

MONITORING OF FOREST RAPTORS IN LOZÈRE AND THE
CÉVENNES NATIONAL PARK:
SHORT-TOED SNAKE EAGLE

Results of 2015

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The Cévennes National Park

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Results of 2015

Results of 2014 have been repeated in 2015. Our Short-toed Eagles could breed in perfect weather conditions. Breeding results of the past two years, surpassed even those found in the Héraultaises lime plateau (JP Céret). We emphasize the significance of weather because it is a factor we cannot affect. Predation is a natural and useful phenomenon in bird populations, therefore an integral part of their development. Conservation measures are limited to the protection of nest sites and the species itself in contrast to direct and indirect antropogenic injury.

D) - Inventory:

Table 1 below contains population figures and densities in the study areas in 2015. We recorded one new pair in Mont Lozère and another one in Aigoual (Gaël K.).

Biogeographical area	Certain	Probable	Possible	Total
Cévennes (CEV)	44	3	8	55
Causses (CAU)	48	5	10	63
Aigoual (AIG)	48	0	0	48
Mt Lozère (LOZ)	18	6	7	31
Aubrac (AUB)	15	1	-	16
Total	173	15	25	213

Table n° 1: Summary of breeding STEs in each area in the study plot (known/certain, probable, possible pairs).

Biogeographical area	known pairs	probable pairs	possible pairs	total	area (ha)	number of pairs/ 100km ²	ha/number of pairs
Cévennes	44	3	8	55	60 000	9,17	1091
Causses	48	5	10	63	90 000	7	1429
Aigoual	48	0	0	48	45 000	10,67	937
Mt Lozère	18	6	7	31	70 000	4,43	2258
ZONE	158	14	25	197	265 000	7,36	1359

Table n° 2: Aggregation of the number of pairs and the density in the four bigeographical regions in the Cévennes National Park in 2015.

II) - Breeding:

The **65 breeding sites we controlled** constitute 37.5% of the **known 173 pairs**. Occupation rate rose to 94% in 2015 and only four territories were left empty.

Table n°3 depicts the breeding results in each biogeographical region in 2015 (number of pairs in parentheses).

<p>Cévennes (16 pairs)</p> <ul style="list-style-type: none"> - Egg-laying : 15 a 16-ból = 0,94 - Hatching: 14 a 16-ból = 0,88 - Fledging: 13 a 16-ból = 0,81 	<p>Causses (9 pairs)</p> <ul style="list-style-type: none"> - Egg-layings : 09 / 09 = 1 - Hatching: 09 / 09 = 1 - Fledging: 07 / 09 = 0,78
<p>Aigoual (7 pairs)</p> <ul style="list-style-type: none"> - Egg-laying : 05 / 07 = 0,71 - Hatching: 04 / 07 = 0,57 - Fledging: 04 / 07 = 0,57 	<p>Mt Lozère (6 pairs)</p> <ul style="list-style-type: none"> - Egg-laying : 05 / 06 = 0.83 - Hatching: 04 / 05 = 0,80 - Fledging: 04 / 05 = 0,80
	<p>Tous les secteurs (38 pairs)</p> <ul style="list-style-type: none"> - Egg-laying : 34 / 38 = 0,90 - Hatching: 31 / 37 = 0,84 - Fledging: 28 / 38 = 0,74

Table n° 3: reproduction indicators of different stages in 38 pairs in 2015.

Fledging success in previous years:

1992 = 0,33 (N=15)	1998 = 0,64 (N=33)	2004 = 0,31 (N=64)	2010 = 0,22 (N=50)
1993 = 0,66 (N=15)	1999 = 0,71 (N=38)	2005 = 0,54 (N=48)	2011 = 0,42 (N=50)
1994 = 0,47 (N=17)	2000 = 0,58 (N=59)	2006 = 0,79 (N=42)	2012 = 0,23 (N=52)
1995 = 0,78 (N=27)	2001 = 0,57 (N=67)	2007 = 0,56 (N=48)	2013 = 0,41 (N=49)
1996 = 0,65 (N=37)	2002 = 0,52 (N=62)	2008 = 0,50 (N=56)	2014 = 0,69 (N=52)
1997 = 0,40 (N=35)	2003 = 0,59 (N=61)	2009 = 0,41 (N=49)	2015 = 0,74 (N=38)

Average of 24 years = 0,52 fledgling/pair (N=1064 breeding attempts).

