

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



# **ANNUAL REPORT 2014**







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Aitor Galarza

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#### **SUMMARY**

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

During this second year of the project, under the licence from Scottish Natural Heritage, 11 osprey chicks were translocated from Scotland to a hacking tower located at the Biosphere Reserve of Urdaibai (Biscay, Basque Country). The birds were kept in the hacking tower just under a month (19-27 days). During this period the birds ate properly (251,19 g/day per bird) and most them experienced positive growth. However, for unknown reasons one of them came with radial fracture and could not be recovered despite the efforts invested.

Five birds were fitted with a backpack transmitter (PP Biotrack 1.70 g) and another five birds with a satellite transmitter (Microwave 30 g Argos/GPS Solar PTT).

After release, the birds stayed on average 32.7 days in the vicinity of the hacking tower in a home range of 3.6 km<sup>2</sup>. They left Urdaibai between August 26 and September 20. It is certain that two individuals died during migration, one electrocuted in La Rioja (Spain) and another depredated, probably by an Eagle owl, in Almeria (Andalusia, Spain). Latest locations of the other young ospreys occurred at Salamanca (Castile, Spain), Sahara Desert (Algeria) and Bafatá (Guinea Bissau).

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## 1. Introduction

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

The program is developed under the guidelines of the *Osprey restoration project in the Urdaibai Biosphere Reserve* (Galarza & Zuberogoitia, 2012) and 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 social awareness about osprey conservation and about 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 the second year of translocation, adaptation and release of young ospreys in Urdaibai. Given that in the 2013 report were described in detail the preparation process and the structures used for hacking, in the present report we refer only to significant technical aspects, in particular the changes or improvements made and the results of the process of hacking and releasing.

# 2. Nestling supply

The general agreement established in 2013 with the Government of Scotland (Scottish Natural Heritage), which guarantees the annual provision of 12 chicks, was maintained in 2014. Because access to some of the nests chosen for the operation put in risk the climber, only 11 ospreys were translocated to the Basque Country in 2014.



Figure 1. Natural osprey nest in Scotland

### 3. Infrastructures

#### 3.1. Perches

The number of artificial perches was increased in the vicinity of the hacking tower in order to facilitate the landing and resting.

### 3.2. Breeding platforms

Nests or artificial platforms consisted basically of a metal platform 1x1 m that was filled with branches and fine plant material to reach a minimum height of 0.5 m. On this platform, a wooden hanger 1.5 m was installed. When placed in the marsh platform was usually attached to a wooden pole 5-7 m high, while in the woods platform was adapted to a tree that stood in the landscape, usually a pine (*Pinus radiata / Pinus maritima*) or eucalyptus (*Eucalyptus globulus*).

Location of artificial breeding platforms was chosen on the following criteria:

- Minimum human disturbance: distance from roads, inhabited buildings and busy paths >300 m.
- The place selected and its surroundings (>300 m) should be within the area of maximum protection in the Reserve (Special Protection Area).



Figure 2. One of the translocated birds roosting in an artificial perch installed ad hoc.

During 2014 five new platforms were built (3 in the marsh and 2 in the forest). A platform was installed at the eucalyptus near the hacking tower which caused the accident to a bird in 2013. In addition to the installation of the artificial platform, tree pruning was carried out to make perches during the dependency phase.



Figure 3. Firefighters from the Gernika Fire Station helped building up some platforms.

Building up platforms was carried out with the help of volunteers. For the installation of platforms in tall trees we had the help of the firemen of the Gernika Fire Station, who previously received a short course on the recovery of the osprey in the Biosphere Reserve of Urdaibai. To date we have installed a total of 14 platforms, 8 in the marsh and 6 in the forest.



Figure 4. Location of the 14 nesting platforms installed in the Urdaibai Biosphere Reserve and installation works of the platforms.

Furthermore, the two platforms installed in 2011 in the Ullibarri-Gamboa, located 40 km from the Biosphere Reserve of Urdaibai, were revised and improved in collaboration with the rangers of the Alava Council County.



