

Annual Report 2015



Human-led migration 2015; flight over the Alps; Photo AG Schmalstieg

PREFACE

Flight Level 2.600 m msl, nothing than unlimited sky, some clouds and the fantastic mountain skyline. Against this background 30 birds, some of them close by, near their foster father Pablo at my backseat, and not far away a second microlight with the pilot Walter and the foster mother Anne. Nothing else. The situation seemed to be surreal, a little bit like a dream.

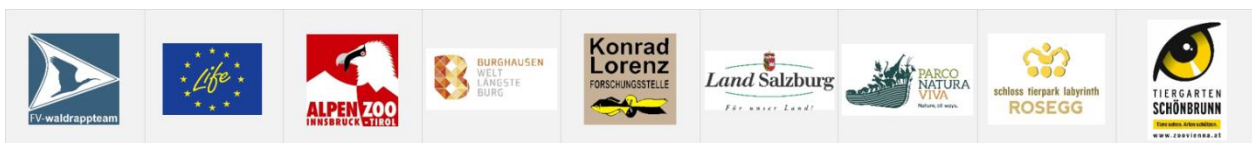
This was my personal highlight during the season 2015. It was my 10th human-led migration journey, but it was exceptional. First, because the formation consisted of double the number of birds compared to all journeys before and of another microlight with a second foster parent, and second, because for the first time we were able to fly at such a high flight level, detached from the topography.

But this was not the only highlight. We had a good reproductive success at the breeding sites, we successfully established a wonderful new breeding site at Burghausen, we had great events, a lot of public awareness, great TV productions and high ranking publications. Of course, we also had drawbacks, like the delayed autumn migration of our wild birds due to the extraordinary temperature in autumn. But we could cope.

My personal highlight was mainly due to the engagement of a wonderful fostering team, with Anne, Corinna, Daniela and Pablo, and to our outstanding microlight pilot Walter Holzmüller. Thanks to all of you! Furthermore, I want to thank all of those who were engaged in the project this year, the project management team, volunteers, sponsors, partners, press and media members and all friends of the Northern Bald Ibis.

Thanks to all of you!!!

Johannes Fritz



Mutters, April 2016

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Fig.1: Photo by J Fritz

1. DEMOGRAPHY

The major objective of the LIFE+ project is the sustainable reintroduction of migratory colonies of the critically endangered Northern Bald Ibis (NBI; *Geronticus eremita*).

By end of 2015, a population of 60 migratory NBIs lived free flying in Europe. Of these birds, 39 individuals belong to the F0 generation, i.e. birds from zoo breeding colonies, hand raised by human foster parents and guided to the wintering area using microlight airplanes. The remaining 21 birds belong to the F1+ generation, i.e. birds raised by their biological parents and guided to the South by conspecific migrants. These F1+ birds can be regarded as wild, migratory NBIs.

With 17 chicks out of 6 nests in 2015 (mean 2.8 chicks per nest), the reproduction rate of our wild birds is quite in the range or above the range of zoo breeding colonies. Also, the fledged juveniles have a survival rate of 61% during the first year of life, almost double the rate found in 9 European white stork colonies (32%; Flack et al. 2016).

age class	Kuchl		BGH	
	status	LIFE GA	status	LIFE GA
juv	13	16	16	9
2nd	15	13	5	3
3rd	1	1	2	4
adult	5	4	3	11
total	34	34	26	27
		0		-1

Tab. 1: Demographic status end of 2015: comparison of the actual status (status) and the intended status according to the specifications of the LIFE+ project (LIFE GA); breeding colonies Kuchl/Salzburg (Kuchl) and Burghausen (BGH); the number in the bottom line indicates the difference of the real status in relation to the intended status for the referring colony.

2. BREEDING COLONY BURGHAUSEN

In 2015, we transferred the breeding location in Burghausen from the temporary location “Laimgrube” at the outskirts of the city to a suitable defence wall at the famous castle of Burghausen. The installation of the structures to establish an NBI breeding colony was approved by the Bayerische Burgen- und Schlösserverwaltung.



Fig. 2: New breeding facility at Burghausen; Photo J Fritz

In time for the start of the breeding season, we installed a wooden breeding structure and a reversible aviary. After arrival at the former breeding site Laimgrube, the birds were caught and enclosed in the temporary aviary at the defence wall. A group of non-migratory breeding birds were supplemented. On May 9th 2015, when

all pairs were breeding, the aviary was removed. All birds continued to breed and roost at the wall.

In 2015, 3 adult migrants returned to the breeding area Burghausen. We supplemented 7 experienced, non-migratory breeding birds during the breeding season. Together they raised 10 juveniles.