Although, the number of controlled sites is adequate, the number of observed pairs have decreased in 2015. As for the breeding cycle and the satisfactory spring weather conditions, 2015 was an extraordinary year. It was even better than 2014 (see Chart n°2). Now, it seems clear that our population prefers dry years to wet ones. Weather anomalies arriving from the south strongly affect STEs by preventing STEs from hunting (fog, rain) and also reptiles from moving on western/southern sunny slopes (cold). Water level seems less important than the number of rainy days (less than six days per month between March and July in 2015). The influence of bad weather coming from the north is dampened by the mountains facing south.

This year, three indicators of the breeding cycle have been the highest since 2006 (see Chart n° 3).

In 2015, mean egg-laying date was quite early and continued the trend found in 2014 (around April 10th).

-Mean egg-laying date in 2015: April 11th (N=23).

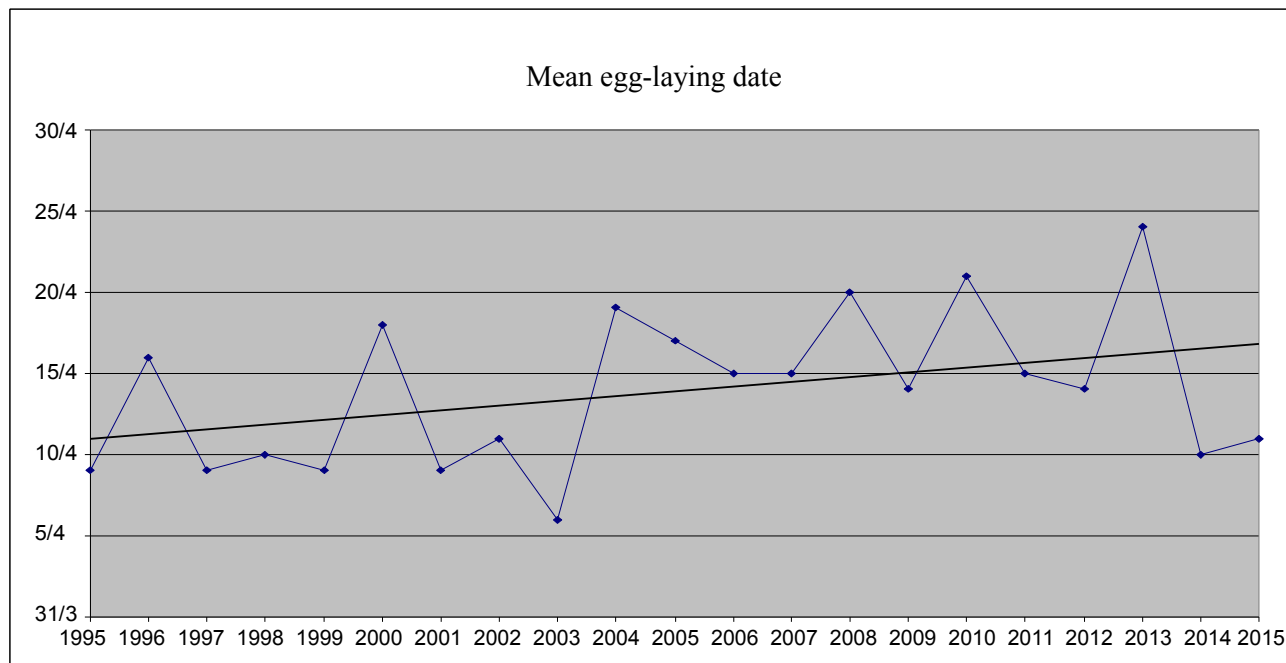


Chart n° 1: Changes in mean egg-laying dates in the past 21 years. General average: April 14th (N=457).

