



**Vulture Multi-species Action Plan
European Regional Workshop**





FOOD AVAILABILITY OR LIMITATIONS IN EUROPE, MIDDLE EAST AND CENTRAL ASIA

Vulture Multi-species Action Plan

Intention of this presentation



- Present the main threats as an introduction for the following working sessions...
- Give a few highlights about :
 - What are the **threats related to food availability or limitations** ?
 - How does food limitation or availability influence vulture's populations ?
 - Present some programs in relation to that subject

And make sure
we keep an eye
on that subject...



Acknowledgements



This presentation was made with the help of the following persons :

- Goran Sušić – Croatia
- Ohad Hatzofe – Israel
- Guido Ceccolini – Italy
- Anna Cenerini - Italy
- Fulvio Genero – Italy
- Martine Razin – France
- Christian Couloumy - France
- Hans Frei – Austria
- Ferninand Lainer – Austria
- Emilian Stoynov- Bulgaria
- Hans Pohlmann – Holland
- Ernesto Alvarez – Spain
- Enrico Bassi - Italy
- Olivier Duriez – France
- Ohad Hatzofe – Israel
- Mario Posilico – Italy
- Fiammetta Berlinger – Italy
- Alessandro Andreotti - Italy
- Alfonso Godino - Portugal
- Dionigi Secci – Italy
- Elena Kmentova – Bulgaria
- Alvaro Camiña - Spain
- Stavros Xirouchakis – Greece (Crete)
- Adela Obracajova – Czech Republic
- Iñigo Fajardo - Spain
- Jovan Andevsky – VCF
-

The ideal situation for vultures...

- Open range and numerous livestock or wildlife... for food prospection and availability

