

Northern Bald Ibis REINTRODUCTION PROGRAMME IN ANDALUCÍA

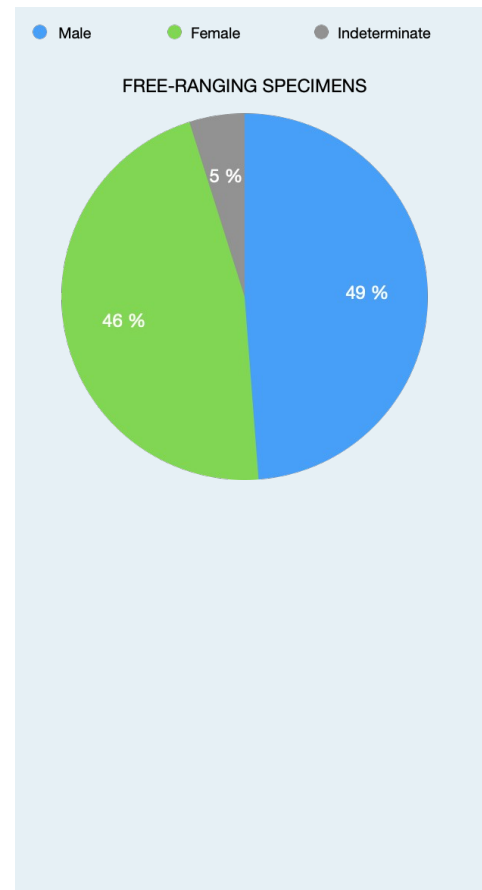
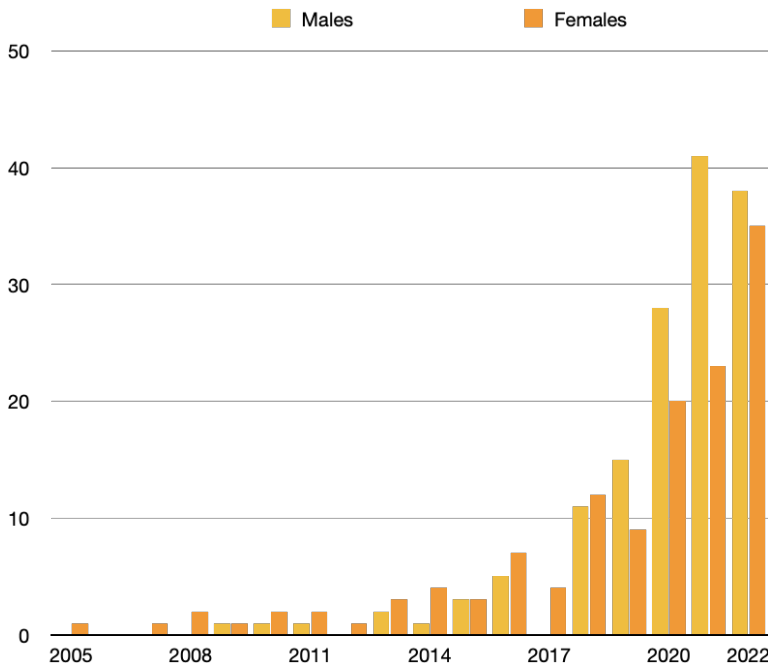


SUMMARY 2023

INITIAL POPULATION 2023

The 2023 campaign started with a total of 246 birds in the wild (120 males, 114 females and 12 undetermined).

Sex of captive birds coming from EAZA zoos for release are provided by each institution participating in Proyecto Eremita. Chicks hatched in the wild are DNA sexed from blood taken during the annual leg-banding campaign. The reason why some birds are undetermined is because we have not received yet the results from DNA sexing analysis. The total free flying population is ringed and sexed.



