



REASON FOR HOPE
LIFE+ Biodiversity



Formation flight during the human-led migration (HLM) 2017; picture C Esterer.

LIFE NORTHERN BALD IBIS

REINTRODUCTION OF THE NORTHERN BALD IBIS IN

EUROPE

ANNUAL REPORT 2017

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Fig.1: Northern Bald Ibises in the wintering area; picture D Trobe.

1. DEMOGRAPHY

At the end of 2017, the population of reintroduced and migrating Northern Bald Ibises (NBI) consisted of 84 individuals. 37 birds belong to the breeding colony of Burghausen (Bavaria; Tab.1), which approximately corresponds to the planned colony size in the LIFE+ agreement (-1). 28 birds belong to the breeding colony of Kuchl (Salzburg; Tab.1), which is slightly below the planned number in the LIFE+ Agreement (-3).

50 birds belong to the generation F0 (founder generation; hand-raised birds from zoos), the other 34 belong to the generation F1+ (wild birds, hatched in the breeding areas). The sex ratio within the population is 1:1.

Tab.1: Demography at the end of 2017: Comparison between the actual numbers (Status) and the planned numbers according to the LIFE+ agreement (LIFE+ GA); breeding colonies Salzburg/Kuchl (SBG), Burghausen (BGH) and Überlingen (ÜB); the values in the last row indicate the deviation from the actual to the planned numbers for each colony.

	SBG		BGH		ÜBLG	
	Status	LIFE+ GA	Status	LIFE+ GA	Status	LIFE+ GA
juvenile	4		8		19	
2nd	8		10		0	
3rd	8		8		0	
adult	8		11		0	
total	28	31	37	38	19	30
		-3		-1		-11

2. BREEDING COLONIES BURGHAUSEN & KUCHL



Fig. 2: Breeding NBIs in Kuchl; picture D Trobe.

In 2017, 21 adult and sub-adult birds independently returned to the breeding areas in Burghausen and Kuchl. Another 11 birds, which do not migrate but are experienced breeding birds, were supplemented to the two breeding sites to

increase the breeding success. Those birds will stay there until the end of July.

In 2017, 17 young NBIs fledged in both breeding areas. The reproduction rate with 2.8 chicks per nest is in the range of the previous years and similar to the rate of zoo colonies.

Since the beginning of the breeding season, the NBIs from Kuchl were acting quite nervous. Only mid of June, after the first chicks hatched, an eagle owl was identified as the trigger of this nervous behaviour. The eagle owl started to attack the nests and preyed on the chicks; it didn't, however, attack the adult NBIs. After the first losses of chicks, the entire breeding group, including the nests, eggs and chicks, was transferred to an aviary at the outskirts of Burghausen (Laimgrube), thus avoiding a total loss of the offspring. A few days after the transfer, the aviary was opened; all the birds were living and foraging independently from that day on. The procedure was a success, and eight chicks fledged.

As it turned out, the eagle owl was in human care for quite some time, and it was released near the breeding colony of our NBIs. Even after the transfer of the birds, the owl stayed on site and was attracting attention by showing unusual hunting behaviour and a lack of fear of humans. In the late summer, the eagle owl was found dead. With the exception of this individual, which was used to the presence of humans and behaving in an extraordinary way, there have never been any problems caused by eagle owls, although there are several known occurrences of this species in the surroundings of the NBI breeding sites. Therefore, this incident does not call into question the further reintroduction of NBIs in Kuchl.



Fig.3: Young NBI in Burghausen; picture J Fritz.

3. COLONY ÜBERLINGEN

The foundation of the third NBI breeding colony in Überlingen at Lake Constance started in 2017. At the end of 2017, 19 birds belonged to the colony of Überlingen (Tab.1). Given that the foundation of the colony started with some delay, the actual number of individuals does not correspond with the planned number of 30 birds in the LIFE+ agreement (-11). In 2018 and 2020 (post-LIFE+), two additional human-led migrations are foreseen to increase the number of individuals in Überlingen.

We expect that the first birds will return to Überlingen in 2019; by 2020, the first birds will breed there.