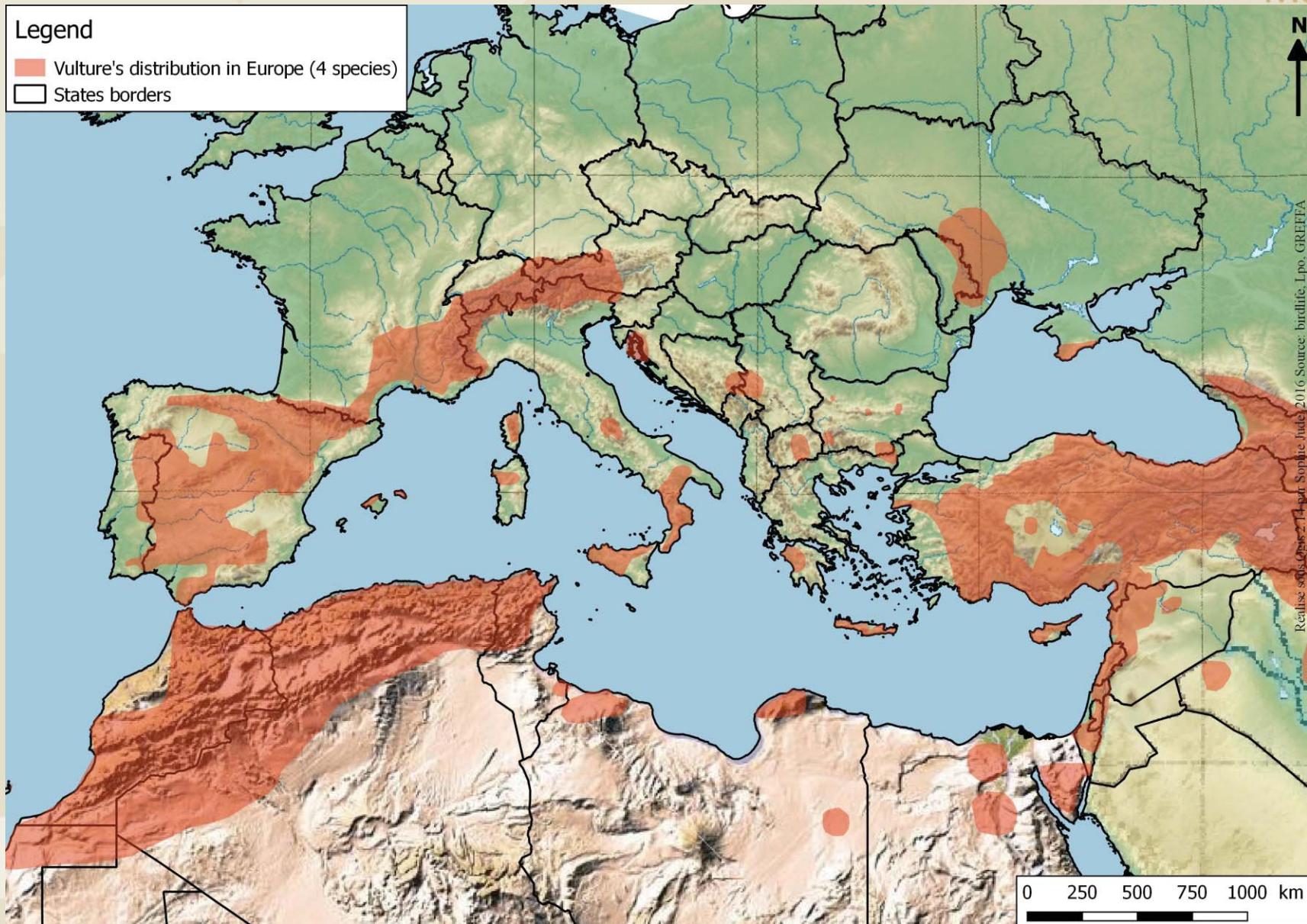


- Relief and cliffs for movements and reproduction
- Welcoming human communities

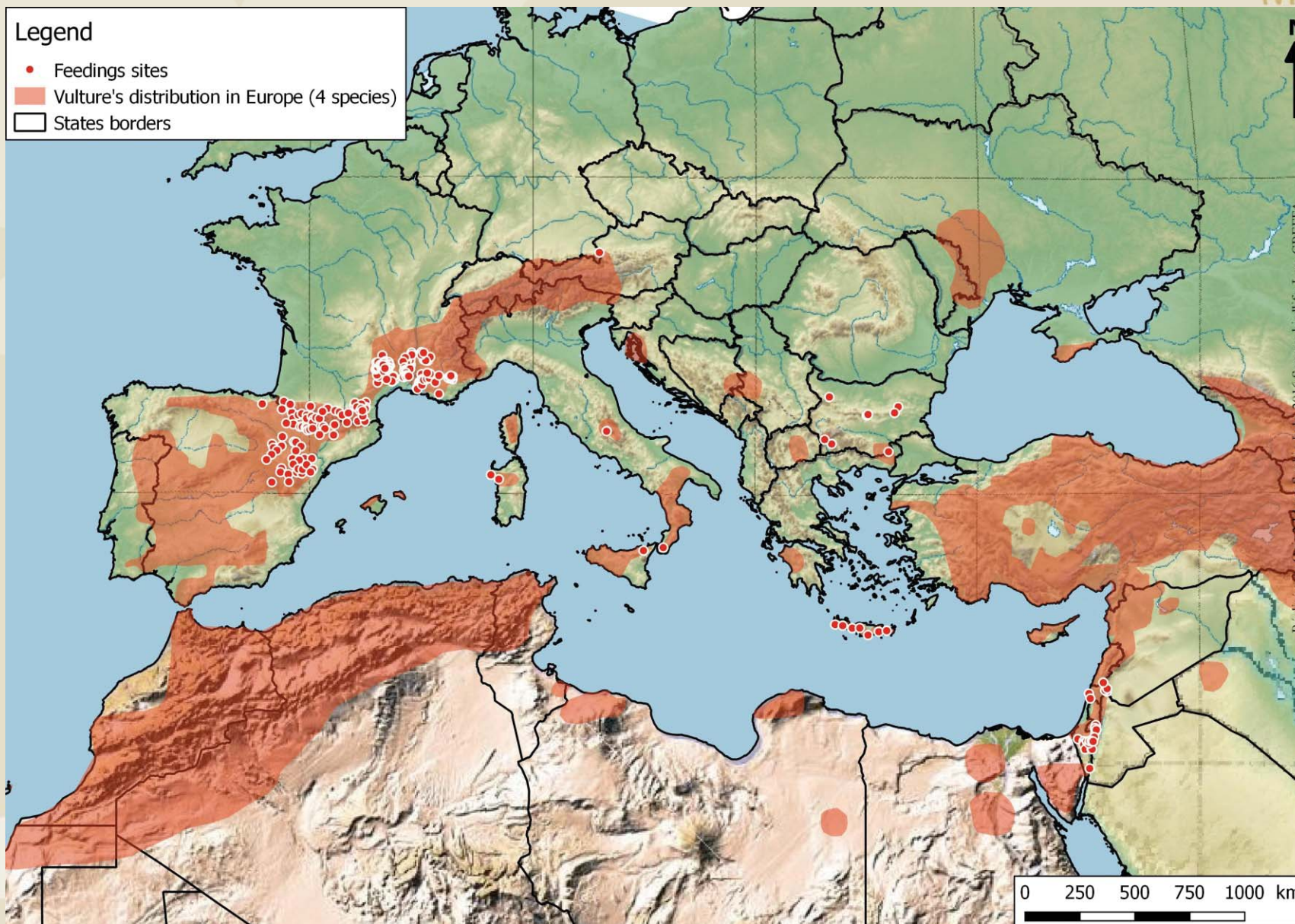


Vulture's distribution in Europe

(The 4 species altogether)



Food availability for vultures in Europe *(known so far...)*



What are the needs vultures ?

Exemple of Griffons



- A reproductive adult Griffon vulture needs around 170 kg of food per year
- This represents on average ~ 470 g / day
 - In South of France, a sheep weight on average 65 kg
(with ~50 kg of consumable flesh ~75 %)
 - In Bulgaria a sheep weight on average 35 kg
(with ~25 kg of consumable flesh ~70 %)
- *Thus, an adult reproductive griffon vulture eats the equivalent of the flesh of 4 to 8 carrions of sheep per year (~ 70 % of carrions)*

What are the needs for a colony?



Exemple of Grands Causes

- 529 pairs in 2016
 - So 1 058 reproducing adult Griffon vultures
- Total population estimated between 1 400 and 1 700 birds
- This represents a global need of 230 to 290 tons per year

Which means from 4 600 to 5 800 carrions per year (used at 75 %)



FOOD AS A DIRECT THREAT

Presence of poison in the food

Deliberate poisoning



Adults / non-griffons



Small baits



Pre adults / griffons



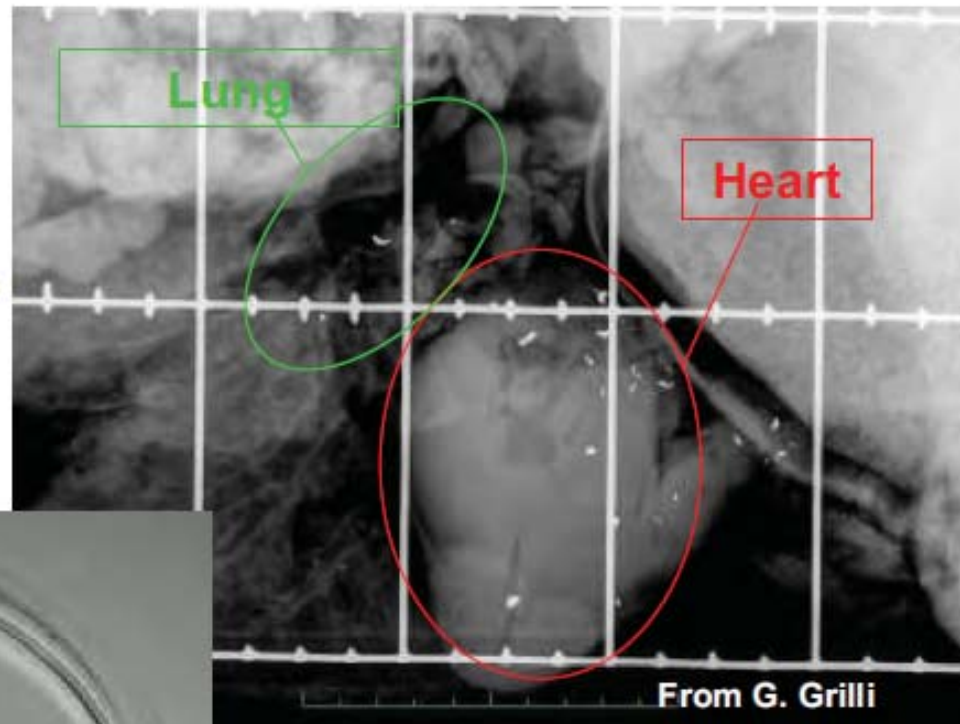
Big baits

Presence of lead in the food



Presence of lead in the food

Computed
Radiography: lead
fragments in heart
and lung



Fragments
of lead and
copper of a
bullet

Presence of chemicals or medicines in the food



Exemple : Diclofenac, antibiotics...



