors:

Vulture Conservation Foundation VCF, Wuhrstr. 12, CH-8003 Zürich, Switzerland
Tel: 0041 (0) 44 450 68 06, email: info@4vultures.org, www.4vultures.org
Facebook https://www.facebook.com/vultureconservationfoundation
Twitter https://twitter.com/4Vultures

ANNEX I

Table 1: BREEDING PAIRS IN 2015

AUSTRIA	PAIR	LAY DATE	HATCH DATE
Tiergarten Schönbrunn	BG 201 x BG 044002003	1st: 1st Jan	broken (1st Jan)
Richard Faust Zentrum	BG 108065040 x BG 175152153	1st: 06th Dec 2nd: ? Dec	29th Jan 05th Feb
	BG 017019021 x BG 070022023	1st: 26th Dec 2nd: ? Dec/Jan	17th Feb (died, badly positioned) 22nd Feb
	BG 199 x BG 107150151	1st: 02nd Jan 2nd: 10st Jan	28th Feb (died by hatching) aborted
	BG 468223132 x BG 453286153	1st: 26th Jan 2nd: ? Feb	20th Mar infertile
	BG 399159270 x BG 278065074	1st: 26th Dec 2nd: ? Dec/Jan	16th Feb 23rd Feb
	BG 087014010 x BG 482	1st: 23rd Dec	broken
	BG 681 x BG 560371103	1st: 20th Feb	disappeared/infertile(18th Mar)
FRANCE			
Breeding Centre Asters	BG 297086104 x BG 115019021	1st: 21stDec 2nd: 26th-27th Dec	broken (1st Jan) infertile
	BG 454108175 x BG 518087054	-	*mating & nest building*
A. de Fauconnerie du Puy du Fou	BG 212152153 x BG 651	1st: 01st Jan 2nd: 05th Jan	infertile infertile
GERMANY			
Tierpark Friedrichsfelde Berlin	BG 294017070 x BG 292199107	1st: 18th Jan 2nd: ? Jan	8th-9th Mar 11th Mar (died during adoption)
Berlin Zoo	BG 298122118 x BG 320018272	1st: 21st Jan	infertile
Nuremberg Zoo	BG 018019021 x BG 336201044	1st: 27th Jan	21st Mar
Wuppertal Zoo	BG 043019021 x BG 040034035	-	*mating & nest building*
KAZAKHSTAN			
Almaty Zoo	BG 159 x BG 270	1st: ?	infertile
SPAIN			
Centro de Cría Guadalentín	BG 286 x BG 153	1st: 15th Dec 2nd: 21st Dec	infertile Infertile (without yolk))
	BG 313009006 x BG 330108119	1st: 11th Jan 2nd: 19th Jan	04th Mar 12th Mar
	BG 391124041 x BG 360018272	1st: 28th Feb 2nd: 07th Mar	aborted 23rd Apr

	BG 337201044 x BG 317017070	1st: 30th Dec 2nd: 05th Jan	21st Feb 26th Feb
	BG 362080081 x BG 389199107	1st: 23rd Dec	16th Feb
	BG 410286153 x BG 290134135	-	*mating & nest building*
	BG 124131132 x BG329043040	1st: 24th Jan 2nd: 30th Jan	18th Mar 24th Mar
Centre de Fauna Vallcalent	BG 371105178 x BG 103065040	1st: 31st Dec 2nd: 09th Jan 3rd: 19th Jan	22nd Feb putrefied 13th Mar
	BG 223014010 x BG 725	1st: 17th-18th Jan	10th Mar
	BG 652 x BG 680	-	*mating & nest building*
	BG 551 x BG 588371103	-	*mating & nest building*
Centre de Fauna Torreferrussa	BG 500 x BG 513009006	1st: 4th Feb	28th Mar
SWITZERLAND			
Breeding Centre Goldau/Rigi	BG 174134135 x 118154155	1st: 20th Dec	20th Feb
	BG 060034035 x BG 091005006	1st: 17th Jan	putrefied
	BG 145131132 x BG 276199107	1st: 10th Dec 2nd: 16th Jan	aborted 10th- 11th Mar (died by handrearing)
La Garenne Zoo	BG 034 x BG 130150151	1st: 10th Dec	02nd Feb
TS-REPUBLIC			
Prague Zoo	BG134 x BG 135	-	*mating & nest building*
Liberec Zoo	BG 180161162 x BG 274	1st: 08th Dec 2nd: ? Dec	aborted 09th Feb
Chomutov Zoo	BG 340018272 x BG 338134135	1st: 26th Jan 2nd: 08th Mar	infertile Aborted (2 weeks before hatching)
Ostrava Zoo	BG 207017070 x BG 233122118	1st: 02nd Jan 2nd: 18th Jan	aborted aborted
	BG 325017070 x BG 322152153	1st: 3rd Jan 2nd: 12th Jan	24th Feb (died 23th Feb) broken (just before hatching)
Private Mr. Stika	BG 470159270 x BG 303009006	-	*nest building*
ESTONIA			
Tallinn Zoo	BG 431 x BG 436180274	1st: 30th Jan	disappeared (09th Mar)
LATVIA			
Riga Zoo	BG 327105178 x BG 381159270	1st: 5th Jan	infertile
ENGLAND			