At the end of 2015, the size of the colony was 26 birds in total (see Tab.1). The birds belong to the generations F0 (14 birds) and F1+ (12 birds).

The number of adults in the population (3) is much below the planned number (11). A major reason for this is the irregular high number of losses during the last season. Seven experienced adults of the BGH colony went lost, mainly due to the delayed autumn migration 2014 (4 adults) and due to one incident of electrocution (2 adults and 2 juveniles; see below).



Fig.3: Breeding bird with chicks in Kuchl; Photo B Aichner

3. BREEDING COLONY GEORGENBERG/KUHL

Six adult migratory birds returned to the breeding area Kuchl. We supplemented 4 experienced, non-migratory adults (breeding group) during the breeding season. Together they raised 7 juveniles.

The size of the colony at the end of 2015 was 34 birds in total (see Tab.1). They belong to the generations F0 (25 birds) and F1+ (9 birds). The real population size (N=34) equals the planned population size (N=34) according to the Grand Agreement.

4. PROJECTED BREEDING COLONY ÜBERLINGEN

Based on an evaluation of different breeding sites in 2013, we decided to establish a third breeding colony north of the city Überlingen at Lake Constance. According to the specifications of the LIFE+ project, the first human-led migration from

Überlingen should have taken place in 2015. This did not happen, mainly because we decided to continue with hand-raising for the two already existing colonies in order to ensure an appropriate population development.

Thus, we decided to postpone the start-up at Überlingen once more until 2017. During 2017 and 2018, we plan to hand-raise four HLM groups in total (2017 up to 32 birds; 2018 up to 32 birds). In 2019, we expect the first subadult birds to return back to Überlingen. Reproduction in the colony is assumed to start in 2020.

5. DELAYED AUTUMN MIGRATION

Until 2013, the independent autumn migration of our migratory NBIs was unproblematic, not a single bird remained north of the Alps. In 2014, this changed unexpectedly and significantly.

The autumn migration started as usual: By mid of August, all birds had left the two breeding areas Burghausen and Kuchl. Then, for the first time, a bigger flock of 19 birds from both breeding areas gathered at the southern outskirts of Salzburg. This was regarded as an important positive development, since it is known from the Middle East that in former times NBIs formed large flocks before and during autumn migration.



Fig.4: Northern Bald Ibis in flight; Photo A-G Schmalstieg.

Only one adult bird departed on its own to Tuscany. All the other birds stayed north of the central mountain range of the Alps until December.

At the end of December, a sudden change in weather brought temperatures up to -10°C and heavy snowfall. The birds had to be captured immediately. Four experienced adult birds died due to this sudden onset of winter, some more had serious frostbite. After some time in quarantine,

the birds were released in Southern Tyrol early in 2015.

From there, most of them continued their journey to the wintering area, except of some mainly juvenile birds, which were seemingly too weak. They had to be re-caught and transferred to the wintering area.



Fig. 5: Human led migration; Pilot W Holzmüller and foster parent A-G Schmalstieg, Austria 2015; Photo P Przesang.

In 2015, the birds followed the same pattern. Only one subadult bird departed on its own. The majority of the birds gathered at Salzburg and remained there, with the exception of some temporary movements further towards the South.

On Oct. 24th, we translocated one adult migrant together with two juveniles from Salzburg about 90 km to the West to the entrance of Valley Zillertal. The next day, these three birds departed to the South and arrived at the wintering area three days later. The change in the group composition due to the translocation caused some other birds at Salzburg to depart temporarily.

Finally, mid-November, we translocated all the remaining birds to the West across the Brenner Pass, from where they continued to fly southwards on their own. According to our pre-experiences it is reasonable to assume that during spring migration the juveniles can easily bridge the translocation distance.

Thus, from an actual point of view, we have a strategy to overcome the autumn migration hangover. The cause of this hangover is difficult to understand, but in accordance with scientists we assume that the proximate causes are the extraordinary weather conditions (i.e. 2014 and 2015 were the warmest years ever measured). The effect was probably complemented and reinforced

by the fact that the absolute number and the proportion of experienced migrants in the flock were low in this new founded population.

6. HUMAN-LED MIGRATION

In 2015, we relocated the flight training camps from Grödig to Seekirchen am Wallersee, about 10 km NE of the city of Salzburg.

32 birds in two groups were raised, completely separated from one another and with two separate foster parents for each group. The groups were trained in two separate field camps, 3.6 km apart from one another.

At the end of July 2015, during a training flight, the two groups were brought together for the first time. From the first trial, the two groups merged and formed one flock. At onset of the migration the formation successively changed from an unstructured flock to a structured V-formation.