Figure 5. Rangers of the Álava County Council checking artificial nests in the Ullibarri-Gamboa reservoir (Álava)

#### 3.3. Information signs

We obtained permission from the Coast Authority (Spanish Government) for the establishment of a temporary exclusion zone (July to September) in order to reduce stress caused by humans during the stay of the birds in the hacking tower and also during the dependence phase. Eight information signs were installed 500 m from the hacking tower and covering an area of about 45 ha of marsh.



Figure 6. Sign of the temporary exclusion area around the hacking tower

#### 3.4. Hacking area

We cleared tall vegetation in the field on which stands the hacking tower and also improved hiding of the access path and the control cabin.

### 4. Reintroduction

#### 4.1. Nestling collecting and transportation

Between July 7 and 9, eleven nestlings (9 male and 2 female) were collected in Moray and the Highlands (Scotland). This operation was conducted by Roy Dennis, Highland Foundation for Wildlife, and had the cooperation of several volunteers and the Forestry Commission. Aitor Galarza, director of the restoration project, attended the collecting operations. Nestlings were collected only from nests containing more than one chick and when body condition was good. Each nestling was 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 three times daily, at the headquarters of the *Highland Foundation for Wildlife*, located near Forres (Moray, Scotland). They were identified with metal rings of the *Aranzadi Society of Sciences* and yellow colour PVC rings supplied by the *Doñana Biological Station*. While in Forres, nestlings were examined by Jane Harley, from the *Strathspey Veterinary Centre* (Grantown on Spey), certifying the good body condition and health of the individuals.



Figure 6. Collecting the osprey chicks in Scotland

Table 1. Weight of nestlings when collected from the nest, on arrival to Urdaibai and when
fitted with transmitter in the hacking tower. The weight of four of them trapped after
released is also showed.

Osprey	Sex	Collecting	Arrival	Transmitter	Capture
P8*	м	1450 g	1429 g	1406 g	1522 g
P00041	IVI	(07.07.14)	(11.07.14)	(03.08.14)	(01.09.14)
P7	м	1550 g	1504 g	1521 g	
P00042	IVI	(07.07.14)	(11.07.14)	(29.07.14)	
NA*	м	1350 g	1379 g	1515 g	1531 g
P00043	IVI	(07.07.14)	(11.07.14)	(31.07.14)	(02.09.14)
NN	м	1350 g	1377 g	1347 g	
P00044	IVI	(07.07.14)	(11.07.14)	(27.07.14)	
NL	м	1470 g	1399 g	1352 g	
P00045	IVI	(08.07.14)	(11.07.14)	(29.07.14)	
PF	м	1490 g	1542 g	1549 g	
P00046	IVI	(08.07.14)	(11.07.14)	(29.07.14)	
PV	м	1400 g	1422 g	1475 g	
P00047	IVI	(08.07.14)	(11.07.14)	(31.07.14)	
PA*	и	1350 g	1442 g	1657 g	
P00048	п	(08.07.14)	(11.07.14)	(03.08.14)	
PC*	м	1380 g	1333 g	1472 g	1623 g
P00049	IVI	(09.07.14)	(11.07.14)	(03.08.14)	(31.08.14)
NP	TT	1250 g	1449 g	1754 g	
P00050	п	(09.07.14)	(11.07.14)	(03.08.14)	
NC*	м	1290 g	1276 g	1229 g	1555 g
P00051	IVI	(09.07.14)	(11.07.14)	(27.07.14)	(01.09.14)

\* osprey with PTT

On the morning of July 9, nestlings were taken in a transit van from Forres to Aberdeen airport, where they were fed before being transported to London by plane. They were inspected and fed once again in the *Animal Reception Centre* at Heathrow airport, an Agency of the City of London. 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 by van, arriving at the area of hacking in 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. All individuals arrived in good condition, although three of them had lost a little weight since their removal from the nest (Table 1).

#### 4.2. Stay in the hacking tower

Except the first cage, which housed only 2 birds, the rest hosted 3 chicks, grouped according to their plumage development. Nestlings were fed with 10-15 pieces of anchovy before placing in the cages. During their stay in the tower birds were fed four times daily. The food was pre-weighed and the amount consumed was noted. At first the fish were given in small pieces, removing large scales and bones, increasing the size of the pieces and the amount of scales and fish bones as the days passed. Prior to each new intake of food uneaten remains were retired from the cages.



