

OSPREY RESTORATION PROJECT IN THE URDAIBAI BIOSPHERE RESERVE (BASQUE COUNTRY)



ANNUAL REPORT 2017











OSPREY RESTORATION PROJECT IN THE URDAIBAI BIOSPHERE RESERVE (BASQUE COUNTRY)

ANNUAL REPORT 2017

Aitor Galarza

Project team:

María del Mar del Arco Vicente De Alba Xarles Cepeda Javier Elorriaga Aitor Galarza Jon Maguregi Edorta Unamuno Jose Mari Unamuno Ander Zabala Íñigo Zuberogoitia

Urdaibai Bird Center. Orueta 7. E-48314. Gautegiz-Arteaga urdaibai@birdcenter.org www.birdcenter.org

SUMMARY

The osprey restoration program in the Basque Country started in 2013. Its aim is to establish a founder population in the Biosphere Reserve of Urdaibai. This may ultimately help the recolonization of estuaries and wetlands on the northern Iberian Peninsula and thus promote connectivity between the populations in Southern Iberia and continental France.

In this fifth year of the project, 12 osprey chicks were translocated from Scotland to a hacking tower located at the Biosphere Reserve of Urdaibai (Biscay, Basque Country) under the license from Scottish Natural Heritage. The birds were kept in the hacking tower for between 11 and 31 days. During this period the birds ate properly (201, 06 g/day per bird) and most of them experienced positive growth. All birds were fitted with a backpack transmitter (1.70 g PP Biotrack), which was replaced by a satellite transmitter (30 g Microwave Argos / GPS Solar PTT) in the case of a single bird. After release, the birds stayed 32.2 days in the vicinity of the hacking tower on average and left Urdaibai between August 17 and September 13. The bird carrying the satellite transmitter left Urdaibai on 13 September but its signal was lost 4 days later when it was in Morocco.

In what is now the fifth year of the project, 6 males have returned to the Urdaibai Estuary. Two are from the group released in 2013, one is from the 2014 group and three from 2015. Another male seems to have settled in Las Landas (France)

SUMMARY

1.	Intro	Introduction				
2.	Nest	Nestling suply				
3.	Infra	Infrastructures				
	3.1.	Correction of electric cable posts	6			
	3.2.	Artificial nests	7			
	3.3.	Photo trap cameras	8			
4.	Reint	Reintroduction				
	4.1.	4.1. Nestling collection and transportation				
	4.2. Stay in the hacking tower					
	4.3.	Release and first flight	13			
	4.4.	Dependence phase	14			
	4.5.	Intraspecific interactions	15			
	4.6.	Interspecific interactions	16			
	4.7.	Human disturbances	16			
	4.8.	Veterinary care	16			
5.	Teler	netry	17			
6.	Retu	Returned ospreys 1				
7.	Tech	Technical visits 2				
8.	Disse	Dissemination				
	8.1.	Guided visits	24			
	8.2.	Talks and conferences	25			
	8.3.	TV, radio and web	26			
	8.4.	Scientific paper	26			
	8.5.	Press conferences	26			
9.	Environmental education 27					
10.	Refe	References				
11.	Ackn	Acknowledgements 32				

1. Introduction

The osprey (*Pandion haliaetus*) restoration project in the Urdaibai Biosphere Reserve (Basque Country) was set up in 2013. The project is an initiative of the *Aranzadi Society of Sciences* (<u>www.aranzadi-zientziak.org</u>) and is managed by the *Urdaibai Bird Center* (<u>www.birdcenter.org</u>). It is funded and supported by the Department of Environment of the Regional Council of Biscay and the Basque Government.

The programme has been developed under the guidelines set out in the *Osprey restoration project in the Urdaibai Biosphere Reserve* (Galarza & Zuberogoitia, 2012). It is authorized by the Board of the Urdaibai Biosphere Reserve and the Wildlife Committee of the Spanish Ministry of Environment.