Private Center	BG 722154155 x BG 723154155	1st: 09th Jan 2nd: ? Jan	28th Feb 16th Mar (died after extraction)
ITALY			
Center Monticello (M. Albertini)	BG 234086104 x BG 397201044	1st: 13th Jan	06th Mar (died 07th Mar)
ARMENIA			
Yerevan zoo	BG 828 x BG 826	1st: 18th Dec 2nd: ? Dec	10th Feb (died 12th Feb) 16th Feb
BULGARIA			
Rescue Center Green Balkans	BG 461199107 x BG 483108175	-	*mating attempts*

TABLE 2. OFFSPRING IN 2015

STUDBOOK NO.	PARENTAGE	SEX	BREEDING STATION/ZOO	DESTINATION
BG 829	BG 108 x BG 175	f	Richard-Faust-Zentrum	**BREEDING** (Destination: Yerevan zoo)
BG 830	BG 034 x BG 130	m	La Garenne zoo	**BREEDING** (Destination: The Monticello centre)
BG 831	BG 108 x BG 175	m	Richard-Faust-Zentrum	RELEASE (Aveyron, Grands Causses, FRANCE)
BG 832	BG 180 x BG 274	f	Liberec zoo	RELEASE (Aveyron, Grands Causses, FRANCE)
BG 833 1)	BG 826 x BG 828	?	Yerevan zoo	DIED
BG 834	BG 362 x BG 389	f	Centro de cría Guadalentín	RELEASE (Guadalentín, Andalusia, SPAIN)
BG 835	BG 399 x BG 278	f	Richard-Faust-Zentrum	**BREEDING** (Destination: Richard-Faust-Zentrum)
BG 836 2)	BG 017 x BG 070	?	Richard-Faust-Zentrum	DIED
BG 837	BG 826 x BG 828	m	Yerevan zoo	**BREEDING** (Destination: Richard-Faust-Zentrum)
BG 838	BG 174 x BG 118	f	Tierpark Goldau	RELEASE (Melchsee-Frutt, SWITZERLAND)
BG 839	BG 337 x BG 317	m	Centro de cría Guadalentín	RELEASE (Guadalentín, Andalusia, SPAIN)
BG 840	BG 017 x BG 070	m	Richard-Faust-Zentrum	RELEASE (Dorfertal, Hohe Tauern, AUSTRIA)
BG 841	BG 371 x BG 103	f	Centre de Fauna Vallcalent	RELEASE (Melchsee-Frutt, SWITZERLAND)
BG 842	BG 399 x BG 278	f	Richard-Faust-Zentrum	RELEASE (Melchsee-Frutt, SWITZERLAND)
BG 843	BG 325 x BG 322	m	Ostrava zoo	RELEASE (Dorfertal, Hohe Tauern, AUSTRIA)
BG 844	BG 337 x BG 317	m	Centro de cría Guadalentín	**BREEDING** (Destination: Nikolaev zoo)
BG 845 3)	BG 199 x BG 107	?	Richard-Faust-Zentrum	DIED
BG 846	BG 722 x BG 723	m	Private M. Horstmann & B. Sloman	**BREEDING** (Destination: Córdoba zoo)
BG 847	BG 313 x BG 330	m	Centro de cría Guadalentín	**BREEDING** (Destination: Yerevan zoo)
BG 848 4)	BG 234 x BG 397	?	The Monticello centre	DIED
BG 849	BG 294 x BG 292	m	Tierpark Berlin	RELEASE (PN Alpi Marittime, Argentera, ITALY)
BG 850	BG 223 x BG 725	m	Centre de Fauna Vallcalent	**BREEDING** (Destination: Parc Animaliers des Pyrénées)
BG 851 5)	BG 294 x BG 292	?	Tierpark Berlin	DIED
BG 852	BG 313 x BG 330	f	Centro de cría Guadalentín	RELEASE (P.N. Castril, Andalusia, SPAIN)
BG 853 6)	BG 145 x BG 276	?	Tierpark Goldau	DIED
BG 854	BG 371 x BG 103	m	Centre de Fauna Vallcalent	RELEASE (PN Alpi Marittime, Argentera, ITALY)
BG 855 7)	BG 722 x BG 723	?	Private M. Horstmann & B. Sloman	DIED
BG 856	BG 124 x BG 329	m	Centro de cría Guadalentín	RELEASE (P.N. Castril, Andalusia, SPAIN)
BG 857	BG 468 x BG 453	m	Richard-Faust-Zentrum	**BREEDING** (Destination: Centro de cría Guadalentín)
BG 858	BG 124 x BG 329	f	Centro de cría Guadalentín	RELEASE (Guadalentín, Andalusia, SPAIN)
BG 859	BG 018 x BG 336	f	Nuremberg zoo	**BREEDING** (Destination: Córdoba zoo)
BG 860	BG 500 x BG 513	m	Centre de Fauna Torreferrussa	**BREEDING** (Destination: Centre de Fauna Vallcalent)
BG 861	BG 391 x BG 360	f	Centro de cría Guadalentín	RELEASE (Guadalentín, Andalusia, SPAIN)

1) died with an age from 3 days: thrown it out from the nest by its mother because of weakness.
2) died with an age from 1 day: wrong positioned in the egg. Yolk sack not absorbed.
3) died by hatching: yolk sack not absorbed
4) died a few hours after hatching
5) died with an age from 7 days: killed during adoption by the foster male from Berlin zoo
6) died with an age from 9 days during hand-rearing: yolk sack infection?
7) died a few hours after hatching: wrong positioned in the egg.