4. AUTUMN MIGRATION

Tab.2: Migration and reproduction, breeding areas Burghausen and Kuchl.

	number	sum
Spring migration & reproduction		
Spring migration	21	
Reproduction Burghausen & Kuchl	17	38
Autumn migration		
migrants	21	
trans-alp transfer	6	
non-migrating juvenile birds	5	
losses	6	38

As in previous years, all birds from both breeding areas have left those areas and gathered near the airport of Salzburg. Mid-September, a total of 21 NBIs migrated independently to the wintering area in Tuscany. This year's highlight was the sub-adult female NBI by the name of Camillo, who flew to Tuscany in just four days, followed by six juvenile

birds (one of which unfortunately died due to electrocution in the Apennine).

Six birds had to be transferred to the south of the Alps due to the onset of winter; they resumed their migration independently and reached the wintering area.

Five juvenile NBIs fell behind during their migration journey, losing contact to any experienced conspecifics they could follow. Four of them were caught and transferred to Tuscany. One juvenile NBI stayed north of the Alps, surviving winter with occasional help of humans. It remains to be seen if those juvenile birds are able to compensate the lack of migration experience; if not, they will be removed from the colony and put in human care.



Fig.4: NBIs in flight; picture C Esterer.

5. HUMAN-LED MIGRATION

In 2017, 31 birds were raised for the first time as one large group by the two foster parents Corinna Esterer und Anne-Gabriela Schmalstieg (Team “CorAnne”). Due to cases of avian flu in Zoo Vienna, the first stage of the hand-raising was transferred to Zoo Rosegg in Carinthia.

On May 13th, the birds were transferred to the training camp in Hödingen, a district of Überlingen at Lake Constance. The local association for the conservation of the cultural landscape in Hödingen (“Verein zur Erhaltung der Kulturlandschaft Hödingen e.V.”) and the city of Überlingen supported the reintroduction project from the beginning. The public interest within the region was great: Within two months, about 2400 people visited the training camp to get more information about the NBI and the project in general.



Fig. 5: Pupils of primary school in Hödingen visiting the training camp; picture J Fritz.

The human-led migration 2017 started on August 14th. Within seven stages, the birds were led from Überlingen to the common wintering area, the WWF Oasi Laguna di Orbetello in southern Tuscany. For the first time, the route led over the Arlberg region and the Reschen Pass to South Tyrol; from there, passing Meran and Bozen, it led on to the Padan Plain. There, the new route merged with the one of the former years; after crossing the Apennine, we reached the wintering area together with 30 birds. One bird unfortunately died during the human-led migration because it swallowed small metal parts.

As in previous years, we carried out a scientific data collection during the human-led migration; by the use of data loggers, we collected data to study the energetic and social aspects of formation flight.



Fig.6: The foster mothers Anne-Gabriela Schmalstieg and Corinna Esterer; picture J Fritz.

6. MORTALITY

The survival rate of juvenile NBIs until April 1st of the subsequent year is approximately 66% for the generations 2014-2016, thus being significantly higher than comparable average survival rates in wild populations.

In 2017, 35 birds of the reintroduction project died. The majority of dead birds were juveniles from the generation 2017 (Fig.6).

In 18 cases (51%), the cause of death is unknown, those birds are classified as “missed” (Fig.7). Most of the missed birds are juveniles of the generation 2017. Even though the hand-raised birds of this season were slowly prepared for their release and integration in the group of wild birds in the wintering area, 13 of them flew further south after being released. Some of them, according to the transmitted GPS data, even reached the Lipari Islands near Sicily. Anne and Corinna were able to catch at least some of those birds, but eight remained missing.

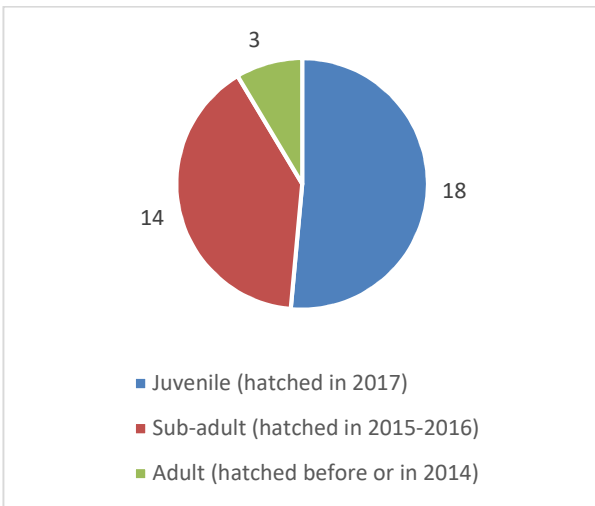


Fig. 7: Mortality rate in different age classes 2017; N=35.