The main objective of this project is to set up a reproductive population of ospreys in the Basque Country. It contributes to the following sub-objectives:

- To increase the osprey breeding range and promote the connectivity between French and Southern Iberian populations.
- To increase awareness of osprey conservation and biodiversity in general, using the process as a tool for education.
- To promote the image of the Urdaibai Biosphere Reserve and ecotourism.

This report describes actions carried out in 2017, the fifth year of translocation, adaptation and release of young ospreys in Urdaibai. Given that the 2013 report described the preparation process and the structures used for hacking in detail, the present report will refer only to significant technical aspects, in particular the changes or improvements made, the results of the process of hacking and release and the returns of birds released in previous years.



Typical osprey habitat in Scotland (Loch Garten, Abernethy Reserve, RSPB)

2. Nestling supply

Established in 2013 with the Government of Scotland (Scottish Natural Heritage), the general agreement guarantees the annual provision of 12 chicks in the period 2013-2017. This was maintained in 2017.

3. Infrastructures

3.1. Correction of electric cable posts

In 2016 an ospey was electrocuted near the hacking tower when it perched on a post supporting a cable. In order to prevent accidents of this kind, we worked with the company Iberdrola and fitted the posts with wooden perches.



3.2. Artificial nests

In 2017 all the artificial nests which had been erected in previous years were checked and any damage was repaired. A new platform was installed on a rocky island near the Urdaibai Reserve.



To date, 12 platforms have been installed in Urdaibai (7 in the marsh and 5 in the forest). Three have been positioned in the Zadorra Reservoir (Álava) and one in Txingudi (Gipuzkoa). In Cantabria, the Council of Marina de Cudeyo have put up two platforms.



3.3. Photo trap cameras

In May, two photo trap cameras were placed on perches and a third one on a nesting platform. All of them were in the area around the hacking cages. This was carried out in collaboration with the company SAITEC engineering.



The cameras helped to document the hacking process, detect ospreys that had returned and further our knowledge of the osprey's diet in Urdaibai.





4. Reintroduction



Chick collection and measurement taking in Scotland

4.1. Nestling collecting and transportation

Between July 6 and 9, twelve nestlings (6 male and 6 female) were collected from 9 nests in Moray and the Highlands (Scotland). This operation was managed by Roy Dennis. A member of the staff from the reintroduction programme was also involved, as were several volunteers. Nestlings were only collected from nests containing more than one chick and when the individual was in good physical condition. On three occasions two chicks were collected from nests containing three nestlings. All nestling were weighed and measured (length of wing, tail and tarsus) *in situ*. After removal from the nest, nestlings were kept in four pens according to their age, and fed four times a day at the headquarters of the *Roy Dennis Foundation for Wildlife*, located near Forres (Moray, Scotland). They were identified with *Aranzadi Society of Sciences* metal rings and yellow colour PVC rings.

On the morning of July 10, nestlings were taken in a transit van from Forres to Aberdeen airport, where they were fed before being transported to London by plane. From London the individuals were transported on another flight to Madrid, where the birds were fed with anchovies (*Engraulis encrasicolus*). Finally, transportation from Madrid to the Basque Country was carried out by van. The nestlings arrived at the area of hacking on the morning of July 11. Aitor Galarza (County Council of Biscay) accompanied the birds during transport. On arrival, the veterinary service of the project examined the birds. Apparently all the nestlings were in

good condition, despite the fact that most of them had experienced a slight weight loss since collection from the nest (Table 1). Feather samples were taken from each osprey. These were used for sexing using molecular techniques. Samples were analyzed in the Department of Zoology and Ecology of the University of Navarre.