RELEASES OF NEW INDIVIDUALS



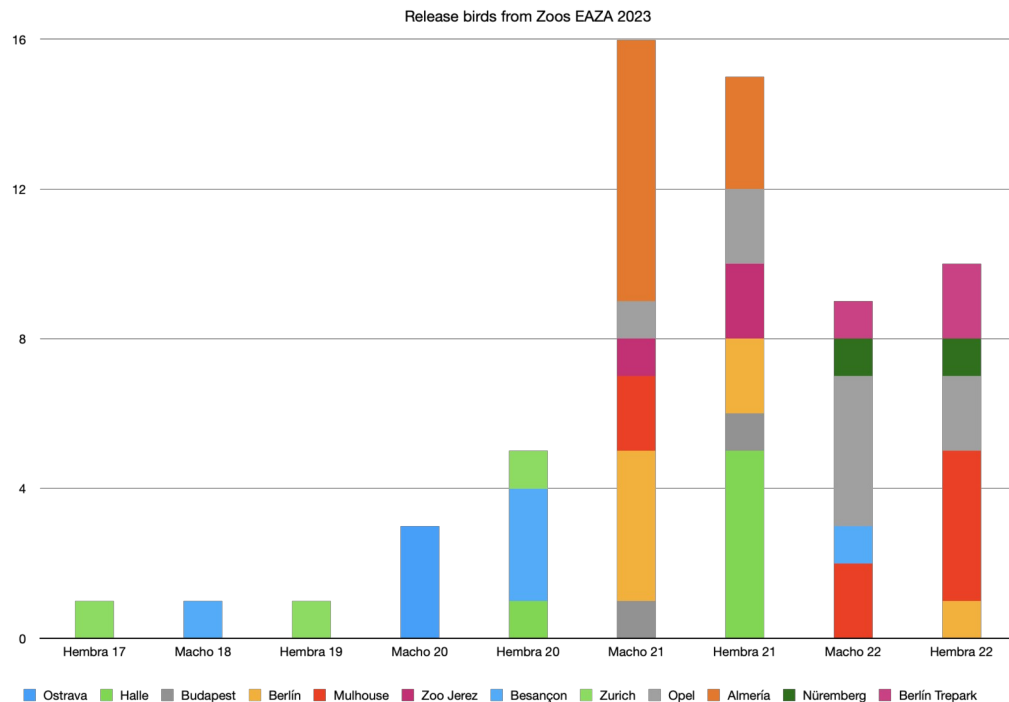
Release aviary at San Ambrosio aviary. Free flying ibis visit the aviary frequently perching and walking on the top. The birds kept in the aviary start to habituated and establish visual and acoustic contact.



Releasing EEP juveniles of northern bald ibis from the aviary at San Ambrosio. After an acclimatization period of 4 – 6 weeks. All of them are identify by leg-banded and some are equipped with GPS/GSM trackers.

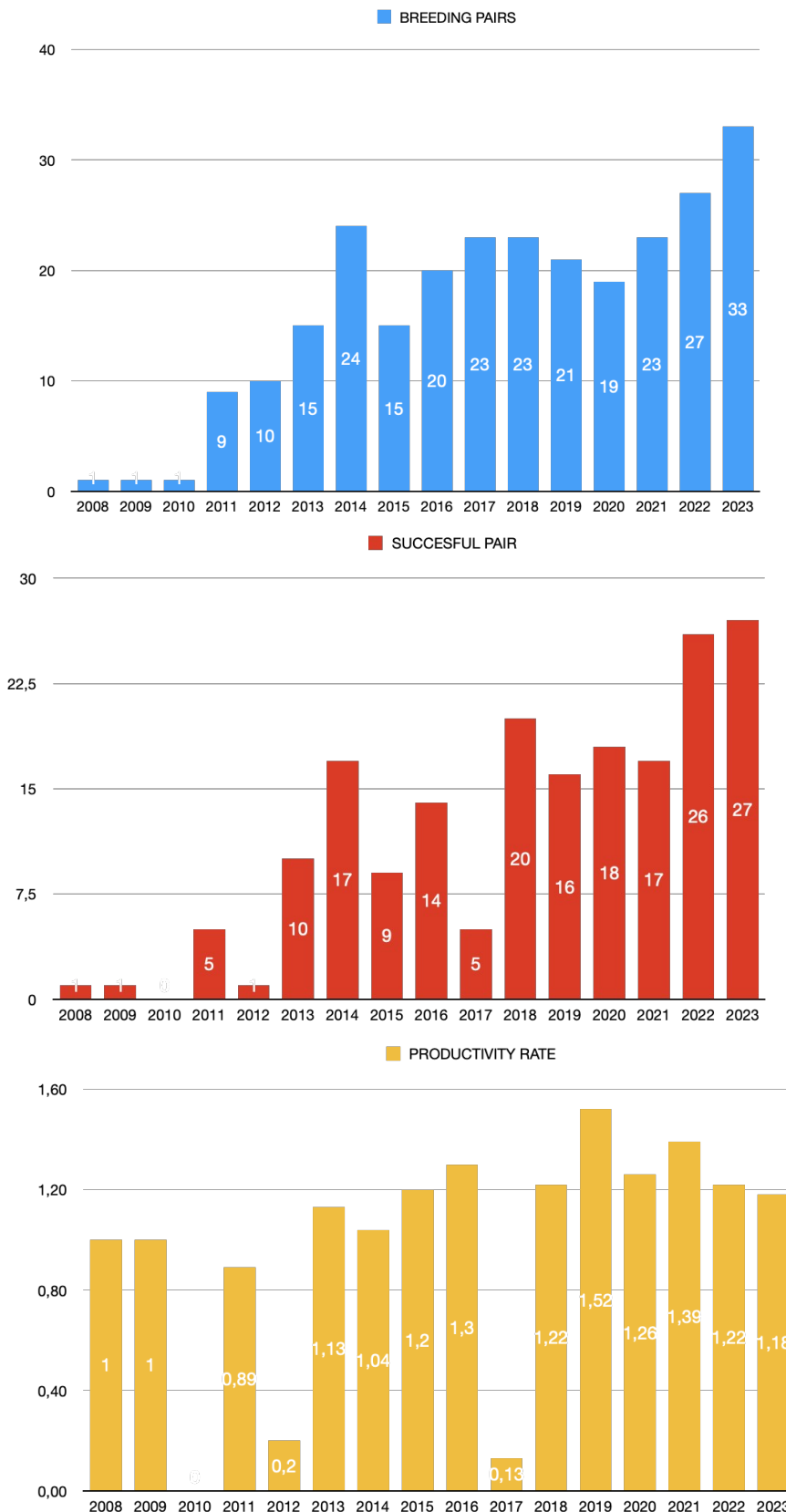
Ongoing supplementation of birds from the aviary is still occurring to achieve the Proyecto Eremita's goal of creating a non-migratory, self-sustaining population at the release site. During 2023 a total of 19 new birds joined the free ranging birds (9 males, 10 females). These juvenile birds come from the EEP programme, all of them captive-hatched in the following EAZA zoos: Besançon, Mulhouse, Nürnberg, Opel, Berlin zoo, Berlin Tierpark. Proyecto Eremita thanks all the participating zoos for sending their birds sexed and covering the transport cost.