Fig. 6: Fostering and flight team human-led migration 2015; from left D Tritscher, P Przesang, C Esterer, A-G Schmalstieg, W Holzmüller, J Fritz. Picture A Stadter.

Starting on August 22nd, we were able to lead both groups together to Tuscany, where we arrived on Sept. 8th with 29 birds. Three individuals were lost during hand-raising resp. human-led migration. During the migration journey, the flight formation consisted of all birds led by two microlights, with a foster parent for each group at the back seats of the microlights.

During the last years, we were able to develop and optimize the human-led migration in a way so that it largely equals the natural migration journey of NBIs, e.g. appropriate flight speed, different flight techniques, and flight distance. In 2015, we could achieve a further great advantage. Doubling the number of birds substantially increases the efficiency and economy of the HLM as a

conservation method and a higher number of individuals makes the HLM also more attractive for basic research.

7. MORTALITY

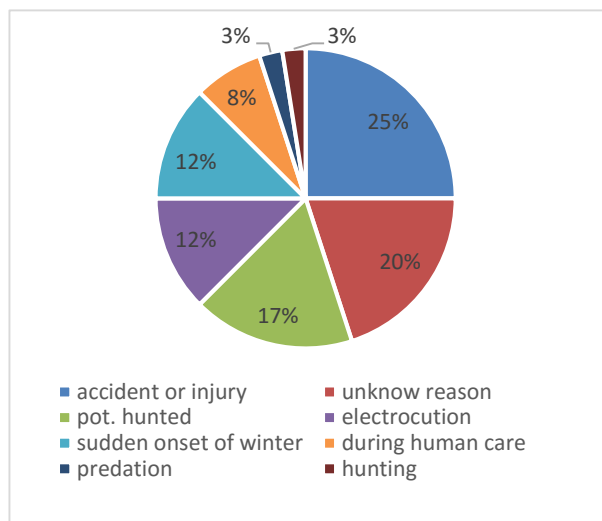


Fig. 7: Graph mortality causes during 2014 and 2015; N=40 birds lost.

Accidents or injuries only affected juvenile birds, seemingly due to a lack of experience. The most frequent injuries were broken legs or bills (N=6), which are particularly exposed in these ibises and therefore at a high risk of injury and difficult to cure.

The losses with **unknown reasons** were mainly birds that disappeared after their transmitters stopped working. In these cases, it seemed unlikely that illegal hunting was the mortality cause because of the circumstances (lost outside Italy and/or outside the hunting season).

The lost birds categorized as **potentially hunted** disappeared too after their transmitters stopped working. However, in these cases illegal hunting was a probable reason for their disappearance because of the circumstances (lost in Italy during the hunting season).

Six out of seven of the birds assumed to be potentially hunted were hand-raised juveniles. They departed in early winter 2015/16 from the wintering site and flew further south to the region of Rome, where their transmitters stopped working and the birds disappeared. To avoid such losses in the future, we will enclose the hand-raised group after arrival in the wintering area and

release them successively in small groups (sequential release).

Losses due to **electrocution** mainly happened during one accident in October 2014, where a total of four birds (two adults and two juveniles) died in Bavaria, as reported in the annual report 2014.

Losses due to **sudden onset of winter** happened during winter 2014/15, as reported above. In the following winter (2015/16), under comparable conditions, losses could be avoided by translocation of the birds. Thus, this mortality cause can be regarded as a singular event.

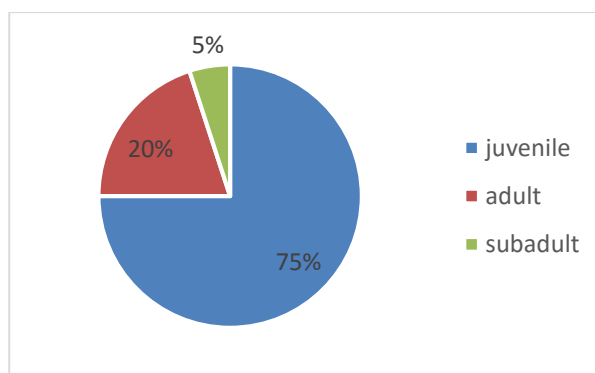


Fig. 8: Graph mortality rate due to age categories during 2014 and 2015; N=40 birds lost.

Since the beginning of the LIFE+ project we registered only one case of **illegal hunting**, which happened during the autumn migration. If we sum up this single hunted bird and the birds assigned as potentially hunted (N=7), we come to a maximum proportion of 20% losses due to illegal hunting. In comparison, during the feasibility study (2002-2011) a proportion of 71% of the losses were caused by illegal hunting.