Ring	Sex	Weight 1 (Date)	Weight 2 (Date)	Weight 3 (Date)
U12	F	1,670	1,552	1,607
P00214		(9/7/17)	(11/7/17)	(25/7/17)
U13 P00215	U13 P00215F1,610 (9/7/17)U14 F13075M1,310 (9/7/17)U15 P00217F1,580 (7/7/17)		1,590 (11/7/16)	1,718 (25/7/17)
U14 F13075			1,238 (11/7/17)	1,297 (25/7/17)
U15 P00217			1,430 (11/7/17)	1,652 (25/7/17)
U16 P00220	М	1,480 (7/7/17)	1,220 (11/7/17	
U17	М	1,600	1,370	1,442
P00221		(6/7/17)	(11/7/17)	(19/7/17)
U18	М	1,570	1,445	1,514
P00222		(6/7/17)	(11/7/17)	(19/7/17)
U19	М	1,490	1,330	1,426
P00223		(6/7/17)	(11/7/17)	(19/7/17)
U20	F	1,500	1,440	1,588
P00224		(6/7/17)	(11/7/17)	(7/8/17)
U21	F	1,270	1,361	1,776
P00225		(7/7/17)	(11/7/17)	(7/8/17)
U22	F	1,370	1,460	1,783
P00226		(6/7/17)	(11/7/17)	(7/8/17)
U23	М	1,420	1,330	1,434
P00226		(7/7/17)	(11/7/17)	(7/8/17)

Table 1Sex and weigh (g) of the chicks when collected form the nest (1), on arrival to Urdaibai (2)and when fitted with transmitter in the hacking tower (3)





Transporting the ospreys in Heathrow (London) and Aberdeen airports

4.2. Stay in the hacking tower

Each cage hosted 3 chicks, which were grouped according to their plumage development. During their stay in the tower birds were fed four times daily. The food was pre-weighed and the amount consumed was recorded. At first, the fish was given in small pieces, large scales and bones having been removed. The size of the pieces and the amount of scales and bones increased as the days went on. Prior to each new intake of food, uneaten remains were removed from the cages. The ospreys were mainly fed on thick-lipped grey mullets (*Chelon labrosus*) which were caught directly from the estuary by the staff of the project.



Fishing for grey mullets in the estuary of Urdaibai



Checking the ospreys in the hacking tower



Osprey U12 and U14 the release day

Young ospreys were observed directly through the spyglass windows and through the CCTV system to monitor their behaviour and the amount of food they ate.

The average amount of food eaten daily per individual was 201.06 g (Range = 171.01 -287.04 g). Three birds lost some weight during the stay in the hacking tower (Table 2).

Nestlings remained in the hacking tower for between 11 and 31 days (see Table 3).

Table 2

Growth rates from date of collecting from nest to the a	rrival in Urdaibai, and growth rates during the stay
in the hacking tower. The mean daily food intake	of each bird in the hacking tower is also shown

	Daily growth rate from nest to arrival (%)	Dif (g)	Daily growth rate during hacking (%)	Dif (g)	Daily food intake (g)
U12	-3.52	-118	+0.25	+55	198.94
U13	-0.62	-20	+0.57	+128	229.42
U14	-2.74	-72	+0.34	+59	181.76
U15	-2.37	-150	+1.10	+222	275.49
U16	-3.51	-94			
U17	-2.87	-260	+0.65	+72	158.23
U18	-1.59	-125	+0.59	+69	188.04
U19	-2.14	-160	+0.90	+96	171.01
U20	-0.8	-60	+0.38	+148	261.94
U21	+1.79	+91	+1.12	+415	259.28
U22	+1.31	+90	+0.81	+323	287.04
U23	-1.58	-90	+0.28	+104	225.57

4.3. Release and first flights

Two days after it was observed that the birds had started moving against the front mesh, the hacking tower cages were opened. Before dawn, fish was distributed on the feeders and the front panels were opened quietly so that the birds could decide themselves when to fly out of the cages. Staff and volunteers followed discreetly from a distance to check on the birds leaving the hacking cages and their first flights. Three openings of the hacking tower were conducted. Some individuals were changed from one cage to another depending on their stage of development.