Exemple : Chemical Euthanasia



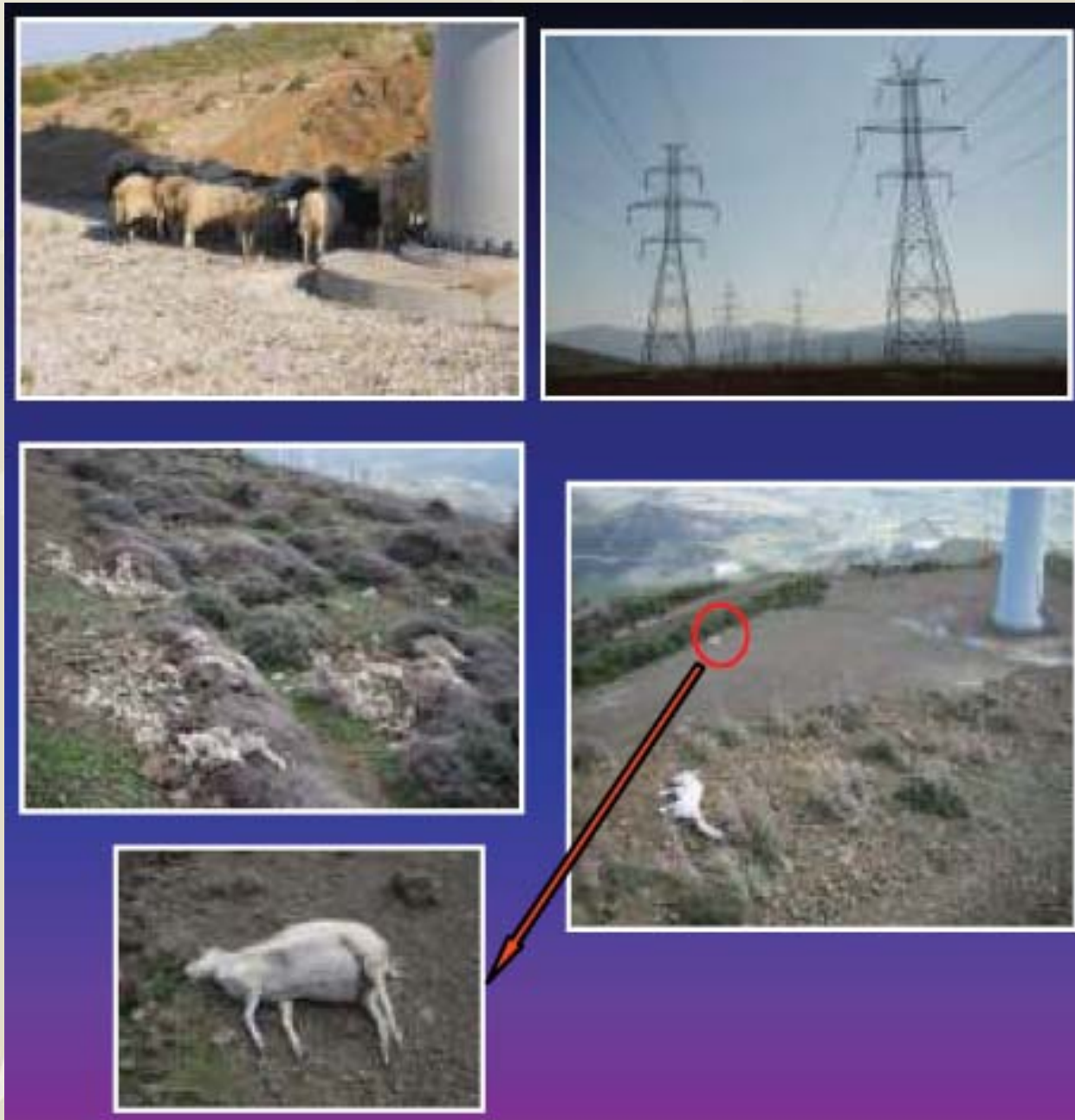
FOOD AS AN INDIRECT THREAT

Vulture Multi-species Action Plan

Dangers of rubbish dumps



Dangers linked with the location of the food



*Pictures from
S. Xiruchakis (Crete)*



THE LACK OF FOOD

Vulture Multi-species Action Plan



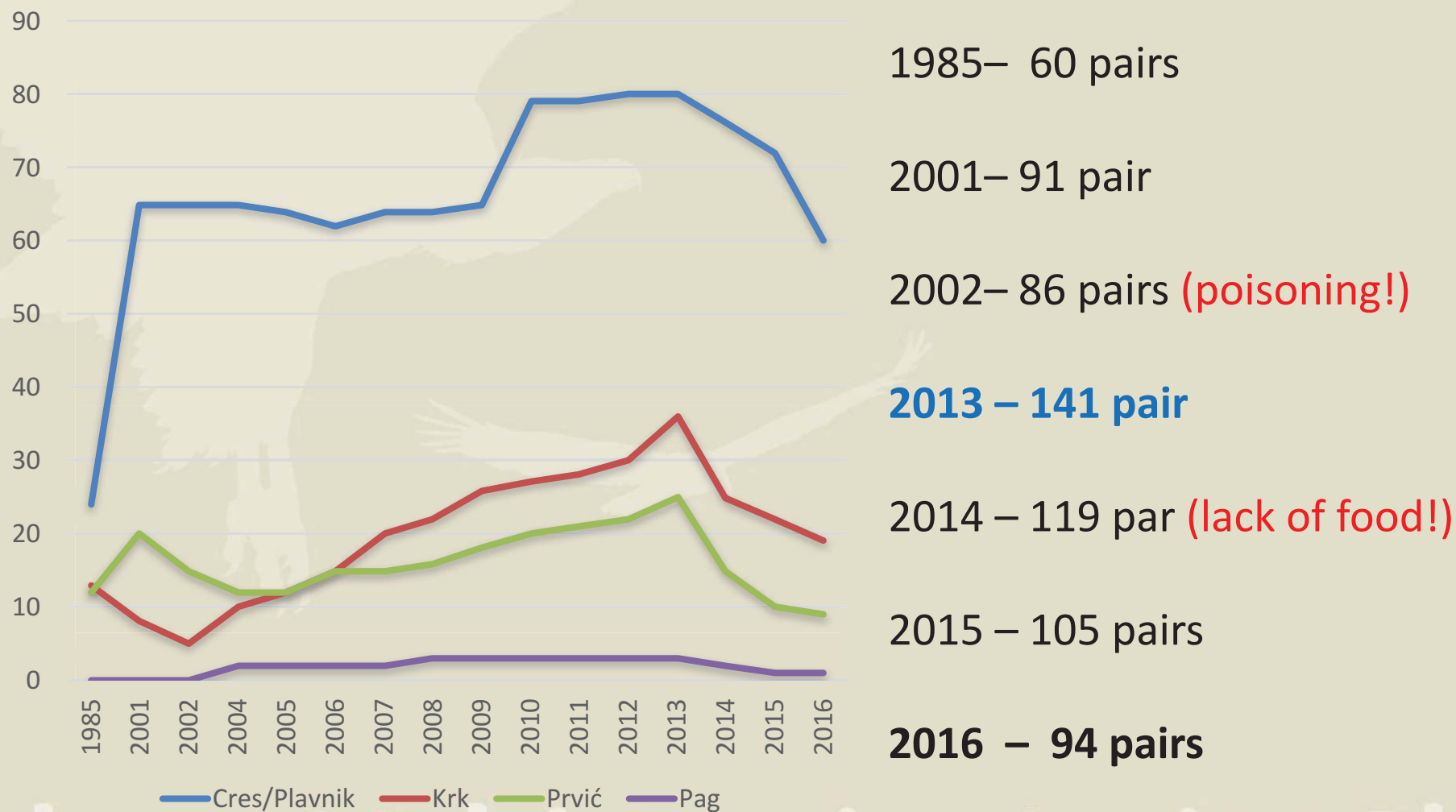
LACK OF FOOD – THE EXAMPLE OF THE CROATIAN
POPULATION OF THE ISLAND OF CRES

Vulture Multi-species Action Plan

After 10 years of increasing in island of Cres in Croatia, the population is declining again!