Figure 7. Checking the ospreys from the control cabin

Like in 2013, ospreys were mainly fed on two fish species. The most frequent were thick-lipped grey mullets, *Chelon labrosus*, directly caught in the estuary by the

staff of the project. Eventually, when grey mullets were not available, we fed the ospreys with frozen sea bream, *Boops boops*, purchased in a fish market.

Young ospreys were observed directly through the spyglass windows and through the CCTV system to monitor the amount of food eaten and observe their behaviour. No hierarchical conflicts between individuals were observed. We only had to manipulate a bird because of a broken radius (see page 18)



Figure 8. . Fishing grey mullets at Urdaibai

Table 2. Growth rates from date of collecting in nest to the arrival 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)
P8	- 0.48	- 21	- 0,06	- 23	226.63
P7	- 1.01	- 46	+ 0.05	+ 17	242.44
NA	+ 0.71	+ 29	+ 0.46	+ 136	205.47
NN	+ 0.66	+ 27	- 0.12	- 30	244.8
NL	- 2.41	+ 71	- 0.17	- 47	204.25
PF	+ 1.74	+ 52	+ 0.02	+ 7	237.05
PV	+ 0.78	+ 22	+ 0.17	+ 53	244.09
PA	+ 3.40	+ 92	+ 0.62	+ 215	305.21
РС	- 0.96	- 47	+ 0.43	+ 139	305.81
NP	+ 7.96	+ 199	+ 0.87	+ 305	329.30
NC	+ 0.54	+ 14	- 0.21	- 47	218.05

The average amount of food daily eaten per individual was 251.19 g (range=205.47-329.30). Ten of the birds gained weight during the stay in the hacking tower, while one lost weight and other remained with equal weight (Table 2).



Figure 9. Monitoring and processing of fish

Osprey	Arrival date	Release date	Days in hacking	Departure date	Days before departing
			tower		1 0
P8	11.07.14	06.08.14	27	09.09.14	33
P7	11.07.14	29.07.14	19	27.08.14	29
NA	11.07.14	02.08.14	23	21.09.14	50
NN*	11.07.14				
NL	11.07.14	29.07.14	19	31.08.14	33
PF	11.07.14	31.07.14	21	27.08.14	27
PV	11.07.14	02.08.14	23	20.09.14	49
PA	11.07.14	06.08.14	27	03.09.14	28
РС	11.07.14	06.08.14	27	09.09.14	33
NP	11.07.14	06.08.14	27	26.08.14	20
NC	11.07.14	29.07.14	19	06.09.14	39

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

\* broken radius

Nestlings remained in the hacking tower between 19 and 27 days (see Table 3). During the stay in the tower (11 July-6 August) the mean maximum temperatures was  $26.2^{\circ}$ C (range= 23.5-35.5°C) and the mean minimum temperatures was  $16.5^{\circ}$ C (range= 13-20°C) (*in situ* measure)

#### 4.3. Release and first flight

A couple of days after noticing that the birds started moving against the front mesh, we opened the hacking tower cages. Before dawn we distributed fish on the feeders and quietly opened the front panels so that the birds could decide themselves when to fly out of the cages. Staff and volunteers discreetly followed from a distance to check the birds leaving hacking cages and the first flights. Roy Dennis visited Urdaibai to supervise the release operation and introduce technical adjustments in order to improve the project.



Figure 10. First flights

We conducted four openings of the hacking tower, since once one of the birds was recovered from the field and put back into the cage to release two days later. Some individuals were changed from one cage to another depending on their stage of development. Finally we released the injured bird three weeks later but unsuccessfully. The sequence of opening and release of birds is shown in Table 4.