Left: Interaction with a crow. Right: one of the young with a returned osprey (N3, 2013)

PVC Ring	Arrival date	Release date	Days in hacking tower	Departure date	Days before departing
U12	10/7/17	27/7/17	17	-	-
U13	10/7/17	27/7/17	17	29/8/17	32
U14	10/7/17	27/7/17	17	29/8/17	32
U15	10/7/17	27/7/17	17	-	-
U16*	10/7/17	-	-	-	-
U17	10/7/17	21/7/17	11	30/8/17	40
U18	10/7/17	21/7/17	11	17/8/17	27
U19	10/7/17	21/7/17	11	20/8/17	31
U20	10/7/17	10/8/17	31	7/9/17	29
U21	10/7/17	10/8/17	31	13/9/17	34
U22	10/7/17	10/8/17	31	13/9/17	34
U23	10/7/17	10/8/17	31	9/9/17	31

Table 3.Period of stay in the hacking tower and period of dependence

* sick

4.4. Dependence phase

The dependence period was 32,2 days (range: 27-40 days, n=11) (Table 3), similar to that observed in North American (32.5 days) (Stinson, 1978) and Scottish (30.4 days) (Bustamante, 1995) natural populations, and shorter than that observed in reintroduction programmes in Andalusia (38.3 days) (Muriel et al., 2010), Portugal (44 days) (Palma & Beja, 2011) and Italy (48.7 days) (Monti et al., 2012).

After the first release day, food was provided once a day before dawn. The ospreys behaved in a similar way to the juveniles in the Scottish population (Bustamante, 1995): the first attempts at fishing were reported during the first week after release, attempts at fishing gradually increased in intensity and most of the ospreys tried to fish, albeit unsuccessfully. As in previous years, the ospreys came to the feeding sites preferably during the first two hours of the morning and the last two before dusk.

One individual (U16) died three days after its arrival. This was possibly due to the stress of the journey from Scotland.

4.5. Intraspecific interactions

Throughout the dependence period, the juveniles showed semi-gregarious behaviour with frequent visual and vocal contact. They often used the feeders, perches and artificial nests together. Up to five individuals were observed on the same feeder and artificial platform. We noted the absence of any aggressive or hierarchical interactions that reduce the feeding of subordinate birds. During the dependence phase the young ospreys coincided with at least four returned males. The presence of N3 (2013) on a nesting platform was very positive as several birds flew directly to it when they were released from the hacking tower.



Marsh harrier and yellow-legged gull feeding on the feeders

4.6. Interspecific interactions

We recorded 17 interactions with other bird species: yellow-legged gull (Larus michahellis) (6), crow (*Corvus corone*) (18), marsh harrier (*Circus aeruginosus*) (2), black kite (Milvus migrans) (4), Peregrine (*Falco peregrinus*) (1), (1), grey heron (*Ardea cinerea*) (2) and black stork (Ciconia nigra) (1). Ospreys chased other birds in 13 cases, while the ospreys were chased in 4 cases (yellow-legged gull, marsh harrier and peregrine). These interactions are considered normal. Physical contact or apparent negative results did not occur.

4.7. Human disturbances

Humans caused the flight reaction of the ospreys on one occasion only. In this case, two canoes approaching to a distance of approximately 100 m were the cause of the fright. Whenever it was possible, people causing disturbance were informed of temporary restrictions on use and told to leave the area voluntarily. Once the area was free, frightened birds returned and recovered their normal activity. This usually occurred in less than an hour.

4.8. Veterinary care

The chicks were examined before leaving Scotland. As in previous years, this was done by Jane Harley, veterinarian of the Strathspey Veterinary Center (Grantown on Spey). She certified that they were in good physical condition. Upon arrival in Urdaibai, a new examination was carried out and no apparent disease or problem was detected.



However, two days after its arrival in Urdaibai, U16 was not looking well and hardly ate. On the third day it was taken to the veterinary clinic. Unfortunately, it died the same day.

Jane Harley and Tim Mackrill during the veterinary inspection in Scotland

5. Telemetry

Each bird was equipped with VHF radio-tags (Biotrack PP 1.70 g), attached to a pair of their back feathers. They were tagged during the night, two days before release. These transmitters were used to detect the individuals on a daily basis, to ascertain their departure date and eventually to locate and rescue them in emergencies. The VHF device was replaced with a satellite transmitter on one bird.

This year the team decided to reduce the satellite transmitter monitoring programme to one bird. This was due to the preliminary results of the monitoring of juvenile ospreys with satellite transmitters. As in previous years, a trap with nooses was installed on a feeding platform approximately a month after the release of the birds. On August 26th one of the birds (U22, *Aline*) was captured and tagged with a satellite transmitter (Microwave 30 g Argos/GPS Solar PTT) attached to its back using a Teflon harness.