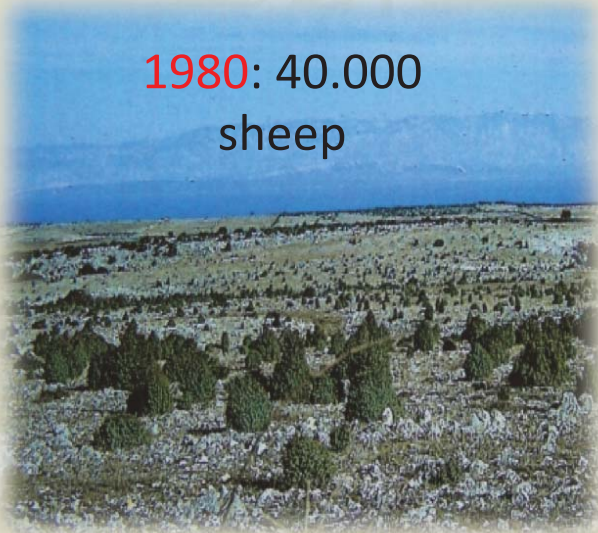
No. of breeding pairs



Following the decline of the number of sheep in extensive farming on the Island of Cres in Croatia



1980: 40.000
sheep



2016: 8.000 sheep (only!)



Evolution of wild ungulates

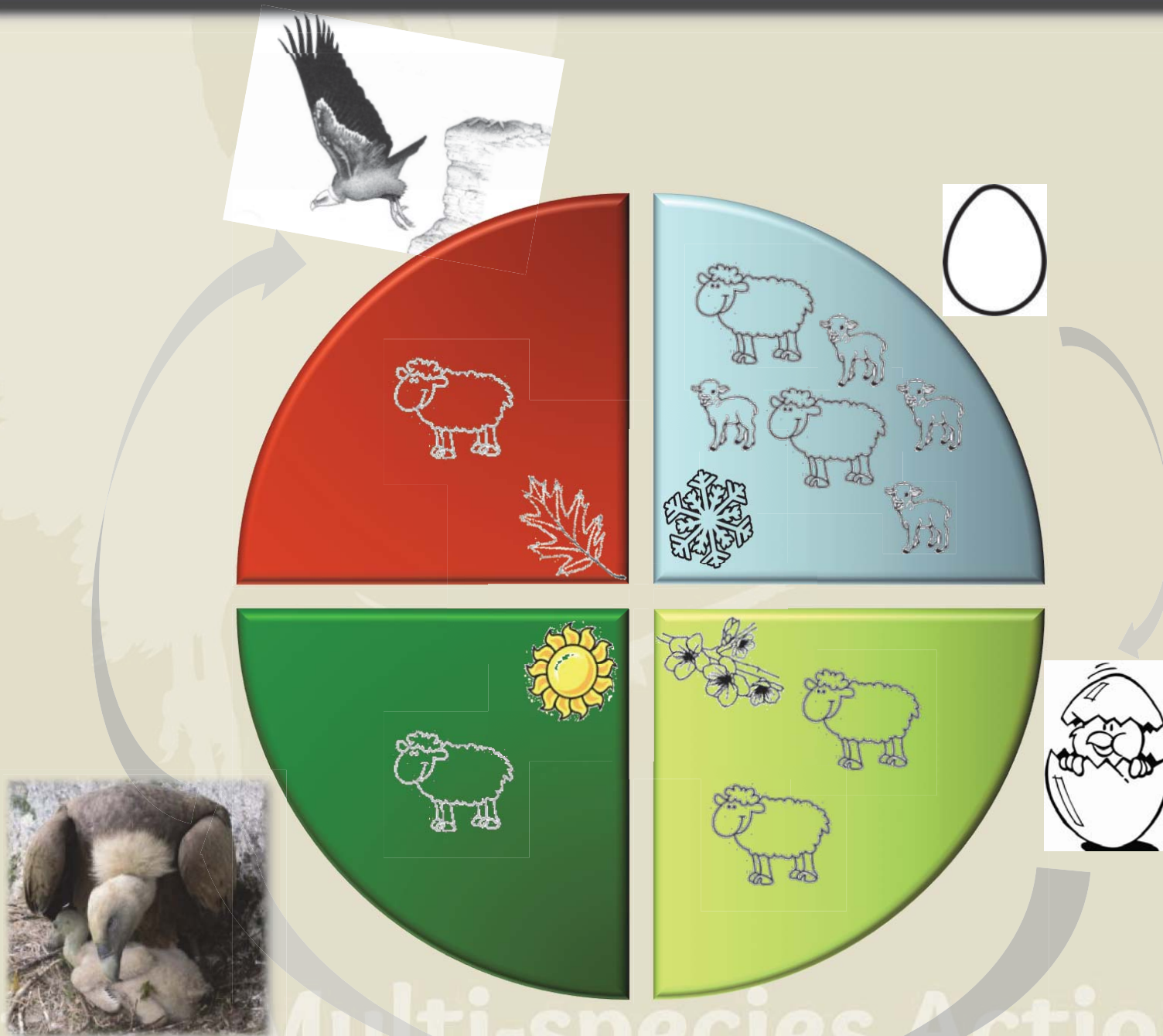




LACK OF FOOD – OTHER ASPECTS OF INTEREST

Vulture Multi-species Action Plan

Seasonal Availability of food resources



Vulture's seasonal capacity of movements

Average distance per Day



122 ± 4 km



92 ± 7 km



55 ± 6 km



29 ± 6 km

Very low domestic carcasses availability - Exemple of Maghreb



Could be a cause for Vulture's decline in the Maghreb mountains

- In some parts of the world, food for human is very rare so that farmers do not wait that livestock dies. They are used to kill and eat the weak animals before...
- Also, the concurrence with mammals such as farm dogs is important