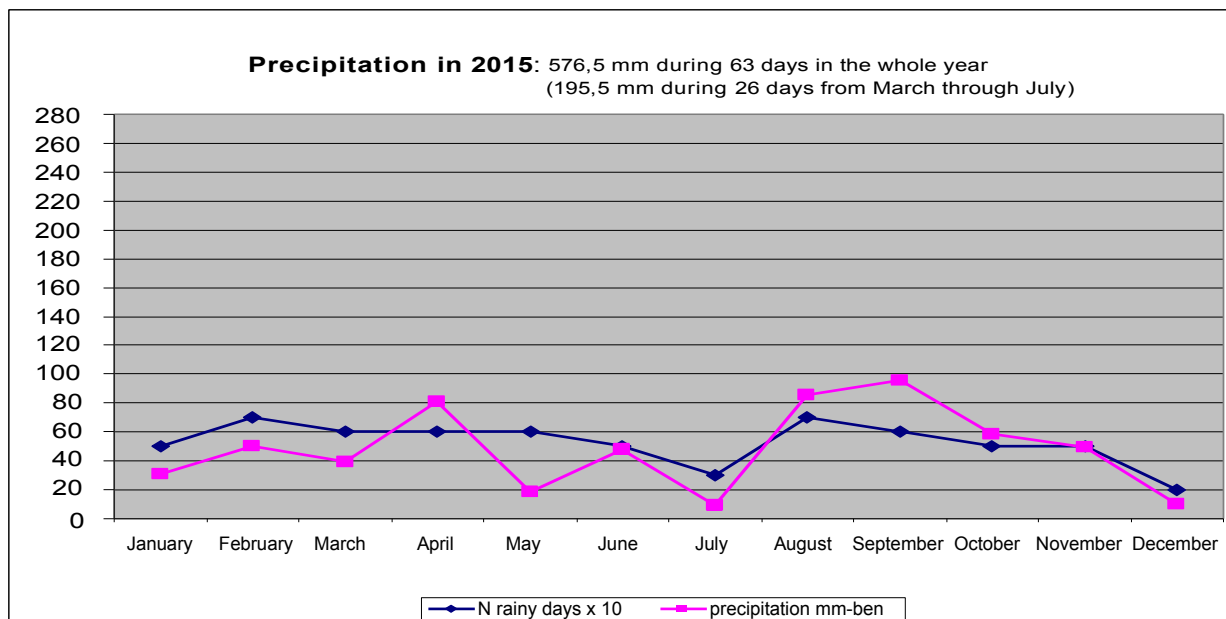


Chart n° 2: Precipitation (mm) and number of rainy days (multiplied by 10) in 2015 (Saint Etienne du Valdonnez -48-).

As in 2014, most egg-layings took place between April 4-22 (83%). No egg-laying occurred in May, however, for the first time since 2007, we found two cases of clutches at the end of March (March 29). Between 1998 and 2004, we observed two egg-layings occurring in March in each year, and also a record from 2003, an exceptionally hot year, when eight early clutches were found between March 23 and 30.

Ten breeding attempts were unsuccessful. In one case the reason is unknown while the other nine is broken down as follows:

- skip of breeding : 03
- uncertain : 01
- disturbance : 01
- predation : 05

One of the non-breeding pairs probably failed because of stress caused by other adults, and which probably led to the death of the chick in 2014, and whose remains were found in the nest (further details about this in Chapter V). Predation of eggs and chicks at early stages is common and considers to be a price paid to keep up the richness of biodiversity.