In terms of age we mainly lost juvenile birds. In comparison, in a recent publication Flack et al. (2016) found a mean survival rate of 32% for 9 European white stork colonies. Thus, the survival rate in juvenile NBIs is already comparably good. However, there is still a good potential do increase the survival rate.

8. VETERINARY CARE

Veterinary care is mainly in the responsibility of our project veterinary Prof. Alexandra Scope from the University of Veterinary Medicine, Vienna, in collaboration with the veterinarians Dr. Jean Meyer from Carinthia, Dr. Renato Ceccherelli from

CRUMA Veterinary and Wildlife Centre in Livorno and others.

All chicks for hand-raising were screened three times. The wild flock was screened in March 2015 at the wintering area (blood sample, clinical pictures, bacteriology and parasitology, lead exposure).

As stated by our project veterinarian A Scope, the whole population is in a very good health condition. The results of blood, parasitological and bacteriological control examinations were within the physiological range with only isolated moderate and short term deviations without clinical expressions. Internal diseases are extremely rare in this population. Almost all problems are caused by trauma (beak, leg, wing fractures, shot and frostbite). All randomized samples for tests for Mycobacteria revealed negative results.

9. GENETIC SCREENING

The PhD Sarah Wirtz from the University of Trier developed fifteen polymorphic microsatellite loci, combined in five multiplex reactions (Wirtz et al. 2016). A total of 807 DNA samples were taken from 49 different institutions/colonies. The samples cover the European zoo population, the European sedentary colonies, the European reintroduced as well as former wild colonies in Turkey and Syria.

Currently, DNA fingerprints of the 727 samples with the developed microsatellite are established and analysed. The complete dataset will be available with mid of March 2016.

Major preliminary results are: (1) A cluster analysis indicates four genetic clusters. The clusters are well distributed over the zoo population with no indication of inbreeding. (2) The reintroduced population LIFE+ Waldrappteam includes types of all 4 genetic clusters and no indication of inbreeding; thus the zoo population is well represented in the reintroduced population. (3) No indication for the differentiation of an Eastern and Western NBI population on a genetic basis. (4) Highest number of private allele found for the Syrian & Turkish individuals.

10. REASON FOR HOPE EVENT



Fig. 9: Opening the new aviary at the castle of the city Burghausen; from left H Donner, H Steindl, C Maurer, A Rössler, K Kotrschal, J Fritz.

On June 5th 2015, a Reason for Hope event took place at Burghausen, Bavaria. The event was characterized by the participation of relevant politicians and stakeholders from Bavaria, Baden-Württemberg and Austria. The first part of the event was a symposium on Nature, Conservation and Culture. Thereafter, the new breeding location at the defence wall of the castle of Burghausen was presented and officially opened, with participation of relevant politicians. In the evening we hosted an open air cinema, set in front of the impressive backdrop of the castle of Burghausen.



Fig. 10: Open air cinema at the castle of the city of Burghausen; Photo J Fritz.

11. CAMPAIGN AGAINST ILLEGAL HUNTING

A major challenge for the sustainable reintroduction of a migratory NBI colony is the reduction of losses due to illegal bird hunting in Italy. This action is well on the way. A range of invasive measures aim to protect the birds directly, e.g. by permanent GPS monitoring of all

individuals, by escorting of birds whilst flying through Italy during the hunting season or by translocation of birds out of hunting hotspot regions during their migration journeys.

Another range of actions focuses on the hunters as the main target group. This includes collaborations with hunting associations, bird adoption programs, lessons, excursions and exhibitions, media work, Facebook activities as well as a criminal case and a civil case against an identified NBI hunter.

Since the start of our LIFE+ project in 2014, we lost only one bird during the autumn migration season. This is much below the number of losses during the previous feasibility study and we assume this to be due to an increasing impact of the actions implemented against illegal bird hunting.

However, we know that things can easily and rapidly change again to the adverse in this context. The migratory population and, in particular, the number of experienced adult migrants is still small. The loss of a few key birds can negatively affect the population development.



Fig. 11: An Italian school class adopted a bird of our group and started a project to support the reintroduction and protection of the species in Italy.

Therefore, we aim to continue and to extend our efforts against illegal bird hunting. For example, in February 2016 we started to present the project at Italian Hunting Shows, with up to 36.000 visitors. We regard this as an occasion to get in contact not only with hunting representatives but with a large number of ordinary hunters. Our information desk was exotic and unique among the others. These presentations also offer an opportunity to distribute questionnaires among hunters in order

to validate the impact of our engagement and to optimize our actions.