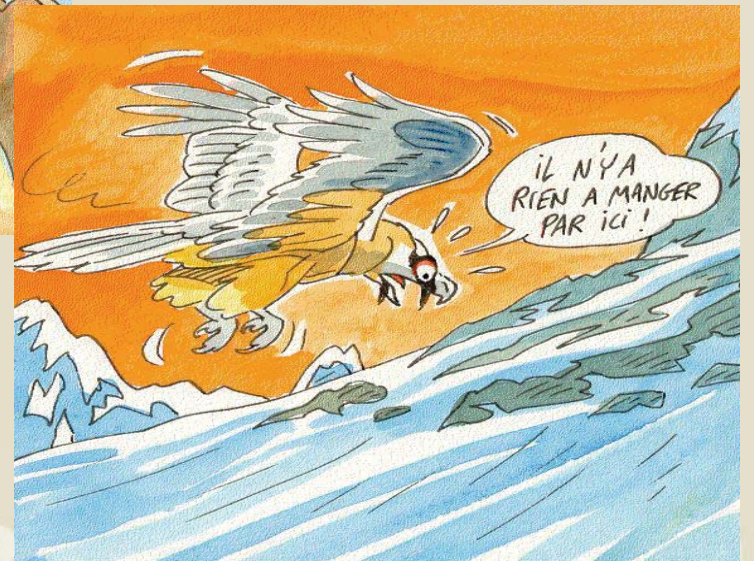
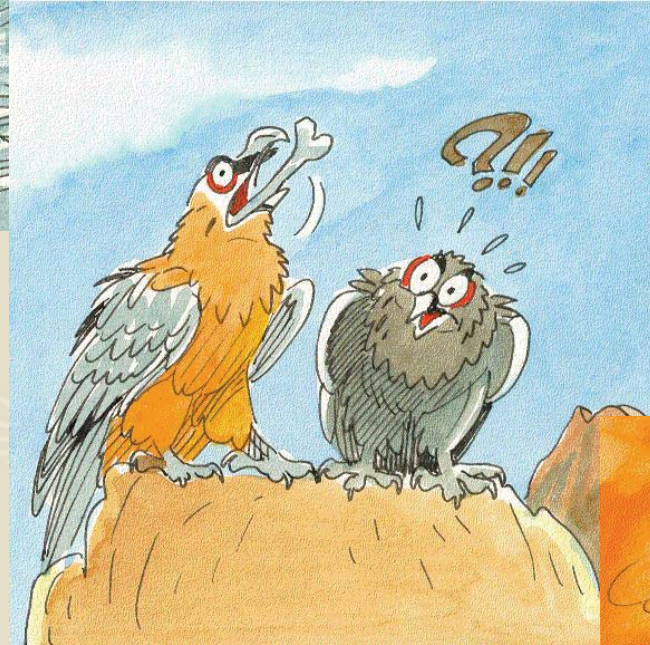


Klaus Robin©

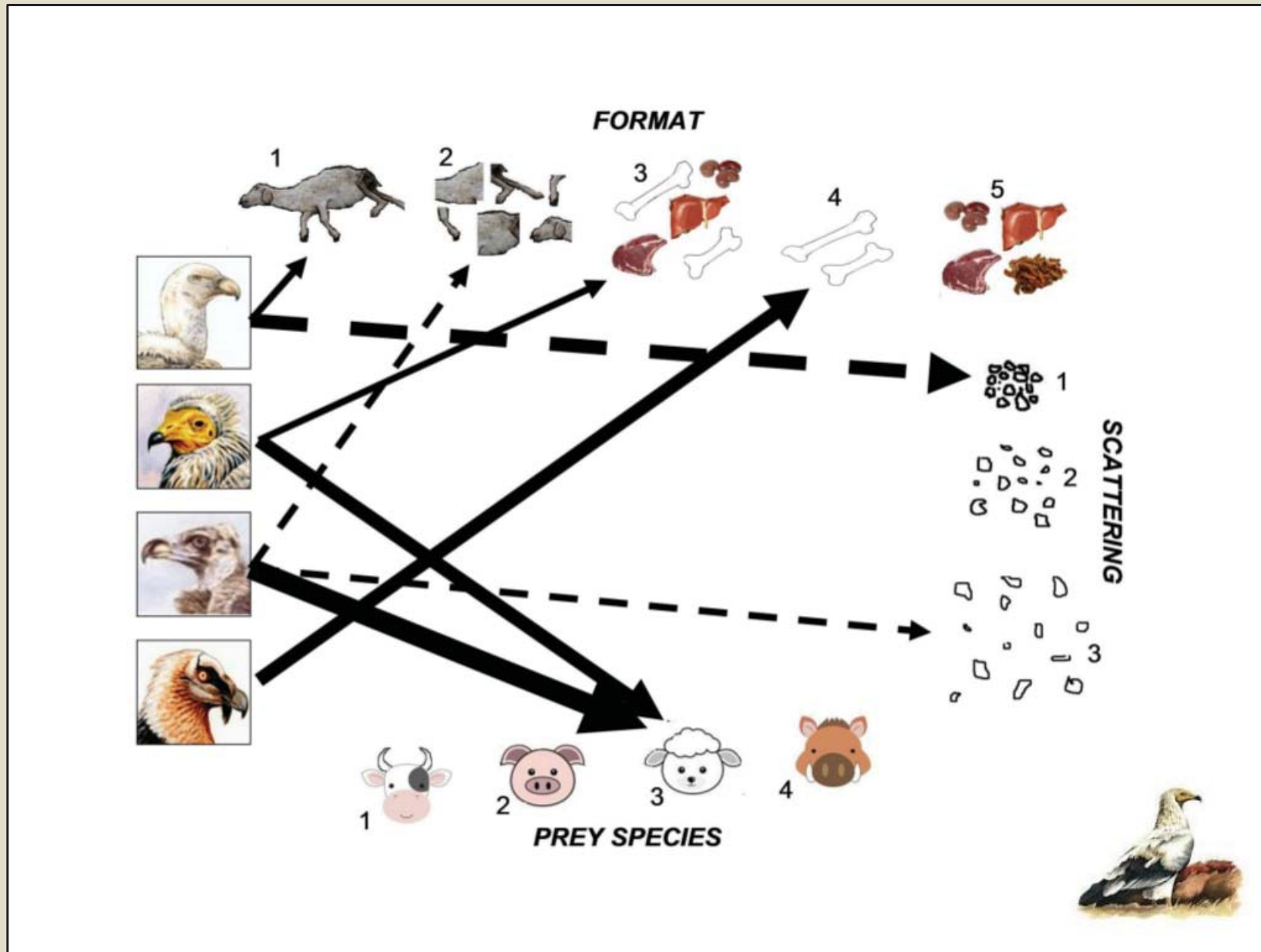


Availability of the good food at the right time... Exemple of Bearded vulture in Corsica

Vulture Multi-species Action Plan



Food conditionning




Dependence on quartering and sanitary regulations changes...



European, National or local level

Official Journal L 294
of the European Union




English edition Legislation Volume 57
10 October 2014

Contents

II Non-legislative acts

REGULATIONS

- * Commission Delegated Regulation (EU) No 1062/2014 of 4 August 2014 on the work programme for the systematic examination of all existing active substances contained in biocidal products referred to in Regulation (EU) No 528/2012 of the European Parliament and of the Council (*) 1
- * Commission Regulation (EU) No 1063/2014 of 7 October 2014 establishing a prohibition of fishing for whiting in VIII by vessels flying the flag of Belgium 15
- * Commission Regulation (EU) No 1064/2014 of 7 October 2014 establishing a prohibition of fishing for common sole in VIII and VIII by vessels flying the flag of United Kingdom 37
- * Commission Regulation (EU) No 1065/2014 of 7 October 2014 establishing a prohibition of fishing for plaice in VIII IX and X; Union waters of CECAF 34.1.1 by vessels flying the flag of Belgium 54



EN Act whose
a limited ;
The date ;



The concern of vulture's and livestock's interactions



- Rumours of incidents “Attacks” started in Spain and Pyrenees in the 1990s and increased slowly in the 2000s.
- **Around 2006, they increased significantly**
 - Time related with the closure of “Muladares” in relation to EU directives