Birds coming from EAZA zoos arrived at Jerez zoo. Once in Jerez, they are leg-banded with both metal and plastic rings and screened before moving to the aviary at the release site in San Ambrosio. They stay in the aviary for an acclimatization period of 6 weeks before release. Some birds are also equipped with GPS/GSM transmitters.



The release aviary, is still located in San Ambrosio (Pierre Gay's property), one of the main feeding areas for northern bald ibis in Vejer and Barbate municipalities. During acclimatization period many free flying ibis rest and roosted on the top of the aviary, so the ibis inside are habituated (visual and acoustic contact) to the free flying birds as well as the new environment. A tower with ledges and nest-boxes were built near the aviary as a roosting and breeding site.

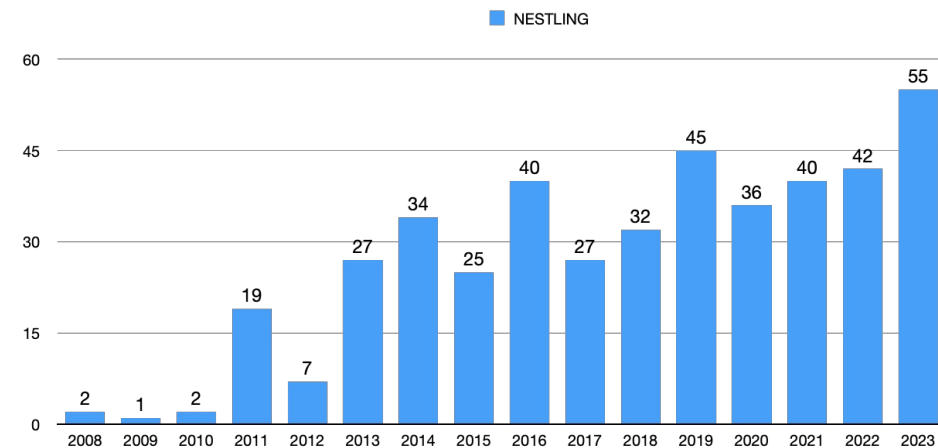
BREEDING RESULTS IN THE WILD



As is usual in the Eremita Project, the main are more famous breeding colony was established on the sandstone cliffs located in the Barca de Vejer, in the municipality of Vejer de la Frontera. This colony is located near a busy road and an observatory was built in front for visitors and ornithologist. Other reproductive location is found inside a tower, the Torre de Castilnovo, in the