Table 4.	Opening	days
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Date	Osprey	Observations
July 29 P7, PF, NL, NC		PF fell down and was put back in cage
July 31	PF	
August 02	NA, PV	
August 06	P8, PA, PC, NP	
August 28	NN	Fell down and was sent to the Zoo of Jerez de la
		Frontera (Cádiz, Andalusia)

### 4.4. Dependence phase

The dependence period was 32.7 days (range: 20-50 days, n=10) (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 programs of 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, except the last week that fish was given on alternate days.

First fishing attempts were reported the first week after release. Notably, most of the ospreys tried fishing, although, as expected in these cases, no successful fishing events were observed. Fishing attempts gradually increased in intensity.



Figure 12. Released ospreys perching in an artificial nest and in the feeders.

### 4.5. . Intra specific interactions

During all the dependence period, the juveniles showed a semi-gregarious behaviour with frequent visual and vocal contact, and often using the feeders, perches and artificial nests together. We observed up to five individuals on the same feeder and the same artificial platform. During this phase the birds were at the Urdaibai Reserve with at least eight migrant ospreys: 26/08-04/09 (1 juv), 23-26/08 (1 ad), 19-23/08 (1 juv), 03/09 (1 juv), 04-15/09 (1 juv), 07-21/09 (1 ad), 14/09-12/10 (1 ad) y 12/09-14/10 (1 ad). We observed that the fishing activity of some of these migrating birds encouraged released ospreys to try fishing.

### 4.6. Inter specific interactions

We recorded 14 interactions with other bird species: crow (*Corvus corone*) (12), yellow-legged gull (*Larus michahellis*) (1), and buzzard (*Buteo buteo*) (1). Ospreys chased other birds in 7 cases, while the ospreys were chased in 5 cases (crow) (Table 5).

Osprey	Date	Species	Result
NA	03.08.14	Corvus corone	;?
NA	05.08.14	Corvus corone	-
P8	05.08.14	Corvus corone	-
PC	08.08.14	Corvus corone	-
PC	12.08.14	Corvus corone	+
NL	14.08.14	Corvus corone	+
NP	14.08.14	Buteo buteo	+
F8	18.08.14	Corvus corone	+
P7	19.08.14	Corvus corone	+
NA	23.08.14	Corvus corone	;?
PA	02.09.14	Corvus corone	-
P8	05.09.14	Corvus corone	+
P8	09.09.14	Corvus corone	+
PV	10.09.14	Larus michahellis	-

*Table 5. Inter specific interactions. +an osprey chases another bird, – a bird chases an osprey* 

### 4.7. Human disturbances

Humans caused flight reaction of ospreys on ten occasions: boat (6 times), canoes (3 times) and walker (1 time). When possible, people causing disturbance were warned of temporary restrictions on use and to leave the area voluntarily. Once the disturbance finished, frightened birds returned to the area and recovered their normal activity, usually in less than an hour.



Figure 12. Motorboat and canoe entering the hacking zone

#### 4.8. Veterinary care

All birds were clinically examined on arrival and they showed no signs of illness. However visualizing the camera recordings it was found that one of them (NN) showed a somewhat low wing, so it was decided to transfer it to a Wildlife Recovery Centre. The bird presented a greenstick fracture of the radius of the left wing so we proceeded to the detention and subsequent return to the hacking tower. Three weeks later the bandage was removed but the bird was incomplete recovered, possibly by poor welding bone.



*Figure 13. Radiography and veterinary cares of NN (Gorliz Wildlife Recovery Centre)* 

Hoping that it would be able to fly and stay close to the hacking tower, this bird was released on 28/08, with negative results since it was only capable of gliding flight. Finally on September 1st, given the inability to adapt to natural life, we chose shipment to the Zoobotánico of Jerez de la Frontera (Cádiz), centre with extensive experience in the management of the species since it was part of the osprey reintroduction program in Andalusia. Finally it died due to muscular dystrophy on October 2nd.

Except for this incident, ospreys did not show any symptoms of illness during their stay in the hacking tower, so it was not necessary any handling.

## 5. Telemetry

Seven birds were equipped with VHF radio-tags (*Biotrack* PP 1.70 g), attached to a pair of back feathers, and were tagged during the night, two days before the release. These transmitters were used to detect daily the individuals, to know the departure date and eventually to locate and rescue them in emergency situation. This VHF device was replaced with a satellite transmitter to three birds.