Tagging "Aline" and his route to Morocco

It was observed that U22 had increased its weight by 137 g. This had occurred at a rate of +0.42 g per day (data corrected by the biomass of the bird) from the installation of the transmitter in the tower hacking until further capture (18 days later). U22 departed on September 13th but when it was flying over Morocco (32°80'N, 15°59'W) the signal was lost.

However, the device worn by *Cousteau* continues to send a signal from the south of Senegal. He has spent the last few months near Koubalan by a small tributary stream of the Casamance River. Located in an area of rice fields and palm tree, the stream is fresh water with a tidal influence. There are also several dead trees in the area and these are used by *Cousteau* as perches. He is able to rest and eat well in this location. In order to create material for the dissemination of the project, a trip was made to film and photograph *Cousteau* in this area.





Cousteau (U06, 2016) and his wintering area in Casamance (Southern Senegal)

6. Returned ospreys

This year (2017) we have recorded the return of 7 ospreys to the Cantabrian Coast. Three individuals are from the 2013 group, one from 2014 and the remaining three from 2015. All of them are males.



Localities in Northern Iberian Peninsula and Southern France where returned individuals were observed in 2017.

P1 (2013) "Txuriko"

Txuriko arrived in Urdaibai on March 18. Three days later he was seen doing a courtship flight and bringing nesting material and food for a female of British origen. On April 11, he was seen for the first time near the Cubas River (Bay of Santander) and he stayed there until September 23. On May 28 various nesting platforms and perches were put up in the River Cubas. This was carried out by the company Santander Ecotourism in collaboration with the Marina de Cudeyo Council. Staff of the Urdaibai Bird Center acted as advisors in the process. On May 30 *Txuriko* was seen on a platform in the company of an unringed female. From that moment until they left, breeding behavior was observed; nesting material was collected, the female was fed and the couple mated repeatedly.

P1 started his Migratory journey on September 22 and the female on the September 21.



Left: P1 (2013) photographed on arrival to Urdaibai in March . *Right*: P1 with his partner in the Bay of Santander (Photo Carlos Sainz)

N4 (2013) "Livingstone"

Livingstone was observed for the first time on March 29 in the Courant d'Huchet Reserve (Les Landes, France). On May 7 he was seen flying with a female in the same area. They stayed together for 4 days. On May 17 he was sighted with a different female. This bird was born in 2014 and was from Giottani (Corsica). During the summer courtship flights took place frequently, the female was fed and the couple mated. The last sighting of N4 in Courant d'Huchet was on Setiembre 14. The Corsican female was last seen on September 13





N4 (2013) with a female from Corsica (CCE, Green) (Photos: Paul Lesclaux)

N3 (2013) "Roy"

From March 28 to September 13, N3 was seen almost continually in Urdaibai. He was seen attempting to mate with foreign females on three occasions. He supplied nesting material and fed the female. Throughout his stay in Urdaibai, he dedicated his time to improving the nest. A juvenile female in the dependence phase spent a great deal of time with him on the platform and was fed by him.





N3 (2013) in the Urdaibai Biosphere Reserve

PF (2014) "Pink Floyd"

Observed in Urdaibai on Urdaibai May 4th, July 18th and August 17 and 18th.

PF(2014) in Urdaibai (Photo: Julian Ansuategi)



NT (2015) "Txingudi"

Observed in the Txingudi Bay (Gipuzkoa, Basque Country) on May 15, 16 and 17th.



NT(2015) in the Bay of Txingudi (Photo: Román Diez)

33 (2015)

Photographed in Urdaibai on May 24th. Regular sightings in Villaviciosa (Asturias) between June 22 And September 13.