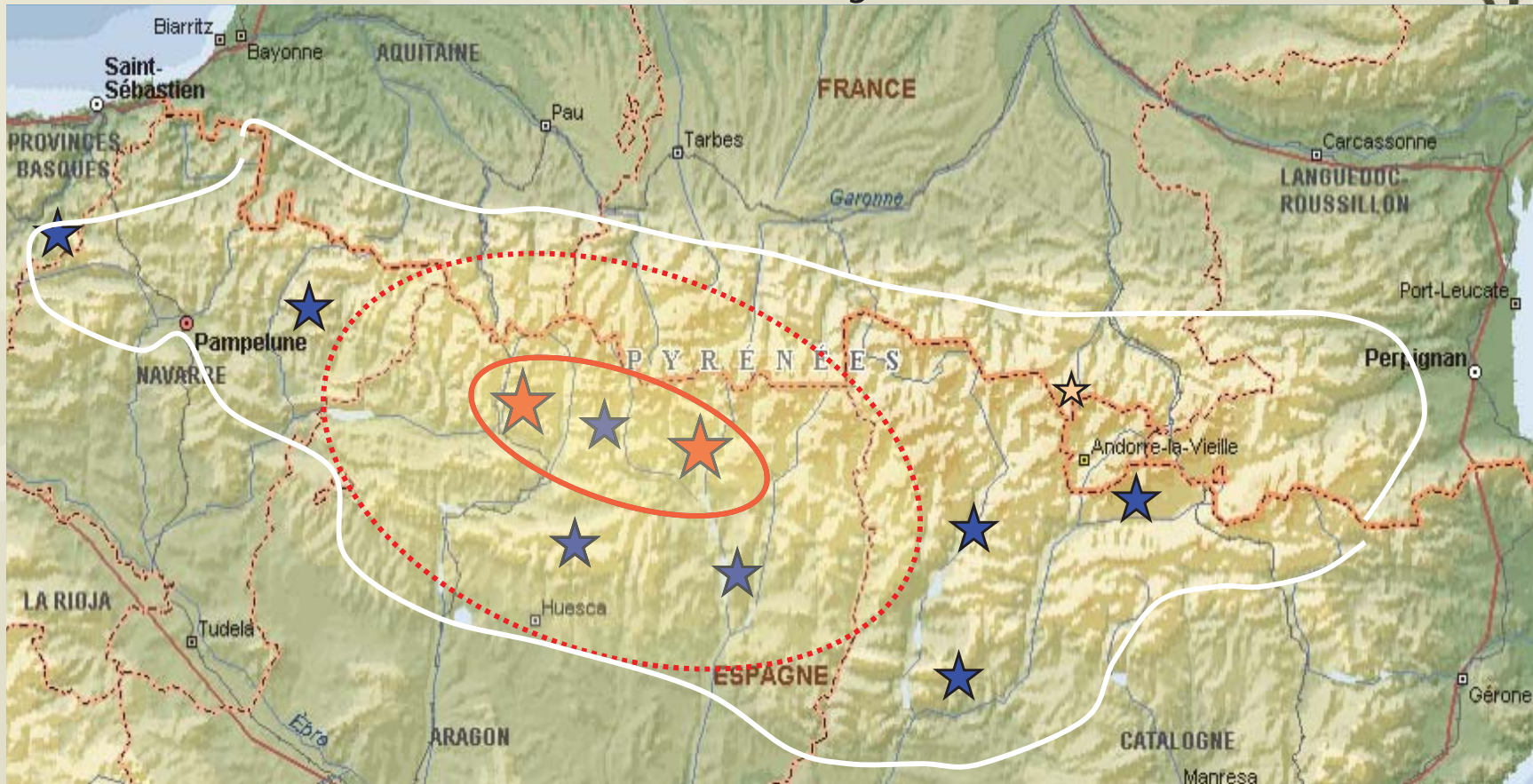
FOOD AS A CAUSE OF REDUCTION (OR ENHANCEMENT)
OF VULTURE'S MOVEMENTS





Vulture Multi-species Action Plan

Exemple of intensive feeding operations
for Bearded vultures in Pyrenees



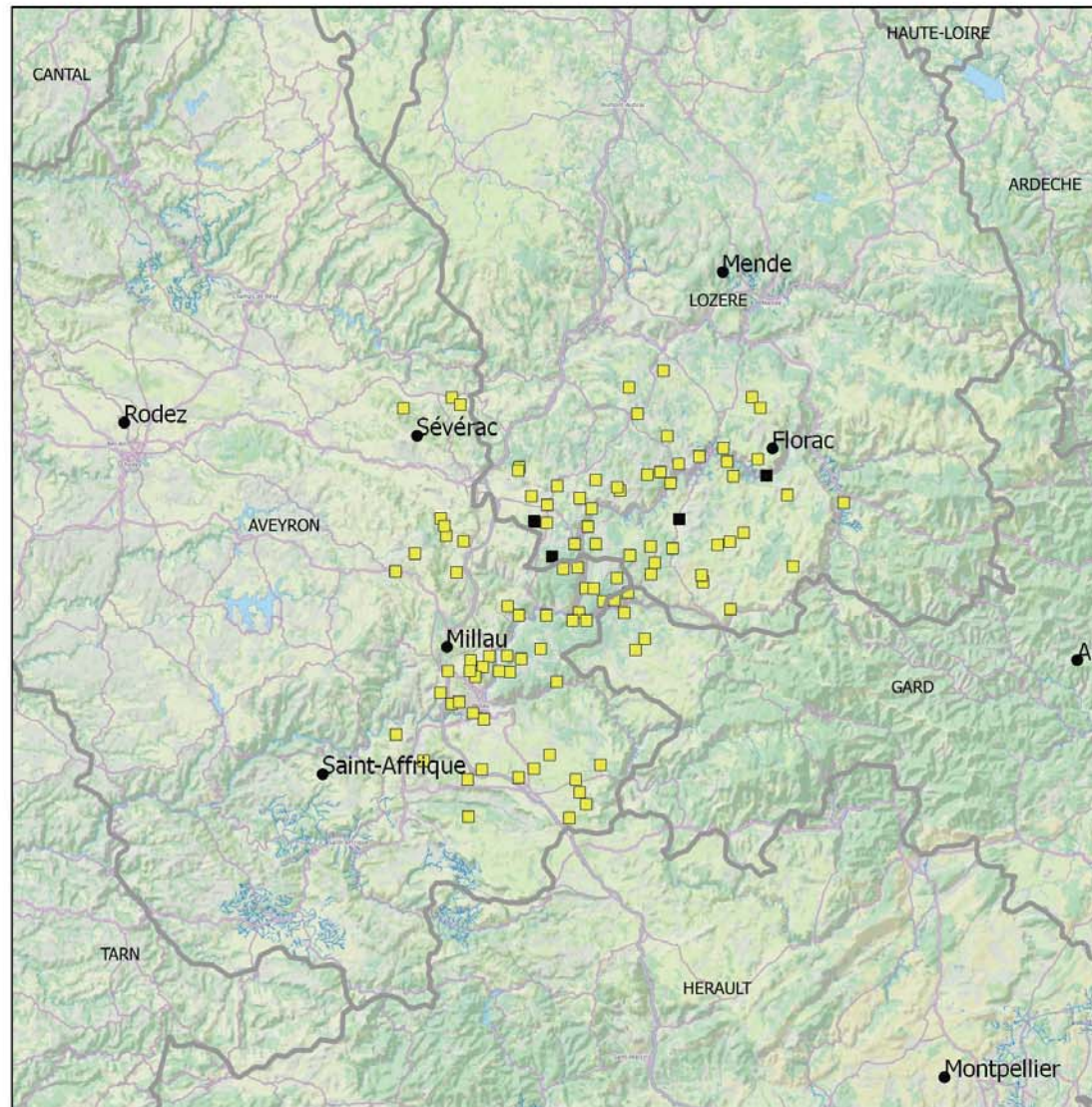
Intensive feeding operations for Bearded vultures in Southern Pyrenees