This behaviour was already observed during the last years, but to a lesser extent. It seems to be a kind of “artefact” of hand-raising, because this behaviour was never observed within juvenile birds that were led to the wintering area by their conspecifics. We assume that the social bonding between the wild and the hand-raised NBIs is not yet strong enough at the time when the latter are released, resulting in their continuation of the autumn migration. We will avoid this kind of losses by applying a more elaborate method of release in the future.

Two birds (6%) were lost due to **illegal hunting** in Italy. In both cases, the police started their investigations to identify the culprit; this work is still in progress. We assume that this rather low number of illegally hunted birds - in comparison to

the numbers in the pre-LIFE period - are due to our huge campaign against illegal bird hunting in Italy.

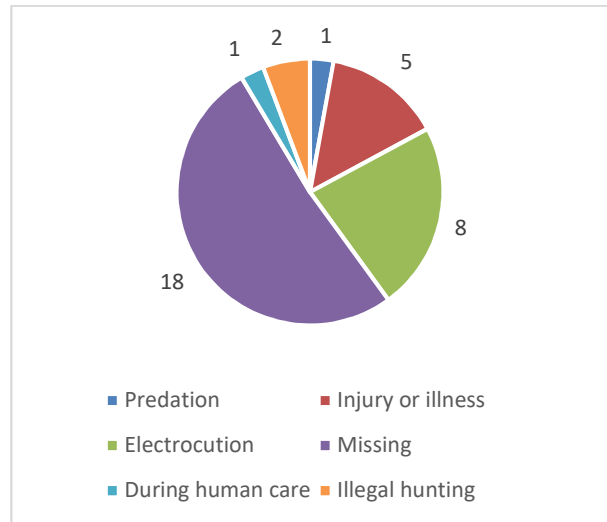


Abb. 8: Causes of death in 2017; N=35.

Five birds (14%) died due to **injuries or illness**. Those losses concerned mainly juvenile birds, suffering leg and beak injuries.

Eight birds (23%) died from **electrocution on unsecured power poles** of medium voltage power lines. In 2018, in the context of a cooperation with the network operator of Salzburg, we will secure relevant power poles in the area around the NBI breeding structures in Kuchl. More extensive measures are planned for the subsequent project (LIFE II).

7. CAMPAIGN AGAINST ILLEGAL BIRD HUNTING AND LEGAL ACTION IN ITALY

Even though the number of killed NBIs decreased in the last couple of years, the illegal hunting of birds is still a big threat for the reintroduction of the NBI in Europe. Furthermore, the data collected within the project relating to this topic are a quantitative evidence for the threat illegal hunting poses to protected, migrating birds in general.

The measures against illegal bird hunting include the direct monitoring of all NBIs during the autumn migration (escorted migration, GPS monitoring) as well as a vast information campaign amongst the Italian public and particularly amongst the Italian hunters. In addition to the cooperation with Italian hunting associations and a bird adoption programme, the project is presented during hunting expos in Italy.

Along the migration corridor, a steadily growing **network of volunteers (TaskForce)** is supporting the field management in the monitoring of the released birds. Private persons as well as NGOs (i.e. *Ente Nazionale Protezione Animali*) participate in this voluntary network. The Italian hunting association *Federazione Italiana della Caccia* (FIDC) has founded their own TaskForce, who closely collaborates with our field management.

To react much faster to future cases of poaching of NBIs, the LIFE+ project team and partners have started the development of a so-called “Dead Body Indicator”. This device shall selectively react in the case of poaching and immediately transmit the actual position of the bird. Thus, the alerted members of the TaskForce shall be able to be on site as soon as possible, which gives them the possibility to start with the investigations immediately.

The lawsuit against the identified hunter who killed two NBIs in 2012 ended with a conviction in 2016. The hunter objected; in June 2017, the Supreme Court confirmed the conviction, thus creating a precedent case of immense importance. A civil lawsuit against the hunter in question is in preparation.