33(2015) photo trapped in the Reserve of Urdaibai

34 (2015)

Photographed in Urdaibai on June 22th and observed in Villaviciosa (Asturias) between July 2nd and 4th34(2015) fotografiada en la Reserva de Urdaibai



34(2015) in the Urdaibai Biosphere Reserve

7. Technical visits

In May we were visited by part of the Scottish advisory group, headed by Roy Dennis. A meeting was held to analyse the progess of the project and and a visit was made not only to the Urdaibai Wetland but to others in the area which would be suitable for ospreys. For example, we went to a location in the Bay of Santander which could be a possible nesting site for some of the ospreys. In addition to this, in May we also hosted a visit from Wendy Strahm y Denis Landenbergue, leading members of the Swiss Osprey Reintroduction Project

In July the rangers from the Reserves of Marais d'Orx and L'Etang Noir y Courant d'Huchet (Les Landes) came back to visit Urdaibai. In August, management from GREFA (Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat) were here. They are involved in a project for the recovery of Bonelli's eagle.



Right. Roy Dennis with a group of students from schools of Urdaibai. **Dcha**: Roy Dennis and Brian Etheridge checking the marshes in the Bay of Santander



Left. Wendy Strahm and Denis Landenbergue, of the Swish team . **Right**: Pablo Izquierdo, Juan José Iglesias, Virginia Moraleja and Ana Rita, members of GREFA, with Javier Elorriaga and Iñigo Zuberogoitia.

8. Dissemination

8.1. Guided visits

During the dependence phase, twelve guided visits were organized. They aimed to raise awareness of the project and allow people to observe the ospreys. Approximately 164 people took part.



8.2. Talks and conferences

March 2017

"Recuperando un icono ambiental para el País Vasco: el águila pescadora en la Reserva de la Biosfera de Urdaibai" Ekologistak Martxan. Bilbao





September 2017

"Conservación y ecoturismo: la recuperación del águila pescadora en las rías cantábricas". Il Jornadas de Ecoturismo Marina de Cudeyo: Ecoturismo y Conservación Binomio Natural. Ayuntamiento de Marina de Cudeyo, Cantabria.





8.3. Press, radio and web

- www.deia.com/.../una-docena-mas-de-polluelos-de-aguila-pescadora-se-criara-en-urd...
- <u>www.eldiario.es/.../Regresa-Urdaibai-primera-pescadora</u> liberada_0_625738053.html
- www.20minutos.es/.../regresa-urdaibai-primera-aguila-pescadora-este-ano-que-fue-lib...
- https://www.ekologistakmartxan.org/.../charla-recuperando-un-icono-ambiental-el-ag...
- web.bizkaia.eus/es/web/area-de-prensa/noticias/-/news/detailView/17824
- <u>www.grefa.org/.../27</u> 31-life-bonelli-visito-el-proyecto-de-reintroduccion-del-aguila-p...
- https://www.ivoox.com > Por Onda Vasca > Euskadi Hoy, edición de tarde
- www.revistaquercus.es/.../urdaibai-recibe-a-las-aguilas-pescadoras-reintroducidas.html
- www.eldiariomontanes.es/region/.../aguila-pescadora-hogar-20170827194238-ntvo.htm...
- www.ondavasca.com/.../llegan-a-urdaibai-doce-nuevos-polluelos-de-aguila-pescadora...
- <u>bilbao24horas.com/.../18783-una-docena-mas-de-polluelos-de-aguila-pescadora-se-cr</u>...
- www.ecoticias.com/naturaleza/132621/Bizkaia-recuperando-aguila-pescadora
- elclickverde.com/agenda/2017/07/19/visita-guiada-para-ver-águila-pescadora-
- <u>www.elcorreo.com/bizkaia/costa/201703/25/confian-esta-primavera-</u> <u>forme-20170324222457.hmtl</u>
- www.elperiodico.com/es/noticias/politica/regresa-urdaibai-primera-aguila-pescadoraeste-ano-que-fue-liberada-2013-5924069
- busturialdea.hitza.eus/2017/07/11/arrano arrantzalearen-12-txita-gehiago-haziko-diraurdaibain/
- -

8.4. Scientific papers



"First evidence provided by satellite telemetry of nocturnal flight overland by an osprey (*Pandion haliaetus*)" is an article which was published in the North American science magazine "Journal of Raptor Research" 51(2). The article relates the incredible migratory journey from Urdaibai to Senegal of one of the ospreys tagged with a satellite device in 2016.