12. PUNISHMENT OF ILLEGAL NBI HUNTERS

The criminal case against the identified hunter who shot two NBI in 2012 is still ongoing. At a first hearing the hunter's lawyer intended to finalize the case by an extrajudicial comparison. However, the judge rejected due to the relevance of the case. A next hearing, including the witnesses, was scheduled for June 19th 2015. However, that hearing had been postponed to December 2015, for formal reasons. During that hearing only public officials and the hunter were heard. A hearing with members of our team is now scheduled for May 2016.

Additionally, we decided to start up also with a civil case. This will take place in 2016. The main payoff of this civil case is the public awareness which could be raised as well as the chance to produce an exemplary case.

13. RESEARCH ACTIVITIES

The NBI becomes more and more established as a relevant model species for various aspects of bird flight and bird migration. Data collection mainly occurs during the human led migration flights, in a way that it does not interfere with the ongoing of the conservation project. Budget for basic science research comes from national science foundations or is due to collaborations with scientific institutions.

During the last year, a number of scientific papers were published in high-ranking journals. A selection of the most relevant papers is listed below. For a complete citation list see the attachment, action E.16.

Bairlein et al. 2015. **Energy Expenditure and Metabolic Changes of Free-Flying Migrating Northern Bald Ibis.** PLoS ONE.

Voelkl et al. 2015. **Matching times of leading and following suggest cooperation through direct reciprocity during V-formation flight in ibis.** PNAS.

Wirtz et al. 2016. **Isolation of microsatellite loci by next-generation sequencing of the critically endangered Northern Bald Ibis, *Geronticus eremita*.** J.o. Heredity.

Basic research is still ongoing. A funding application at the Austrian Scientific Foundation is submitted: Voelkl & Fritz 2015: **Costs and Benefits of Formation Flight in Birds.**

The results of the scientific research significantly promote the implementation of the LIFE+

conservation project. In addition, scientific publications and conference contributions also substantially support a high and increasingly reputation of the LIFE+ project in the international science and conservation community.

14. TEAM, PARTNERS AND SPONSORS

LIFE+ Partners

Förderverein Waldrappteam (coordinating beneficiary); Alpenzoo Innsbruck, Tyrol; City of Burghausen; Country of Salzburg; Konrad Lorenz Forschungsstelle; Parco Natura Viva Garda Zoological Park; Zoo Vienna GmbH; Tierpark Rosegg.

Sponsors 2015

Bund Naturschutz in Bayern e.V.; Bundesministerium für Wissenschaft und Forschung; Mrs Maria Schram; HIT Umwelt- und Naturschutz Stiftung; Verein für Tier- und Naturschutz in Österreich; Grovni Stiftung; Zoo Schweiz; Tierpark Hellabrunn München; Valuena Stiftung; Waldrapp-AG.

Partner Institutions 2015

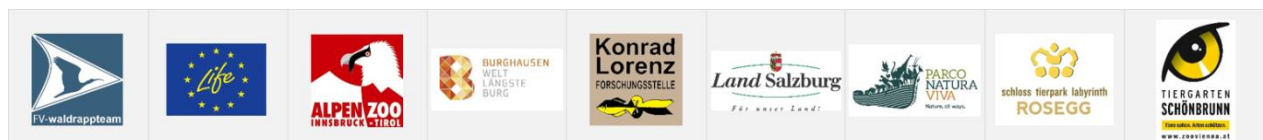
CRUMA Veterinary Wildlife Management Centre LIPU; Greifvogelstation Haringsee; Max Planck Institute for Ornithology Radolfzell; Oasi dei Quadris di Fagagna; Tierarztpraxis Völkendorf; Universität Trier; Universität Wien; Veterinärmedizinische Universität Wien; Vogelwarte Radolfzell; World Association of Zoos and Aquariums (WAZA); WWF Italy; WWF Oasi Laguna di Orbetello; Zoologische Staatssammlung München.

Team 2015

Aichner Barbara Maria; Altnöder Ursula; Attenberger Birgit; Böhm Christiane; Burati Luca; Cibulski Lara; Brimmer Regina; Cianchi Fabio; Dell'Agnolo Lisa; Dorfner Monika; Dorfner Renate; Eberhard Barbara; Esterer Corinna; Franzke Siegfried & Brigitte; Fritz Angelika; Fritz Johannes; Gönner Bernhard; Habel Oliver; Hafner Lynne; Hoffmann Wiebke; Holzmüller Walter & Edith; Kirtz Manfred; Kotschal Kurt; Kramer Regina; Lechner Norbert; Liechtenstein Emanuel; Lotz Matthias, Andrea & Stefan; Lundt Holger; Matignoni Cesare; Meyer Jean; Obermayer Jennifer; Perco Fabio; Perco Nicoletta; Pfäffl Barbara; Prillinger Klaus; Przesang Pablo; Riedler Barbara; Schnöll Georg & Georg jun.; Schweikl Marseta; Scope Alexandra; Schmalstieg Anne-Gabriela; Schroll Michael; Spindler Ernst-Josef; Sperger Christian; Stadter Anette & Hans; Stanclova Gabriela; Strebel Gunter; Travali Angela; Trevisi Rachele; Trobe Daniela; Trusendi Maurizio; Unsöld Markus; Völkl Bernhard; Weindl Josef & Familie; Wiener Siegfried; Zimmer Susanne.