Figure 14. Transmitters

Five individuals were fitted with a satellite transmitter (*Microwave* 30 g Argos/GPS Solar PTT), attached to the back by a Teflon harness. Two transmitters were installed overnight while the birds were in the hacking tower (PA and PC) and the other three transmitters were installed outside the hacking tower about a month after its release. These birds (P8, NC and NA) were captured with nooses in the feeding platforms.

Table 2. Daily growth rate (g/day) of four of the birds during dependence phase (data corrected by the biomass of each individual). Weight 1: two days before release. Weight 2: capture day

Individual	Weight 1	Weight 2	Dif.	Daily growth rate
	(g)	(g)	(g)	(70)
P8	1406	1522	116	+ 0.29
	(03.08.14)	(01.09.14)		
NA	1515	1531	16	+ 0.03
	(31.07.14)	(02.09.14)		
РС	1472	1623	151	+ 0.36
	(03.08.14)	(31.08.14)		
NC	1229	1555	326	+ 0.75
	(27.07.14)	(01.09.14)		

These three birds and a fourth one increased their weight from transmitter tagging in the hacking tower to capture (30 days) (Table 2)

The information provided by the five satellite transmitters was used to determine the home range, the day of departure, the migration route and the wintering area.

During the dependence phase the satellite-tracked birds used a maximum area of 3.69 km<sup>2</sup>, although the most frequent used area was much smaller (Figure 14). Table 6 shows the home ranges of the satellite-tracked birds. All of them used as a night roost a pinewood close to the marsh and 500 m away from the hacking tower.

Table 6. Days of transmission, maximum home range and maximum distance from thehacking tower of the satellite tracked birds during the dependence phase

	Transmission	Maximum home range	Maximum distance
	days	(km²)	(km)
PA	28	1,48	1,6
PC	34	2,30	2,04
P8	8	0,28	0,86
NC	5	0,09	0,55
NA	19	0,43	0,72



Figure 15. Home range of the satellite tracked birds (n=5). The colour of the lines shows the intensity of the use of the area (White: low frequency, Red: high frequency)

In the following we describe the records of the ospreys tagged with PTT:

# PA 137909 (Female) MALASPINA

During the dependence phase it used only the near-hacking tower area and slept in a grove or in a nearby power line pole, less than 500 m from the hacking tower.

Release day: 06/08 Transmitter installation day: 03/08 Departure: 03/09 from 11:00 a.m. Crossing to Africa: 07/09 Last location: 13/09 at 02:00 p.m. Place: Sahara Desert (Algeria) (26°31'39″N, 0°32'33″W) Diagnostic: Unknown



*Figure 16. Malaspina's home range during the dependence phase and migration route* 

# PC 137910 (Male) HUMBOLDT

During the dependence phase it used only the near-hacking tower area and slept in the groves close to the hacking tower.

Release day: 06/08 Transmitter installation day: 03/08 Departure: 09/09 at 10:00 Crossing to Africa: 12/09 Last location: 30/09 at 13:00 Place: Bafatá, Geba River (Guinea Bissau) (12º10'01"N, 14º41'42"W) Diagnostic: Unknown



Figure 17. Humboldt's home range during the dependence phase and migration route

# **P8** 137911 (Male) **IRADIER**

During the dependence phase it used only the nearby marsh and slept in a pinewood 500 m away from the hacking tower.

Release day: 06/08 Transmitter installation day: 01/09 Departure: 09/09 at 14:00 Crossing to Africa: 12/09 Last location: 13/09 Place: Alcaide (Almería, Spain) (37º46'32"N, 02º02'23"W)

*Diagnostic*: probably depredated by an Eagle owl (*Bubo bubo*). Rangers of the Government of Andalusia found signs of depredation and recovered the transmitter.



Figure 19. Iradier's home range during the dependence phase and migration route



Figure 20. Rangers of Almería in the area where Iradier was found death

# NC 137912 (Male) ELCANO

During the dependence phase it used only the area close to the hacking tower and slept in a pinewood, less than 500 m from the hacking tower.