-  Area of wintering of floaters (nov-june)
-  Area of high density of pairs ($\pm 66\%$)
-  Most important intensive feeding places
(10 x 80 kg x 12 months = ± 10 T)
-  Other feeding places 2011 (> 1 T) – incomplete datas

Intensive feeding operations show a positive effect on young survival but negative effects on productivity (density dependence) and on dispersion of young

The exemple of Grands Causses

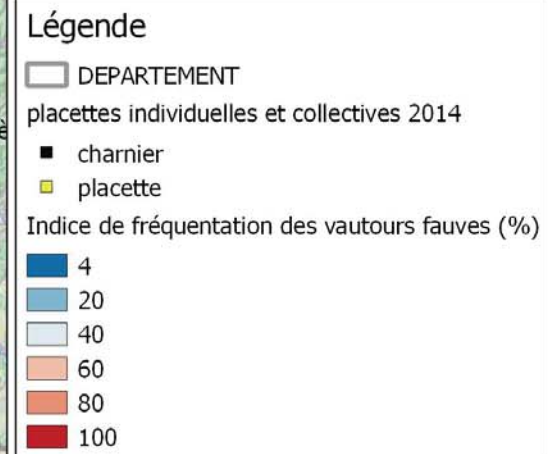
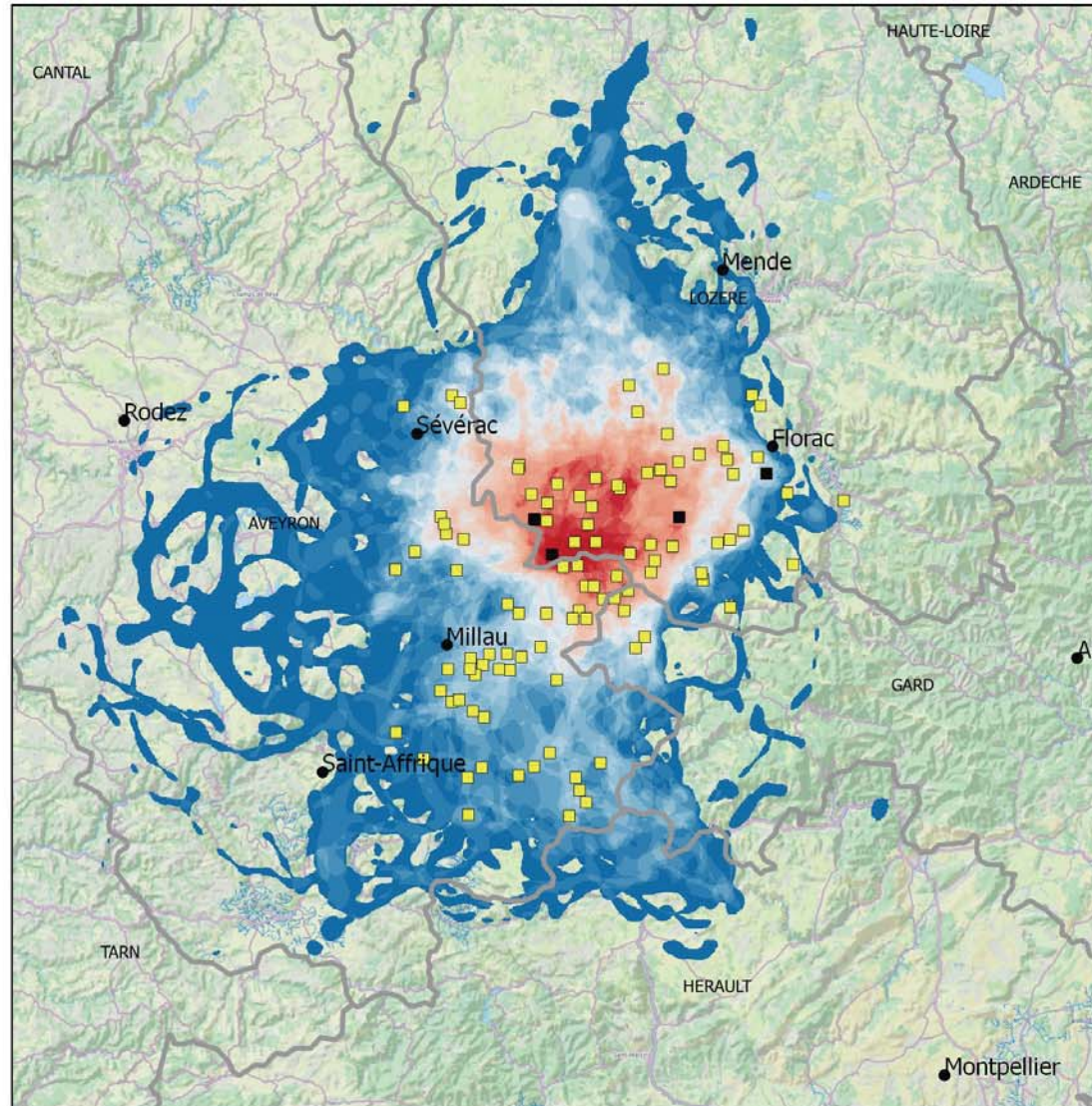