Fig. 12: Project Management Team; from left: B Eberhard, W Holzmüller, C Sperger, D Tritscher, M Klumb, A-G Schmalstieg, J Fritz, C Esterer, I Scheiber, M Unsöld, A Fritz, B Gönner, D Trobe, R Trevisi.



15. QUANTITATIVE ACTION REPORT 2015 (SELECTION)

1. Action E.1 Project homepage and website

Generally, we have a lot of positive feedback on the website and a considerable increase of visitors both for varying visitors (2014: 15.776 ; 2015: 39.046; increase 147%) and for visitors total (2014: 1.037.403; 2015: 1.795.939; increase 70%). The visitors mainly belong to the countries Austria, Germany, Italy and Switzerland and by this cover the area of project implementation.

2. Action E.2 Project notice boards indoor and outdoor

The LIFE notice boards (160*90 cm) have a corporate design, as reported in Inception Report. It has already been installed at 8 sites in Germany, Austria and Italy.

3. Action E.4 Project trailer and demo video

Project trailer (47 sec) and demo video (194 sec) in the languages German, Italian, and English are permanently presented at our homepage. At the first visit to the HP the demo video (194sec) is played automatically.

The demo video has been uploaded to YouTube as a German version (3.119 clicks since upload), Italian version (2.586 clicks since upload) and English version (7.419 clicks since upload).

4. Action E.5 Northern Bald Ibis Live Tracking internet application for PCs and mobile devices

The Life Tracking App is available as a free download via Android- and Apple-store in a full version, including an Italian language version, a filter button and a search function. All our NBIs can be followed at the App.

So far, the number of downloads in the Apple Store was 5.600 and in the Android Store 14.700. A total of 16 bird species is currently shown in the App, with a total of 291 tracked individuals all over the world. The NBI is the species with the largest number of individuals, followed by the White Stork.

5. Action E.6 Overall project public relations

The overall project **Public Relations** are internationally on a high and still increasing level. In 2014, we have registered 167 articles (Germany: 27; Italy: 95; Austria: 20; Switzerland: 4; international: 21). In 2015, we have registered 224 articles, what is an increase of 37 % (Germany: 24; Italy: 116; Austria: 33; Switzerland: 25; international: 8). We have access to professional media clipping by AB TGS and AB PNV, but we assume that the real number of articles is much higher.

We particularly want to highlight the high number of articles in Italy, which are of significant relevance to the illegal hunting problematic. We also want to highlight the advanced level of public relation due to the combination of applied conservation and basic science in our LIFE+ project. For example, the magazine Scholastic News Edition 2, a social studies and science magazine for elementary school kids in the US, reaching about 1.5 million second-graders across the country, currently produced an article about NBI migration. The article will be about the LIFE+ project, but with a particular focus on our recently published study, showing that ibises cooperate when they fly in a V formation. The editor states that the idea behind the article is that reading about animal cooperation will help children understand that they can cooperate too.

The **project folder** was produced in an updated version and in three languages, German (16.000 pcs.), Italian (15.000 pcs.) and English (4.000 pcs.).

In 2015, 14 **press releases** were published.

We regularly publish **newsletters** referring to the actual ongoing of the project. The newsletters are distributed as an email over a database. Subscription can be made via our website or on request. The actual number of subscribers is German: 463; Italian: 63; English: 50. In addition, the newsletter appears automatically on the first side of our website. In 2014, 14 newsletters were published, in 2015 20 newsletters.

For the project we have a **German Facebook** fan site and an **Italian Facebook fan site**. Facebook became our primary communication tool to report about the ongoing project. In 2015, the number of fans increased substantially, for the German Facebook site (fans end of 2014: 1.857; end of 2015: 2.453; increase 32%) and for the Italian site (fans end of 2014: 1.079; end of 2015: 1.998; increase 85%).

International **radio and TV presence** is on a continuously high level (2015: 9 productions). We want to highlight a 52 min TV production by BR and ARTE, GEO 360°, which will be broadcasted in May 2016 as well as a production called TERRA X on Bird flight, which will also be broadcasted in 2016. We also want to point out the increasing proportion of radio and TV productions in Italy.