Release day: 29/07 Transmitter installation day: 01/09 Departure: 06/09 Last location: 11/09 at 16:00 Place: Vilvestre (Salamanca, Spain) (41º04'27"N, 06º44'14"W) Diagnostic: Transmitter failure. UBC staff tracked unsuccessfully last location area.



Figure 21. Elcano's home range during the dependence phase and migration route



Figure 22. Area where Elcano's transmissions finished (Salamanca, Spain)

# NA 130532 (Male)\_DARWIN

During the dependence phase it used only the area close to the hacking tower and slept in a pinewood, less than 500 m from the hacking tower.

Release day: 02/08 Transmitter installation day: 02/09 Departure: 21/09 at 10:00 Last location: 11/09 at 16:00 Place: Sorzano, Iregua (La Rioja, Spain)

*Diagnostic*: electrocution. UBC staff recovered the body and the transmitter, which was damaged.



Figure 23. Darwin's home range during the dependence phase and migration route



Figure 24. Darwin's body and pole where it was electrocuted (Iregua, La Rioja, Spain)

# 6. Dissemination

### 6.1. Guided visits

During the dependence phase four guided visits were organized in order to observe the ospreys and disseminate the project. Around 60 people took part.



Figure 25. Guided visits to observe the released ospreys

### 6.2. Talks and conferences

### February 2014

*Looking for the osprey in Senegal.* Urdaibai Bird Center (Gautegiz Arteaga, Biscay)

May 2014

*The Osprey in Urdaibai: recovering a conservationist icon.* Bake-leku txokoa. Culture Hall (Gernika, Biscay).



Figure 26. Posters announcing the conference on the osprey in Senegal and the exposure of the project in Gernika.

June 2014 Talk to the staff of the Agriculture Department of the County Council of Biscay. Urdaibai Bird Center (Gautegiz Arteaga, Biscay)

July 2014 *Osprey nest building*. Basic course for firefighters. Fire Station. (Gernika, Biscay).

October 2014 *Recovering the osprey by hacking*. Practical course of Vertebrate Zoology. University of the Basque Country. Urdaibai Bird Center (Gautegiz Arteaga, Biscay).

November 2014 *Recovering and environmental icon: the osprey in the Urdaibai Biosphere Reserve.* Reintroduction and Recovery of Wild animal and plants as tools for Conservation. Hazi Foundation. Fraisoro School of Agriculture, Basque Government (Zizurkil, Gipuzkoa).

### 6.3. TV and Radio

*The One Show*. Programme of the British public television (BBC) presented by Mike Dilger.



Figure 27. The presenter Mike Dilger and naturalist Roy Dennis in Urdaibai during recording of the BBC (August 2014).

*Veda Abierta*. Program of the private channel Canal Plus (Madrid), presented by Juan Delibes.

ETB (Basque Public TV) http://www.eitb.eus/eu/bideoak/osoa/2405592/bideoa-arrano-arrantzaleaberreskuratzeko-lanak-urdaibain/ www.youtube.com/watch?v=89PkHjONwnQ http://www.eitb.eus/es/television/programas/teknopolis/videos/detalle/26053 18/video-el-aguila-pescadora-vuelve-urdaibai/ **Basque Public Radio (Radio Euskadi)**. Several programs. To emphasize the programs developed weekly with Roge Blasco relating monitoring migratory journey of ospreys to Africa.

http://www.blogseitb.com/rogeblasco/2014/09/17/migracion-del-aguilapescadora-de-urdaibai-hacia-africa-segunda-semana/

http://www.blogseitb.com/rogeblasco/2014/09/23/migracion-del-aguilapescadora-desde-urdaibai-hasta-africa-tercera-semana/

http://www.blogseitb.com/rogeblasco/2014/09/30/migracion-del-aguilapescadora-desde-urdaibai-hacia-africa-cuarta-semana/

http://www.blogseitb.com/rogeblasco/2014/08/25/aitor-galarza-aguila-pescadora-de-escocia-a-urdaibai/



Figure 28. Dissemination of the project in the TV studios of Canal Plus in Madrid and in the Basque Public Radio (September 2014)