8.5. Press conferences

February 2017

In the Palace of the Regional Council of Biscay, the Minister for the Environment and Sustainability (Biscay County Council), Elena Unzueta, and the Project Manager, Aitor Galarza, report on the actions which have been undertaken since the beginning of the osprey recovery project.

July 2017

Near the acclimatization tower in Gautegiz Arteaga, the fifth and final batch of ospreys from Scotland are presented to the press by The Minister for the Environment and Sustainability (Biscay County Council) and the Project Manager.



Press conferences of the Minister for the Environment and Sustainability with the Project Manager, in Bilbao and Gautegiz Arteaga

9. Environmental education

In 2014 we began an environmental education programme. Focusing on one of the priorities of the osprey restoration project, it aims to raise awareness of the conservation of biodiversity in general and the osprey in particular. Several schools in the Basque Country take part in this programme. It is coordinated by the Urdaibai Bird Center in collaboration with the Department of Education and the Department of Environment of the Basque Government (Centre of Interpretation of the marshes of Txingudi) and the Araba Country Council (Ornithological parks of Mendixur and Garayo).

During 2015 the following activities have been carried out:

Project "Ospreys flyways linking communities"

Now in its fourth year, the project continues to participate in the international "Osprey Flyways linking communities" coordinated by Tim Mackrill and Pete Murray (Rutland Water, Leicester, England). Schools in Europe, America and Africa are involved. The main objective of this project is to develop a coordinated approach in the use of new technologies in education (Websites, Google Earth, Skype, ...). The osprey and its migratory route are used as a vehicle to connect schools in different parts of the world. Among other activities the World Osprey Week (WOW) was held in March and two state schools from Urdaibai (Montorre and Urretxindorra) participated. Work was shared by videoconference with schools in Italy, England, America and Gambia. In addition to this, we organized a talk with the Environmental Education team from Rutland Water. Schools from Urdaibai participated and experiences were shared.

Work done by Basque schools in this event are available on the project website (<u>www.urdaibaiospreys.eu</u>).



Pete and Jackie Murray talking about the Rutland Water Osprey project

2. Basque local net of "Ospreys flyways linking communities"

Running at the same time as the international network and following the same model o, a network has been created on a local level. Schools involved use Basque as the vehicle language. In addition to this, a second level of involvement exists. Local schools participate in the international network and use English to communicate. This year, six schools participated in this network. The project was coordinated by the Urdaibai Bird Center and the Txingudi Ornithological Park. Schools from Busturia (Uzelay), Gautegiz Arteaga (Montorre), Muxika (Urretxindorra) and Donostia (La Anunciada and Aitor) participated in World Osprey Week https://www.youtube.com/watch?v=VzzjxqiFZ-g&t=152s

3. Conferences for school centers

On November 24th two talks were given in Gernika. Their aim was to involve other schools in the project. In addition to this there was a talk in the Urdaibai Bird Center by the Environmental Education Team from Rutland Water. School from Urdaibai which participate in the International network attended. https://www.youtube.com/watch?v=rFjtfXi7C08



4. Travelling exhibition

The exhibition was on display in September and Octubre at the Urdaibai Bird Center, the Txingudi Centre for Interpretation and in the Garaio Ornithological Park. It was seen by thousands of people. A new panel has been added and another is in progress. It covers the return of the ospreys to Urdaibai.

5. Monographic visits

In October schools involved in the environmental education programme visited the Urdaibai Bird Center, the Txingudi Center for Interpretation and the Mendixur Ornithological Park (Alava). A total of 1,468 students and 95 teachers were involved in these visits. 6024 students and 357 teachers have participated in these monographic visits since they began in 2014.



Some of the schools that took part in the monographic visits

6. Collaboration with the British Council

Since 2016 we have been developing the Environmental Education Project in organizations outside the official education system. One example of particular note is the work carried out in the British Council, Bilbao, where the main activity is English Language teaching. Materials from the Environmental Education Project have been included and adapted to suit the needs of students of all ages. Thanks to the collaboration of the management and teaching staff in this organization almost a thousand people have participated in the project, including both parents and students.