municipality of Conil de la Frontera. This hollow tower has 21 m high and just 100 m from the sea, it is built with oyster stone (sedimentary rock formed by remains of sea shells). The distance from this tower to the colony of Vejer is 11 km to the W. Other breeding site is in Tajo de Barbate, a coastal cliff used in previous seasons. This year we have a new breeding site, a tower built near the release aviary at San Ambrosio, intended for this purpose. Two pairs tried again to breed in the La Mora cliff, nearby Barca de Vejer. They built nests and incubated eggs but unfortunately, they failed due to disturbance from the large number of jackdaws established in this rocky cliff. Up to a total of 33 pairs participated in the breeding episode, of which 27 laid and raised chicks. The number of fledglings in this campaign has been 39.

These pairs were distributed as follows:

Barca de Vejer: 14 pairs, 21 fledglings
Castilnovo tower: 14 pairs, 10 fledglings
Barbate cliff: 1 pair, 2 fledglings
La Mora cliff: 2 pairs, no fledglings
San Ambrosio tower: 6 pairs, 6 fledglings.



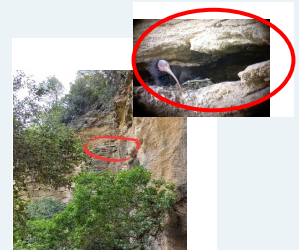
1) Barca de Vejer



2) Barbate cliff



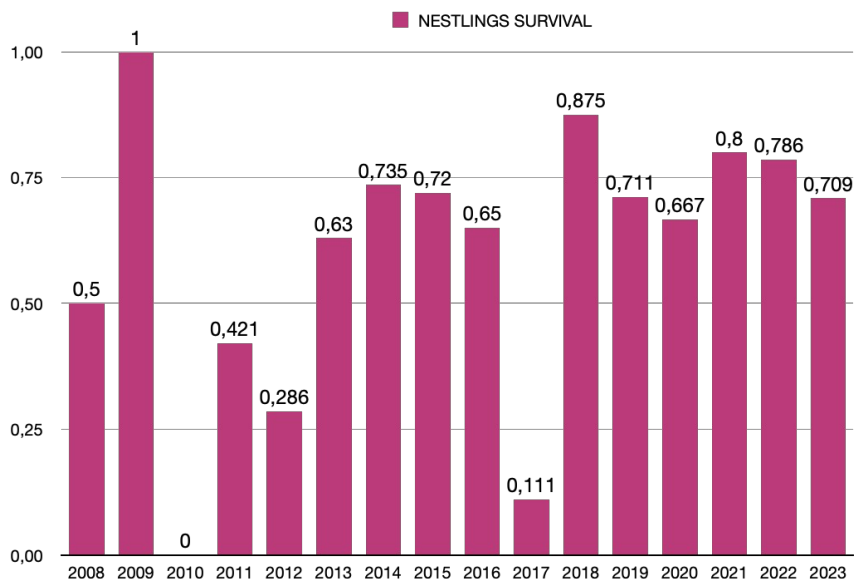
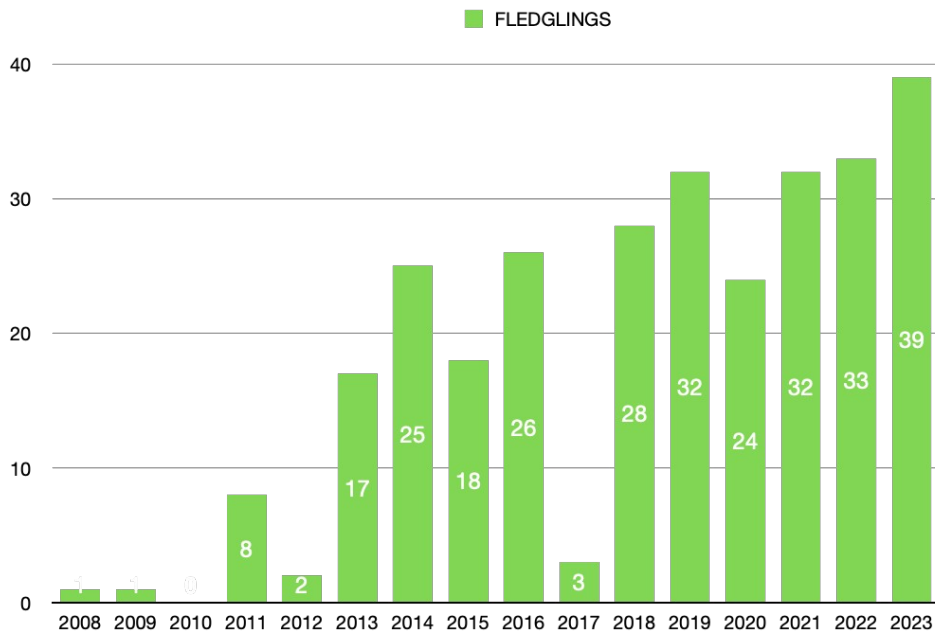
3) San Ambrosio Tower