The campaign against illegal bird hunting receives more and more attention on a European level. We are now cooperating with the LIFE+ project *European Network of Prosecutors for the Environment* (ENPE) and the *European Union Network for the Implementation and Enforcement of Environmental Law* (IMPEL). In October 2018, a joint congress is planned in Crete.



Fig. 9: Our lawyer Carla Campanaro (see photo) and Barbara Eberhard, member of the LIFE+ project management team, presented the NBI reintroduction project in the context of conferences hosted by ENPE and IMPEL; picture; Foto B Eberhard.

8. REASON FOR HOPE FESTIVAL IN ÜBERLINGEN

On August 4th 2017, a “Reason for Hope Festival” took place in Überlingen at Lake Constance. The festival was organised in collaboration with the city of Überlingen and the district Hödingen as well as the local association “Verein zur Erhaltung der Kulturlandschaft in Hödingen eV.”.

More than 90 invited guests participated in the festival, including representatives from Überlingen and Hödingen and the member of the German Bundestag Lothar Riebsamen. Additionally to an excellent organic buffet, the regionally well-known cabaret-duo Hepperle and Moser were the entertaining highlight of the event.



Fig. 10: The cabaret-duo Hepperle and Moser performing during the RfH Festival in Überlingen at Lake Constance; picture J Fritz.

9. VISITING „PROYECTO EREMITA“ IN SPAIN

From February 11th to February 18th, seven members of the LIFE+ project team visited the Spanish NBI reintroduction project “Proyecto Eremita” near Jerez in Andalusia. Together with the coordinator of the reintroduction project, José Manuel López, and the project veterinarian Miguel Quevedo, the team visited the different project sites around Jerez. In the context of a visit of Zoo Jerez, Johannes Fritz presented the LIFE+ project during a public lecture.



Fig. 11: The LIFE+ project team during their visit of the Spanish NBI project “Proyecto Eremita”; picture J Fritz.

10. MEDIA PRODUCTIONS

In 2017 we registered 87 specific publications in print media; the real number is most probably significantly higher. The project management team published 10 press releases and 19 newsletters in three languages.



Fig.12: Filming for the TV documentation „Elstners Reisen“ (SWR) with Frank Elstner and Matthias Reinschmidt.

Nine different TV productions were filmed in 2017; we want to highlight the filming for “**Elstners Reisen**” (SWR) with Frank Elstner and Matthias Reinschmidt, the filming for the Canadian-Swiss production “**Die Rückkehr der Wildnis**” with Remo Sommerhalder as well as the very extensive

filming for the French documentation “**Planet+ Le Sanctuaire**”.

11. SCIENCE

The NBI is still a relevant model species for the study of different aspects of bird flight and migration. Also in 2017, data was collected during the human-led migration flights. This basic research is funded by external resources. Dr. Bernhard Völkl from University of Bern is the leading member of Waldrappteam in this context. Since 2018, the research project “**Costs and benefits of formation flight**” conducted by Waldrappteam is funded from the Austrian Science Fund (FWF), enabling comprehensive basic research in the context of the LIFE+ project.

Publications in 2017:

Fritz, J., Kramer, R., Hoffmann, W., Trobe, D. & Unsöld, M. (2017): **Back into the wild: establishing a migratory Northern bald ibis *Geronticus eremita* population in Europe.** *Int. Zoo Yb.* 51: 107–123; DOI:10.1111/izy.12163 51. DOI: 10.1111/izy.12163.

Fritz J, Wirtz S, Unsöld M (2017): **Aspekte der Nahrungsökologie und Genetik des Waldrapps: Reply zu Bauer et al. (2017) Vogelneozoen in Deutschland - Revision der nationalen Statureinstufungen.** *Vogelwarte.*

Sperger C, Heller A, Voelkl B & Fritz J (2017). **Flight strategies of migrating Northern Bald Ibises: Analysis of GPS data during human-led migration flights.** *AGIT – Journal für Angewandte Geoinformatik*, 3-2017.

Spergser, J, Loncaric, I, Tichy, A, Fritz, J & Scope A (in press): **The cultivable autochthonous microbiota of the critically endangered Northern bald ibis (*Geronticus eremita*).** *PlosONE*

Stanclova G, Schwendenwein I, Merkel O, Kenner L, Dittami J, Fritz J & Scope A (in press) **The effect of flights on hematologic parameters in Northern Bald Ibises (*Geronticus Eremita*, LINNÉ 1758) during migration.** *Journal of Zoo and Wildlife Medicine.*

Voekl B & Fritz J (2017). **Relation between travel strategy and social organization of migrating birds with special consideration of formation flight in the northern bald ibis.** *Phil. Trans. R. Soc. B* 372: 20160235. <http://dx.doi.org/10.1098/rstb.2016.0235>.