In 2015, we had a total of 20 **talks** in Austria, Italy and Germany; assigned to speaker Fritz J: 14, Perco N: 5, Trevisi R: 1. Additionally, we presented the project at 6 **events**, in Austria, Italy and Germany.

6. Action E.7 Project networking

We frequently communicate with our partners in the established network of the **International Advisory Group for the Northern Bald Ibis** (IAGNBI). Scientific exchange also occurs on the level of the **AEWA Northern Bald Ibis International Working Group** (AEWA NBI IWG). This group was founded in 2012, with J Fritz as a founding member. Since 2015, J Fritz is also member of the

IUCN Stork, Ibis and Spoonbill Specialist Group (IUCN SIS-SG). This group is a further efficient platform for the exchange of experiences and data, beyond the level of the NBI species.

Our collaboration with Projecto Eremita in Andalusia, Spain, is ongoing. Networking with other LIFE+ projects took place at two Austrian LIFE platform meetings

A collaboration with the **Green Teen Foundation** (<http://www.greenteenteam.org/>) was established via our Italian AB PNV during the RfH event at their site, with a ceremony to open a new aviary by Green Teen members, J Goodall and J Fritz (picture; see **Fehler! Verweisquelle konnte nicht gefunden werden.**). We collaborate with the **Migratory Birds for People program**. On invitation, our LIFE+ project became a member of the **European Rewilding Network**. This initiative aims to create an active, living network of rewilding initiatives of major interest, throughout Europe. A collaboration also takes place with **Sparkling Science**, an Austrian research program of the Federal Ministry of Science, Research and Economics (former BMWF).

We also collaborate with a number of **zoos and parks in Italy**, mainly in the range of the NBI migration corridor, is well on the way.

7. Action E.8 Public Relations Tiergarten Schönbrunn

In 2015, **NBI chicks were hand-raised** at Zoo Vienna. Visitors could observe the foster-parents and the chicks through a window. During 27 days (17/04 – 12/05) 140.053 people visited Zoo Vienna.

Two large **public events** were organized; 03.09.2015: Animal Conservation Days (4 days, 25.315 zoo visitors); 09.05.2015: Northern Bald Ibis Days (2 days, 14.453 zoo visitors).

8. Action E.10 Public Relations Burghausen

On June 5th 2015, a **symposium** took place in Burghausen on nature, conservation and culture. **Eco-tourism** is developing. **6 excursions** to the breeding site at the defence wall took place.

9. Action E.12 Public Relations WWF Oasi Laguna di Orbetello

Three **TV productions** took place at the wintering site.

The reserve is opened for the public from September to May. During that time a number of about 12.000 people visit the reserve.

10. Action E.14 Public Relations Tierpark Rosegg

In 2015, a total of around 87.000 people visited TPR. The NBI aviary and the notice board is on the main route through the park, where the majority of visitors pass by.

11. Action E.15 Public Relations Parco Natura Viva

In 2015, about 180.000 people visited the zoo. PNV is highly involved in the overall public relation. It regularly distributes the general LIFE+ press releases.

12. Action E.16 Documentation and dissemination of project methods

Documentation and dissemination of project methods occurs mainly via scientific publications and conference contributions. In 2015, a total of 7 scientific papers were published and one further is submitted for publication. Members of the LIFE+ team presented 9 conference contributions.

Publications Peer Reviews

Bairlein F, Fritz J, Scope A, Schwendenwein I, Stanclova G, van Dijk G, Meijer HAJ, Verhulst S & Dittami J 2015. Energy Expenditure and Metabolic Changes of Free-Flying Migrating Northern Bald Ibis. PLoS ONE 10(9): e0134433.

Fritz J 2015. Reintroduction of the Northern Bald Ibis in Europe: Illegal Hunting in Italy during Autumn Migration as the Main Threat. World Association of Zoos and Aquariums, WAZA News 2/2015 pp 31.

Fritz J & Unsöld M 2015. Internationaler Artenschutz im Kontext der IUCN Reintroduction Guidelines: Argumente zur Wiederansiedlung des Waldrapps *Geronticus eremita* in Europa. Vogelwarte 53: 157–168 (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Fritz J & Unsöld M 2015 (2). Mortalität durch Stromschlag beim Waldrapp. Vogelwarte 53/4, 443-444 (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Fritz J & Voelkl B 2015. Zur Evolution von Kooperation: Formationsflug bei Waldrappen als Beispiel für Kooperation durch direkte Reziprozität. Vogelwarte 53/4, 387-388.

Voelkl B, Portugal SJ, Unsöld M, Usherwood JR, Wilson AM & Fritz J 2015. Matching times of leading and following suggest cooperation through direct reciprocity during V-formation flight in ibis. Proceedings of the National Academy of Sciences, 112/7, 2115–2120 (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Wirtz S, Böhm C & Hochkirch A 2015. Genetische Diversität beim Waldrapp - Ein Vergleich zwischen Zoo- und Freilandpopulationen. Vogelwarte 53/4, 400.