4) La Mora cliff



5) Castilnovo Tower



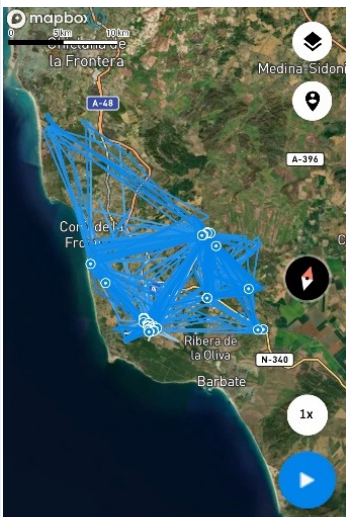
RELEASES OF NEW INDIVIDUALS

All the birds, both captive-hatched coming from EAZA zoos to be released as well as those wild-hatched, are individually marked using metal and plastic rings with an alphanumeric code. Also, GPS/GSM-transmitters are fitted in some of them to track down their movement.

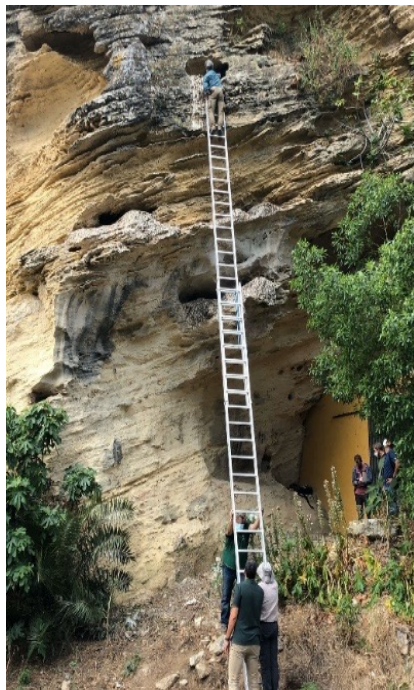
All the breeding sites are monitored periodically, at least twice a week, to identify breeders, number, and development of chicks. The chicks need to be leg-banded before they fledge. An expert team climb up the nests to handed the chicks between 30 and 40 days old. Chicks are leg-banded, screened, blood sample are taken for DNA sexing, and some of them are fitted with GPS/GSM transmitters.

GPS/GSM transmitters

Proyecto Eremita use two types of transmitters of 23 - 35 grams: OrniTrack-25 (Ornitela) solar powered GPS/GSM tracker and Druid (DEBUT series prototypes, Devices of Biological Ubiquitous Telecommunication) by Interrex-Tracking.com, model LEGO 2G with raised solar panel.



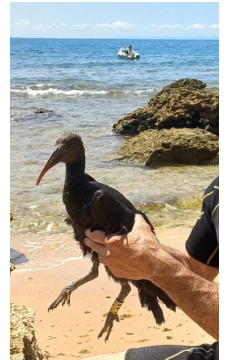
Tracking down example of a group of resident ibis in La Janda area using Animal Tracker. With this application we can follow the movements of our northern bald ibis, identifying foraging and breeding sites.



Barca de Vejer



Castilnovo hollow tower



Barbate cliff

In 2023, the main source of GPS/GSM transmitters were zoological institutions that has supported the Proyecto Eremita sending GPS/GSM transmitters, such as Doué la Fontaine zoo, Spaycific zoo, and Jacksonville Zoo and Gardens, Florida.

VETERINARY ISSUES

The veterinary procedures are based on the Veterinary Protocol in the Reintroduction of Northern Bald Ibis. There is a permanent veterinary service at Jerez zoo for any ibis found sick or injured in the wild. Sick or dead ibis are detected by signal warning from the tracking application or found by local people that call to inform about it.