Voelkl, B. & Fritz, J. 2017 : **Relation between travel strategy and social organization of migrating birds with special consideration of formation flight in the Northern Bald Ibis.** *Philosophical Transactions of the Royal Society B Biological Sciences.*

Wirtz, S., Böhm, C., Fritz, J., Kotrschal, K., Veith, M. & Hochkirch A (in press): **Optimizing the genetic management of reintroduction projects: genetic population structure of the captive Northern bald ibis population.** *Conservation Genetics.*

12. TEAM, PARTNERS AND SPONSORS

LIFE+ Partners

Förderverein Waldrappteam (coordinating beneficiary); Alpenzoo Innsbruck, Tirol; Konrad Lorenz Forschungsstelle; Land Salzburg; Parco Natura Viva Garda Zoological Park; Stadt Burghausen; Tiergarten Schönbrunn GmbH; Tierpark Rosegg.

Sponsors & donors

Arbeitsgemeinschaft Waldrapp; Bund Naturschutz in Bayern e.V.; Grovni Stiftung; Hans und Helga Maus Stiftung; HIT Umwelt- und Naturschutz Stiftung; Maria Schram; Stadt Überlingen; Tierpark Hellabrunn München; Verein für Tier- und Naturschutz in Österreich; Zoo Schweiz.

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Partner institutions 2017

CRUMA Veterinary Wildlife Management Center LIPU; Eulen- und Greifvogelstation Haringsee; Max Planck Institut für Ornithologie Radolfzell; Tierarztpraxis Völkendorf; Universität Wien; Universität Trier; Veterinärmedizinische Universität Wien; Vogelwarte Radolfzell; World Association of Zoos and Aquariums (WAZA); WWF Italien; WWF Oasi Laguna di Orbetello; Zoologische Staatssammlung München; Verein zur Erhaltung der Kulturlandschaft Hödingen e.V.

Team 2017

Aichner Barbara Maria; Altnöder Uschi; Aster Ines; Buratti Luca; Campanaro Carla; Cianchi Fabio; Derkmann Waltraud; Eberhard Barbara; Esterer Corinna; Feichtner Gabi; Fischbach Tom; Franzke Siegfried; Fritz Angelika; Fritz Johannes; Füreder Klara; Gall Elias; Gönner Bernhard; Habel Oliver; Hafner Lynne; Hammer Jana; Hanfler Barbara; Henrich Maximilian; Hoffmann Wiebke; Holzmüller Edith; Holzmüller Walter; Huter-Öffer Julia; Kässler Birgit; Keßler Raphael; Klar Carolin; Kirtz Manfred; Kolatsis Nicholas; Kotrschal Kurt; Kramer Regina; Lechner Norbert; Liechtenstein Emanuel; Lundt Holger; Meyer Jean; Obermayer Jennifer; Nowack Linda; Perco Nicoletta; Primus Sarah; Schläffer Johann; Schnöll Georg & Georg jun.; Scope Alexandra; Schmalstieg Anne-Gabriela; Schragl Carina; Schroll Michael; Schwaiger Larissa; Seebacher Barbara; Seelich Johanna; Sommer Evelyn; Spindler Ernst-Josef; Sperger Christian; Stadter Anette & Hans; Strebel Gunter; Teischinger Georg; Travali Angela; Trobe Daniela; Unsöld Markus; Völkl Bernhard; Wehner Helena; Zimmer Susanne; Zocchi Alberto.



Fig. 13: Human-led migration team 2017; from left, standing: Hanna Seelich, Max, Sarah Primus, Anne-Gabriela Schmalstieg, Raphael Keßler, Corinna Esterer, Walter Holzmüller, Christian Sperger, Edith Holzmüller, Larissa Schwaiger, Ines Aster, Bernhard Gönner, Barbara Eberhard, Bernhard Völkl, Helena Wehner, Johannes Fritz; from left, sitting: Valentin, Emmanuel und Angelika Fritz.