Stanclova G, Schwendenwein I, Merkel O, Kenner L, Dittami J, Fritz J & Scope A subm. The effect of migratory flights on hematologic parameters in Northern Bald Ibises. PLOS ONE.

Conference contributions

- Fritz J & Voelkl B 2015. Zur Evolution von Kooperation: Formationsflug bei Waldrappen als Beispiel für Kooperation durch direkte Reziprozität. Poster 148. Jahresversammlung der Deutschen Ornithologen-Gesellschaft, Konstanz (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).
- Unsöld M & Fritz J 2015. Mortalität durch Stromschlag beim Waldrapp. Poster 148. Jahresversammlung der Deutschen Ornithologen-Gesellschaft, Konstanz (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).
- Wirtz S, Böhm C & Hochkirchner A 2015. Genetic diversity in the ex situ population of the Northern Bald Ibis – Choosing suitable individuals for a reintroduction. Poster 10th International Conference on Behaviour, Physiology and Genetics in Wildlife, Berlin, Germany.
- Perco N 2015. The reintroduction of the NBI in Europe LIFE+. Talk Annual Conference of FIDC (Federazione Italiana della Caccia), Rome.
- Perco N 2015. The return of the Northern bald ibis in Europe. The importance of the anti poaching campaign. Talk. VI. Conference on Research in the Parks, Parco Natura Viva, Italy.
- Scope A 2015. Using Population Based Reference Data for the Health Screening of Rare Species. Talk International Conference on avian herpetological and exotic mammal medicine; APR 18-23, 2015; Paris, FRANCE.
- Wirtz S 2015. Genetische Diversität beim Waldrapp *Geronticus eremita* (Linnaeus, 1758) – Ein Vergleich zwischen Zoo- und Freilandpopulationen. Talk. 148. Jahresversammlung der Deutschen Ornithologen-Gesellschaft, Konstanz.
- Wirtz S 2015. Conservation genetics in the critically endangered Northern Bald Ibis. Talk. Jahrestagung des Arbeitskreises Biogeographie im Verband der Geographen an Deutschen Hochschulen, Basel, Schweiz.
- Wirtz S 2015. Genetic diversity in the ex situ population of the Northern Bald Ibis – Choosing suitable individuals for a reintroduction. Talk. Jahrestagung des Deutschen Zoologischen Gesellschaft, Graz, Österreich.

13. Action E.18 Symposium on International NBI Conservation and Reintroduction

The symposium is scheduled for August 2016 and it will be located in Seekirchen am Wallersee, State of Salzburg. During 4 days, a meeting of the LIFE+ Steering Committee and hosting of a meeting of the International Advisory Group for the Northern Bald Ibis will be combined

14. Action E.21 Project presentation in European zoos

In 2014 and 2015 we presented the project at 6 events in different zoos. More than 42.000 people visited the zoos respectively the events during these days.

15. Action E22 Illegal Hunting Campaign

Collaborations with two major Italian hunting associations could be established. The representatives also signed Gentle Agreements. In the follow three further birds were adopted and Gentle Agreements signed.

Seven project presentations were made in Italy, mainly during meeting of hunting associations.

In 2015, the number of fans at our Italian Facebook site increased substantially (fans end of 2014: 1.079; end of 2015: 1.998; increase 85%). We could cause and control extended discussions between hunters and conservationists about topics like illegal hunting, invasive bird species, relevance of reintroduction work, etc.

A total of 15.000 Italian folders were produced and distributed during exhibitions, events, presentations and at public places.

In February 2016, an exhibition took place at the HIT Show 2016 (Hunting Individual Protection, Target Sports) in Vincenza, Italy, with 36.000 visitors. N Perco and R Trevisi presented the project. It was the first time that we presented the project at such a large hunting event. We regard it as an occasion to get in contact not only with hunting representatives but with a large number of ordinary hunters. Our information desk was exotic and unique among all the hunting expositions. This raised a lot of attention. We want to continue with this kind of presentation. In spring 2016, three further exhibitions at hunting events are planned. It is also an efficient way to distribute the questionnaires. We also intend to inspire other conservation projects to follow our example. Five bird adoptions were assigned to hunting associations and 16 to school classes.

The criminal case against the identified hunter who shot two NBI is still ongoing. A next hearing will take place in Livorno on May 27 2016. A Schmalstieg and D Trobe from our team are invited as witnesses. In addition, we will go for a civil case against the hunter, requesting compensation for the damage.