In case of unclear mortality the carcasses are sent to the Andalusian Wildlife Analysis and Diagnosis Centre (CAD) where a thorough post-mortem study is performed. This laboratory applies forensic analysis to determine the cause of death using means such as necropsy, toxicology, pathological anatomy, forensic entomology, microbiology and parasitology. All the carcasses undergone a viral disease protocol, especially for Avian Flu and West Nile Virus.



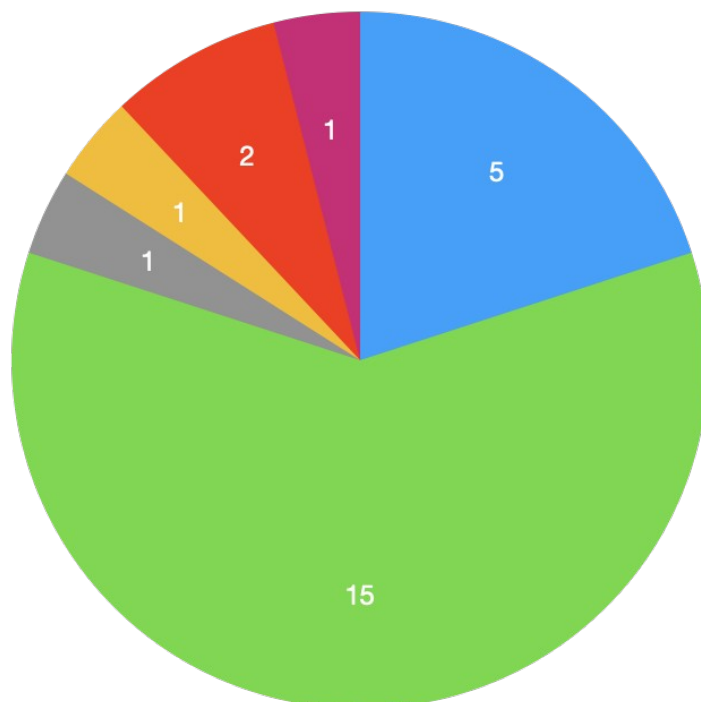
MORTALITY

During 2023 a total of 25 deaths has been registered. From these, 7 were one year old juveniles, 13 were two years old juveniles and 5 adults, some of them proven breeders. The majority of casualties were located thanks to GPS/GSM transmitters. There is a high juveniles mortality rate, especially during the first 2 years of life due to inexperience in both cases: captive hatched and wild hatched juveniles.

The main causes of mortality are electrocution, drowning and trauma. In this 2023 campaign the mortality rate has decreased, in part due to some measures corrections taken. Drinking containers for cattle have been corrected to prevent falls inside and drowning. Isolation of the electric pylon is the most common correction measure although it is not easy due to the high number of specimens that can be perching together in the same line. It is necessary to set longer insulation sheath or undergrounding the cables. The resulting mortality in 2023 was less than that of previous years, but still having a high rate of juvenile mortality, causing a slow recruitment rate.