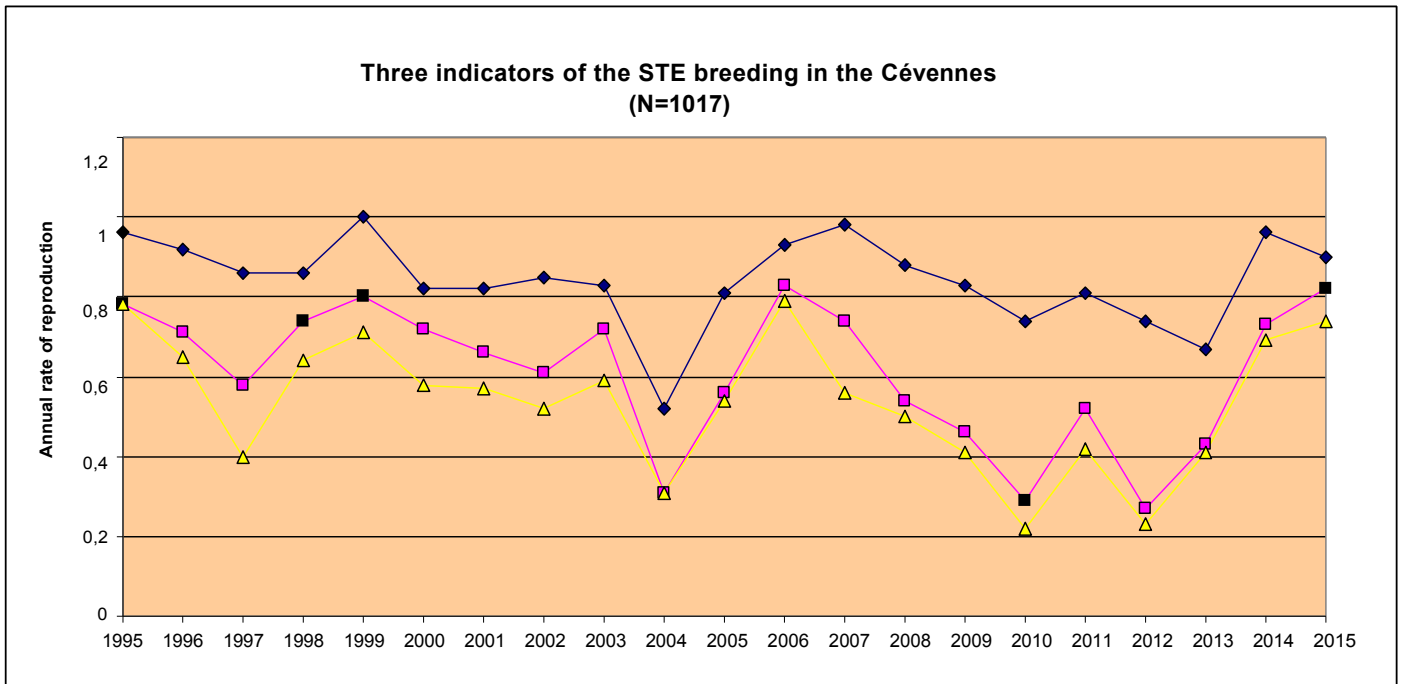


Chart n° 3: Observed breeding attempts between 1995 and 2015.



III) - Composition of preys found in nests:

We could only find nine additional prey items in 2015, which we included in Table n° 4.

<u>Colubridae</u>		263
Aesculapian snake		51
Green whip snake (4)		81
Grass snake		15
Montpellier snake (2)		35
Viperine snake		3
Southern smooth snake		1
Smooth snake		3
Coluber. (sp) (1)		74
Aspic viper (1)		36
Snakes (sp)		16
Green lizard (1)		21
Slow worm		21
Hedgehog		7
European mole		1
Vole sp.		5
Common mouse		3
Common hare (young)		1
Common rabbit (young)		1
Rodentia sp.		13
European fire-bellied toad		3
Toad sp.		4
Aves sp.		7

Table n°4: Summary list of prey items between 1991 and 2015 (N-402). Preys observed or found in 2015 are in parentheses.