Students of the British Council of Bilbao

10. References

Bustamante, J. 1995. The duration of post-fledging dependence period of Ospreys *Pandion haliaetus* at Loch Garten, Scotland. *Bird Study*, 42: 31-36.

Casado, E. & Ferrer, M. 2017. Osprey (*Pandion haliaetus*) reintroduction project in Andalucia. 2007 Report.

Galarza, A. & Zuberogoitia, I. 2012. *Proyecto de reforzamiento y recuperación del Águila pescadora en la Reserva de la Biosfera de Urdaibai (Bizkaia, País Vasco)*. Sociedad de Ciencias Aranzadi/Diputación Foral de Bizkaia. http/www.birdcenter.org

Mackrill, T., Appleton, T. & McIntyre, H. 2014. *The Rutland Water Ospreys*. Bloomsbury Publishing, London.

Monti, F., Sforzi, A. & Dominici, J.M. 2012. Post-fledging dependence period of ospreys *Pandion haliaetus* released in central Italy: home ranges, space use and aggregation. *Ardeola*, 59(1): 17-30.

Muriel, R.; Ferrer, M.; Casado. E. & Calabuig, C. 2010. First breeding of reintroduced ospreys *Pandion haliaetus* in mainland Spain. *Ardeola*, 57(1): 175-180.

Palma, L. & Beja, P. 2014. Reintroduction of the osprey (*Pandion haliaetus*) in Portugal. Annual Report 2014. CIBIO.

Stinson, C.H. 1978. The influence of environmental conditions on aspects of the time budgets of breeding ospreys. *Oecologia*, 36: 127-139.

11. Acknowledgements

Organizations

- Scottish Natural Heritage, Scottish Government, UK
- Roy Dennis Foundation for Wildlife, Scotland, UK.
- Ministry of Agriculture, Food and Environment, Government of Spain
- Biodiversity Agency, Basque Government, Spain
- Department of Sustainable Development and Natural Environment, County Council of Biscay, Spain
- Department of Presidence, County Council of Biscay, Spain
- Board of the Urdaibai Biosphere Reserve, Basque Government, Spain
- City of Gautegiz Arteaga, Biscay, Spain
- Courant D'Huchet Nature Reserve, Las Landas, France
- Bahía de Santander. Ecoturismo y Educación Ambiental, Cantabria, Spain
- Fondo Asturiano para la Protección de la Naturaleza (FAPAS), Asturias, Spain
- Iberdrola S.A.
- Saitec S.A.
- Panadería Labakoa

People

- Roy and Moira Dennis, Tim Mckrill (Roy Dennis Foundation for Wildlife, Scotland)
- Ian Perks, Brian Etheridge, Emily Joáchim and Fraser Cormack (Volunteers in Scotland)
- Julian Orsi (Rothiemurchus Fishery, Scotland)
- Jane Harley (Strathspey Veterinary Centre, Scotland)
- Paul Lesclaux (Courant D'Huchet Nature Reserve, France)

• Igor Aginako, Eneko Díaz, Iñigo Iriarte, Francisco Martínez, Julio Ruiz and Enrique Goikolea (Rangers, Department of Sustainable Development and Natural Environment, County Council of Biscay)

• Iñaki Berroeta and Oscar Lizarralde (Vehicle pool, County Council of Biscay)

• Beatriz Alcalde, Juan Ángel Bizkarra (Txope), Rowan Hardman, Sonia Hidalgo, Arnau Sargatal, Sandro Schäfer, Svana Rogalla, Erin Telletxea, Nagore Ugarriza, Jarein Mesa, Ruth Pedrosa, Genis Puig, Iban Malaxetxebarria and Irati Oria (Volunteers in Urdaibai).

- Carlos Sainz, Román Diez, Julian Ansuategi (pictures)
- Nagore Saiz y Maria Alonso (Saitec S.A.)
- Carlos Artola (Custodia del Territorio)