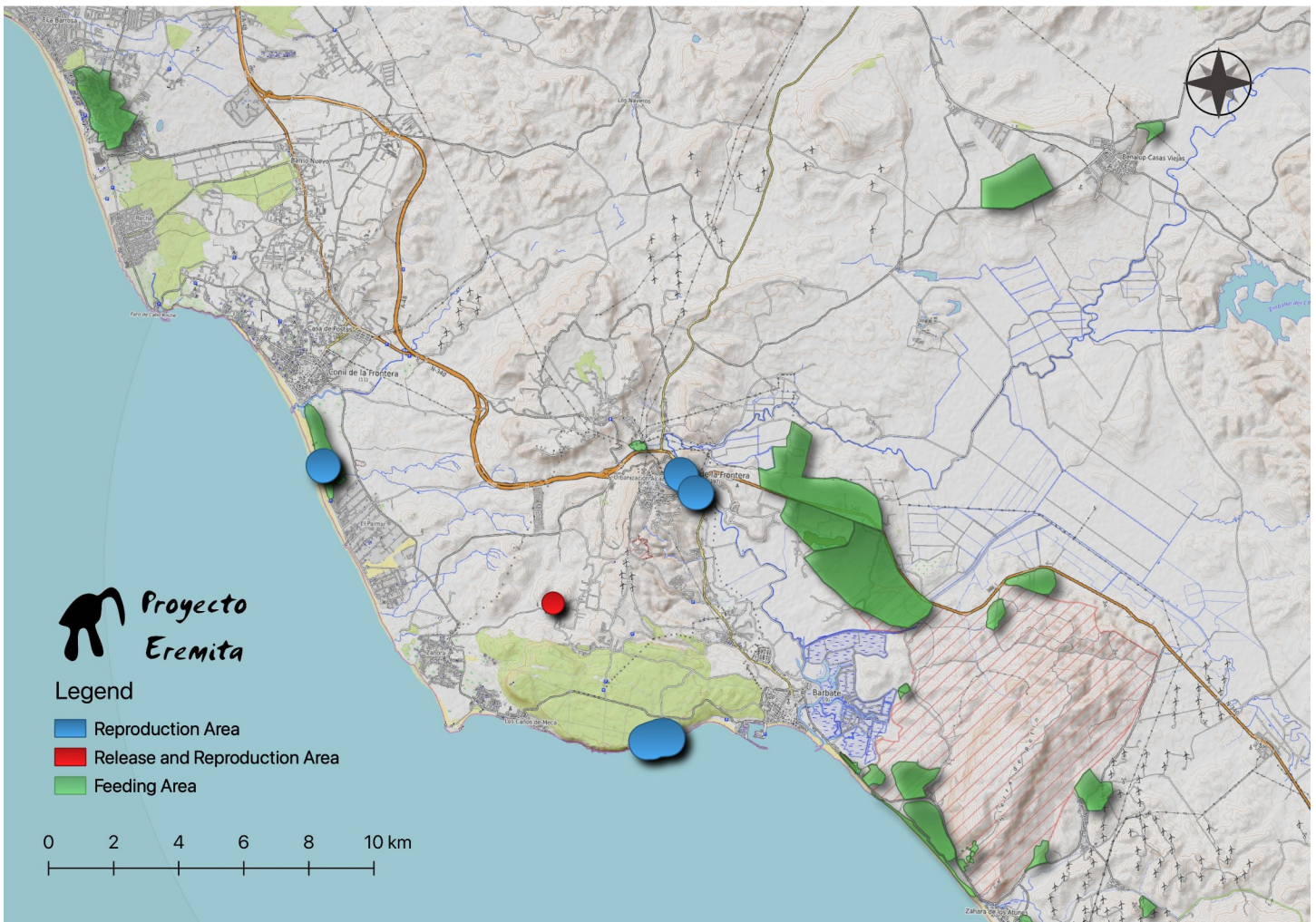
These deaths are detected mainly in those birds equipped with GPS transmitter; it follows that in the rest of the population not GPS equipped the same case must have occurred. The large proportion of casualties are produced during the two first years of life, given their inexperience. In most cases, dead birds are collected by Andalusian rangers. They are sent, in sealed bags, to the Analysis Center and Diagnosis (CADS), in Malaga for the corresponding post-mortem study.

● Electrocution ● Unknown ● Predation ● Windmill ● Disease ● Drowning



DISTRIBUTION AREA

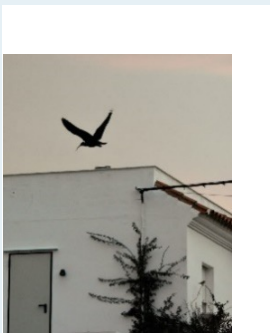
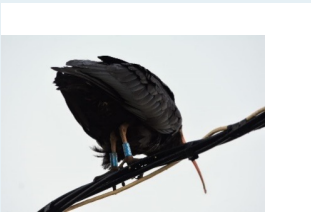
The distribution area of the wild population in Cádiz province is still the same as previous years, in “La Janda” area (Vejer, Barbate, Conil, Chiclana, Medina, Zahara de los Atunes). It is a sedentary population with no migratory movements and only occasional juvenile dispersion movements. No juvenile dispersion has been detected to North Africa in the last years.



The distribution area of the resident population continues to be that of previous years (La Janda area), with only a few juveniles moving long

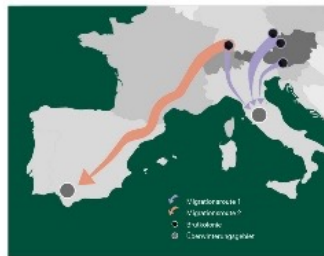
THE JOURNEY OF "FIETE"

On November 28th, a juvenile northern bald ibis named Fiete, ring n°: 680, hatched in 2023 in the wild in Überlingen, Germany appeared in Tahivilla village, Cádiz only 15 km away from the resident population. Fiete has been the second bird coming from the Central European migration population (first was Ingrid) that has flown down to Andalusia. On February 20th was captured, fitted with a GPS transmitter, and released in San Ambrosio resident population.