IV) - Ringing - biometrics:

Ringing of chicks occurred between 2015.6.20-2015.7.1. Altogether, we ringed 17 chicks of which three received orange color rings with black inscriptions from 067 to 069.

2015 was the last year of ringing of STEs in the Cevennes. The ringing programme running from 1995 through 2014 ended in 2015 and will not continue upon the request of the CRBPO.

Monitoring of their breeding biology, ecoethology and the protection of their environment still leave us lots of work to do in the coming years. We will be there in March 2016 to witness their arrival again.

Observations of marked birds in 2015:

We have three birds observed or reobserved in 2015.

-Alive, identified, reobserved or regularly observed birds:

A nesting male near Montmirat returned to his territory to which he is very faithful. This year, at the age of 19 years (class 20A), he raised a chick again. To make our job harder he got rid of some of his rings. He lost his red ring and aluminium ornithological ring as well. Still, he could be identified by his blue ring and unique plumage features (see Photo 1.) Losing an aluminium ring is very rare, it is only the second recorded case.

-Reobserved live birds:

We observed a five year-old (classe 6A) STE hunting close to Fraissinet de Lozère (48). Its orange color ring was well obvious however, the characters couldn't be read. Nevertheless, its age could be determined with the help of its yellow/aluminium ring combination on its left leg. It is a subadult bird, it will breed probably next year in 2016.

-Recoveries (dead birds):

CRBPO informed us that the third bird was found dead in Navarra, Spain.

The location of this bird was a bit far from the species' normal migration route but it does not exclude the possibility of its breeding. Its age, 6 years, allows us to suspect that it was breeding, however, we do not have exact date of its death.



Photo 1: The 19 year-old male arrives at his nest with a Green whip snake in his beak. Only his blue ring left. The female (left) has just fed the chick with a viper.

V) - Behavioural observations:

Changing of nest, non-beeding behaviour in case of a pair which lost their chick int he previous year

Last year, we ringed a 4.5 week-old chick, which showed sings of aggression suffered before (see our 2014 summary). Its back and shoulder was covered with minor bloody scars. We concluded that these do not threaten its life.

In 2015, Gaël Karczewski, who followed the everyday life of this particular pair in 2014, did not notice any signs of the pair returning to its nest, as was expected. A few weeks later, he observed them across the valley building a new nest. During observations in July, it was obvious that the nest was empty and there was no sign of egg-laying or incubation (no egg shells, no down feathers). Since the birds keep vsiting this nest, we have to

be careful. We later found the body of previous year's chick in the old eyrie which was not consumed by any kind of a raptor. We could determine that the chick was more developed than at the ringing, but we could not correctly age it.

This case constitutes the fourth one in the Cévennes, which shows that STEs do not occupy the nest if the body of the young was left there. We cleaned the nest because we would like to see if the birds return in 2016.

In 2013, a pair neither bred nor built a nest, since their chick died in the nest in 2012. In 2014, they returned to the nest after we cleaned it prior to that.

A second pair also deserted their nest in 2014, after their chick died and were left in the nest in 2013. They nested successfully in 2014, but they did not return to this particular nest, we cleaned in 2013, in 2015.

Beak deformation in a STE chick

This year in the Cévennes, we experienced a chick with beak deformation during ringing. The deformity was to the axis of the skull, which was not similar to those anomalies, called cross-beak, found rarely in birds (see photo 2). It is more likely that it was a result of some kind of trauma (within the egg or during hatching), than a genetic abnormality. This was the first time we saw something like that in STE sin the Cévennes.



Photo 2: Beak deformation in a STE chick.

Translator's note: this page is dedicated to the memory of the authors' good friend Jean Séon and includes a beautiful poem of Jean Bonnet. We do not dare to translate this part for you and would like to refer to the original text.



Photo 2: A Short-toed Eagle female (the typical plumage) in the eyrie with her young.

The monitoring was conducted in 2015 in collaboration of:

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