### 6.4. Press and web

http://www.revistaquercus.es/noticia/5844/Articulos-de-fondo/Urdaibaipreparada-para-acoger-al-aguila-pescadora.html

http://www.bizkaia.net/home2/Bizkaimedia/Contenido\_Noticia.asp?Not\_Codigo= 13733&Idioma=CA

http://www.deia.com/2014/10/04/bizkaia/costa/de-urdaibai-al-mundo-con-elvuelo-del-aguila-pescadora

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http://ingurumena.blog.euskadi.net/escolares-vascos-comparten-conocimientosobre-el-aguila-pescadora-en-una-videoconferencia-con-companeros-europeosafricanos-y-norteamericanos/

http://www.efeverde.com/noticias/aguilas-pescadoras-llegan-urdaibai-desdeescocia/

http://www.20minutos.es/noticia/2191282/0/once-aguilas-pescadoras-llegandesde-escocia-reserva-urdaibai-para-favorecer-su-proceso-recuperacion/

# 7. Environmental education

In 2014 we initiated an environmental education program as a main instrument to fulfill one of the priorities of the osprey restoration project: awareness on the conservation of biodiversity in general and the osprey in particular.

Several schools in the Basque Country take part in this program that 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). In 2014, this education program attended the very popular Birdfair held at Rutland (England) through the stand of Birding Euskadi (Basque Government).



During this year there have been carried out the following activities:

### "Ospreys flyways linking communities" Project

It has continued with the participation, initiated two years ago, in the international project "Ospreys Flyways linking communities" coordinated by Tim Macrill (Rutland Water, Leicester, England) in which are involved schools in Europe, America and Africa. The main objective of this project is to develop a coordinated approach in the use of new technologies in education (Websites, Google Earth, Skype, ...), taking the osprey and their migration route as a vehicle to connect schools in different parts of the world. Among other activities in March the World

Week Osprey was held in which two public schools Urdaibai (Montorre and Urretxindorra) shared by videoconference works with schools in Italy, England, America and Gambia.

https://www.youtube.com/watch?v=OwMcGFDgZTw&list=PLrdysEocipo7AGh7bjioBzVaMECR7Sg R5

https://www.youtube.com/watch?v=r6J-0HUM6L4&list=UUBeIuQX299e1MxFuSszHxtQ

#### Comic

It has been made the first chapter of a comic in which basic background of the recovery plan and the osprey biology, migration and fishing techniques are explained. This material has been distributed by schools and is available on the network.



The comic is being worked by the schools at different educational levels such as languages, visual arts or development of oratory as introductory material for the case monographic guided visits.

#### **Travelling exhibition**

For the dissemination and supporting of the education program it has been performed an exhibition that serves as a physical support to the monographic visits of the schools. During the month of October, the exhibition has been exhibited at the Urdaibai Bird Centre and at the Centre for Interpretation of Txingudi, having been visited by 1,377 people.





#### **Didactic units and support materials**

We have made two didactic units in Spanish and Basque to deepen the work of school before and after each visit to the osprey site. One of the units is aimed at students of Primary and Secondary to another. Both have separate materials for teachers and for students. This educational material is provided to the schools in order to optimize the site visit and provide continuity in subsequent work in the classroom.



### **Monographic visits**

In October were carried out monographic visits to the Urdaibai Bird Center and the Center for Interpretation of Txingudi for those schools engaged with the environmental education program. A total of 25 schools (1,249 students and 75 teachers) were envolved in these visits.



Each visit has consisted of the following areas:

- 1.- Introduction to migration
- 2.-Osprey and migration
- 3. Osprey exhibition
- 4.-The biology of the osprey:
- Identification by pictures and video.
- Migration in Urdaibai and other Basque wetlands.
- Travel friends (waterfowl species)
- The restoration program in the Biosphere Reserve of Urdaibai
- School Project "Ospreys Flyways linking communities"
- Tracking by GPS.
- 5.-Watching wetland birds with special dedication to Osprey



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### 9. Acknowledgements

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- Department of Agriculture, County Council of Biscay, Spain
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