COOPERATION WITH WALDRAPPTTEAM

The Waldrappteam Conservation and Research, is running a reintroduction project of migratory Northern bald ibis in Central Europe. This is a part of a Life NBI project. The European migratory population breed in colonies north of the Alps with a common wintering area in southern Tuscany, Italy. Due to several factors (climatic change delaying the timing of the autumn migration, presence of a sedentary population in southern Spain) they started a second migration route to Cádiz province. In cooperation with Proyecto Eremita, the goal is to establish this second migration route connecting both European populations.



A new migration route for the colonies north of the Alps to Cádiz province, Spain

Using the "Human Led Migration" technique they guide the birds from Germany to Cádiz province. The technique consists of hand-rearing the chicks on humans being and training to follow the ultralight plane. To achieve a new migratory route between Central Europe and Cádiz, on August 21st, 2023, a group of 35 hand-raised juveniles were guided for the first time from the airfield of Baden-Würtemberg, in Germany, across 2300 kilometers to Andalusia. On October 3rd the team reached San Ambrosio area, Cádiz, with 32 ibis. In total, the flight was completed in 18 stages during which 3 birds were lost (apparently due to raptor attacks, erratic dispersal, or adverse weather conditions). The 32 birds were kept in the San Ambrosio aviary for a period of two-month to be released on December 5th and join the resident population in the Janda area. After the success of this first experience, the plan is to continue using this "migration" method guided by humans until 2025 to establish a migratory tradition route between the two European populations.



Waldrappteam and Proyecto Eremita teams at the arrival/landing site in San Ambrosio, 3rd

OTHER ACTIVITIES

DUBLIN ZOO supported Proyecto Eremita in 2023 with 5.000 euros. This fund allowed many activities related to ibis conservation. We acquire tools, stuff, portable incubator and materials needed for daily work. New ledges were built in the cliff of Barca de Vejer to improve the quality and increased the breeding sites. Also, more nesting boxes was built and places in the tower of San Ambrosio.

CONFERENCES on Northern Bald Ibis conservation. Several speech and presentations took places in different universities and institutions regarding the on-going projects in Cádiz and Central Europe as well as the last wild population in Morocco.



CONCLUSIONS

The 2023 reproduction and leg-banding campaign, as in the previous campaign, indicates a trend to stabilization and increase of the breeding pairs in the last five years. It can be translated as a positive adaptive process of the population and the suitability of nesting substrates chosen by the breeders. There are successive incorporations of new breeders in the same locations, filling niches that have been left due to the casualties produced. This year a new reproductive nucleus has established in the tower built at San Ambrosio near the release aviary. This experience of building a breeding tower near the aviary could be interesting for future reintroduction programs.

In summary, the 2023 reproduction campaign yield an increased number of pairs and fledglings compared to previous years. On the other hand, mortality rate has decreased almost to a half, compared to the data from the previous campaign and there has not been a high loss of adults / breeders. The result is that the population is increasing.

The positive results of Proyecto Eremita in 2023, with a resident population of 240 birds and 33 breeding pairs, encourage thinking that we are getting closer to the final goal of the project, which was to establish a sedentary, stable, and self-sufficient population at the release site.

We noticed a higher public awareness concerning the northern bald ibis conservation in Cádiz.

The connection of the Central European migratory population with the resident population of Cádiz could be a milestone in the conservation of this species in Europe.

ACKNOWLEDGMENT

Proyecto Eremita would not be possible without the support and collaboration of EAZA/EEP zoos. I think it is a good example of zoos working together for species conservation.

A part from Jerez zoo, the following zoological institutions (sorry if I forget someone) have been kindly collaborated with the project along all these years + providing birds for release or supporting it by sending GPS transmitters: Amersfoort, Jersey, Budapest, Chester, Doué la Fontaine, Innsbruck, Berlin, Nüremberg, Mulhouse, Clères, Parco Natura Viva, Goldau, Upie, Sigean, Ostrava, Opel, Oasys-Almería-Tabernas, Selwo, Rheine, London, Cologne, Wuppertal, Hedielberg, Basilea, Gaia, Zurich, Northens Ark, Besançon, Halle, Barcelona, Spaycific and Jacksonville, Florida. Thanks to Dublin zoo for funding the project with 5000 euros.

Especial thank to Pierre Gay to offer part of his property in San Ambrosio, Barbate to allow us setting the acclimatization/release aviary as well as building the tower for reproduction.