Légende

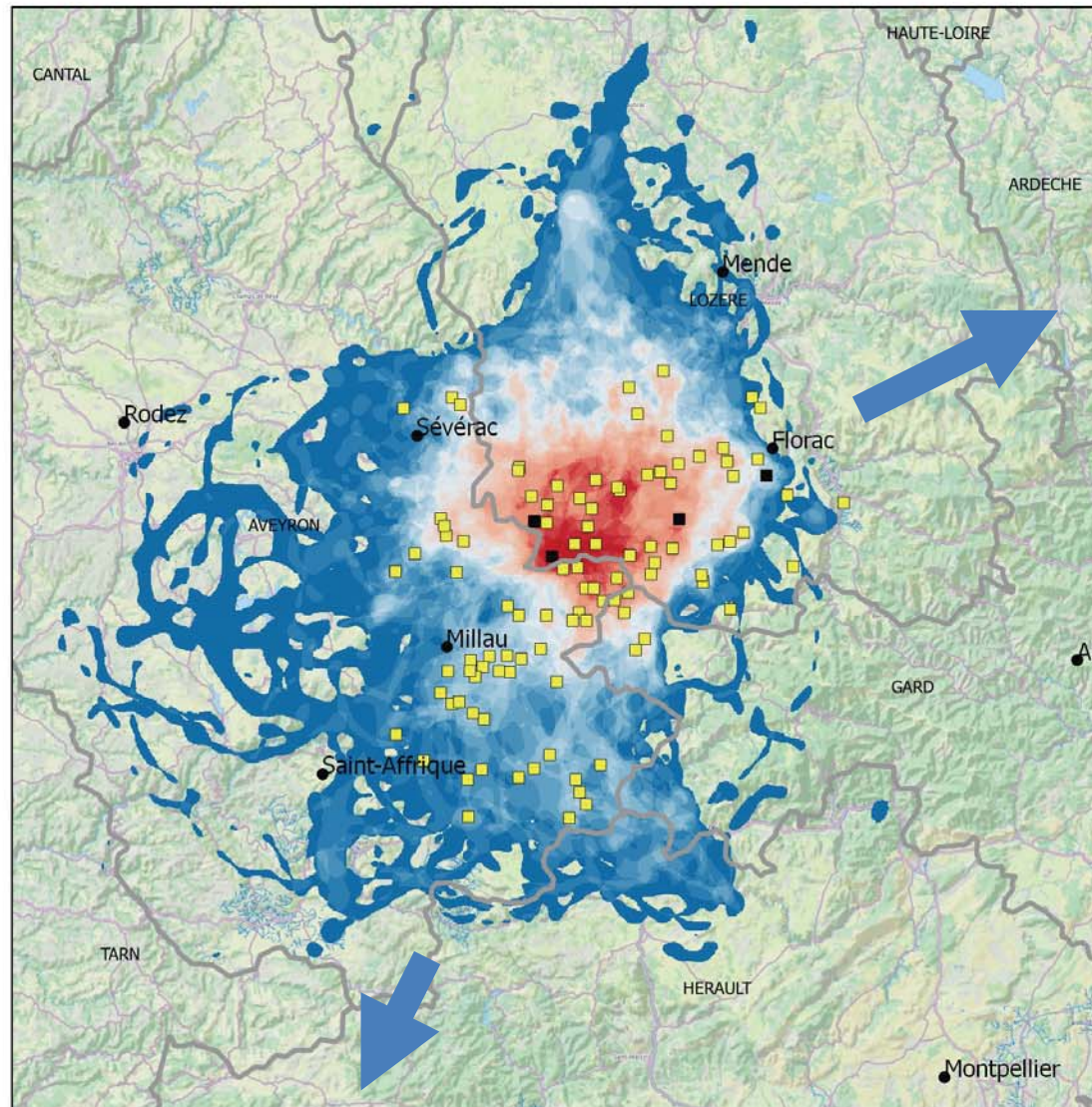
- DEPARTEMENT
- placettes individuelles et collectives 2014
 - charnier
 - placette



Situation of the farm feeding stations and Griffon's home range

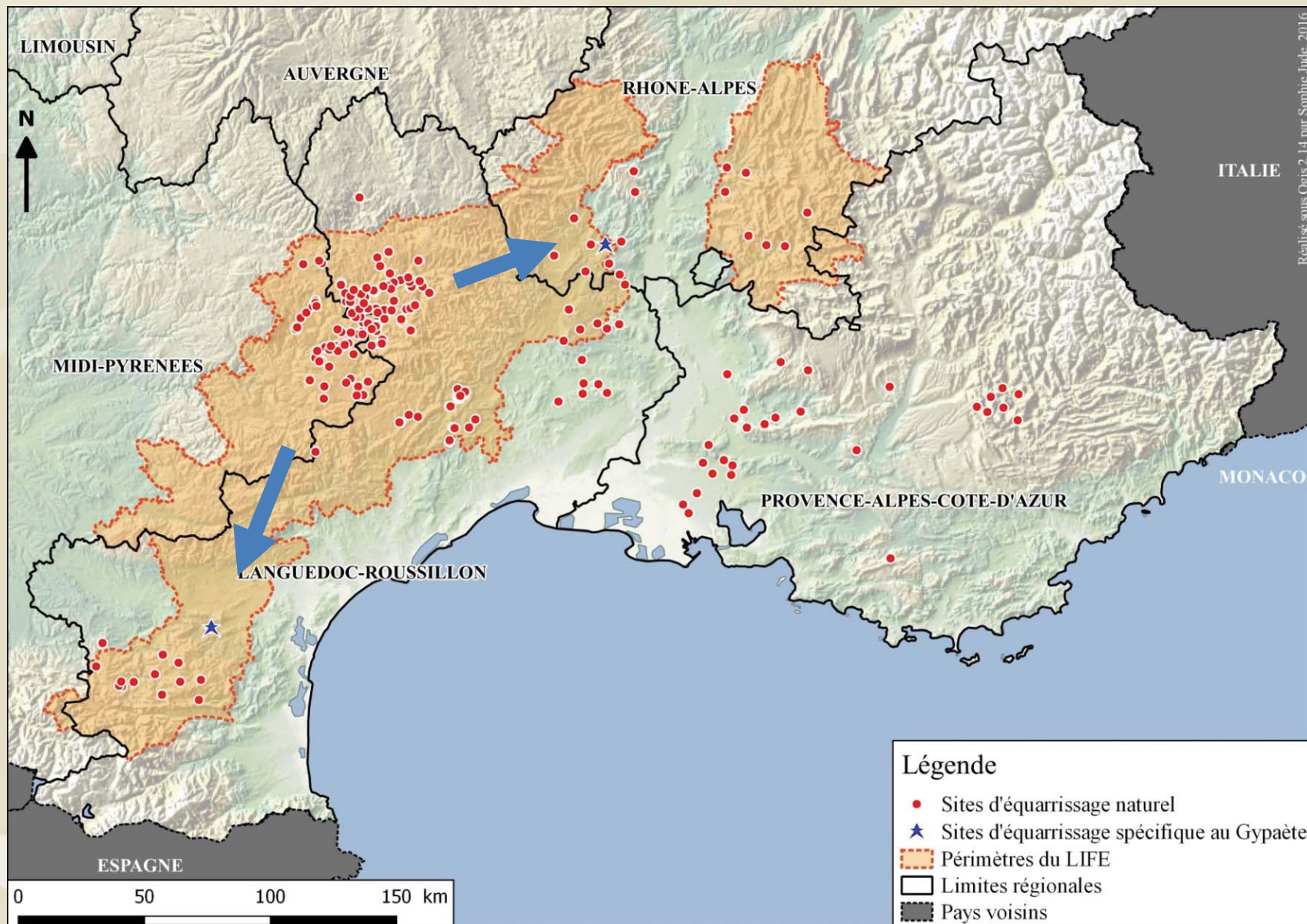


Direction of extension of the GV home range



Olivier Duriez – CEFE CNRS

Direction of extension of the Griffon vulture home range





FOOD AS A WAY TO SECURE THE INSTALLATION OF
REPRODUCING PAIRS

Vulture Multi-species Action Plan

Oriental French Pyrenees - Aude -

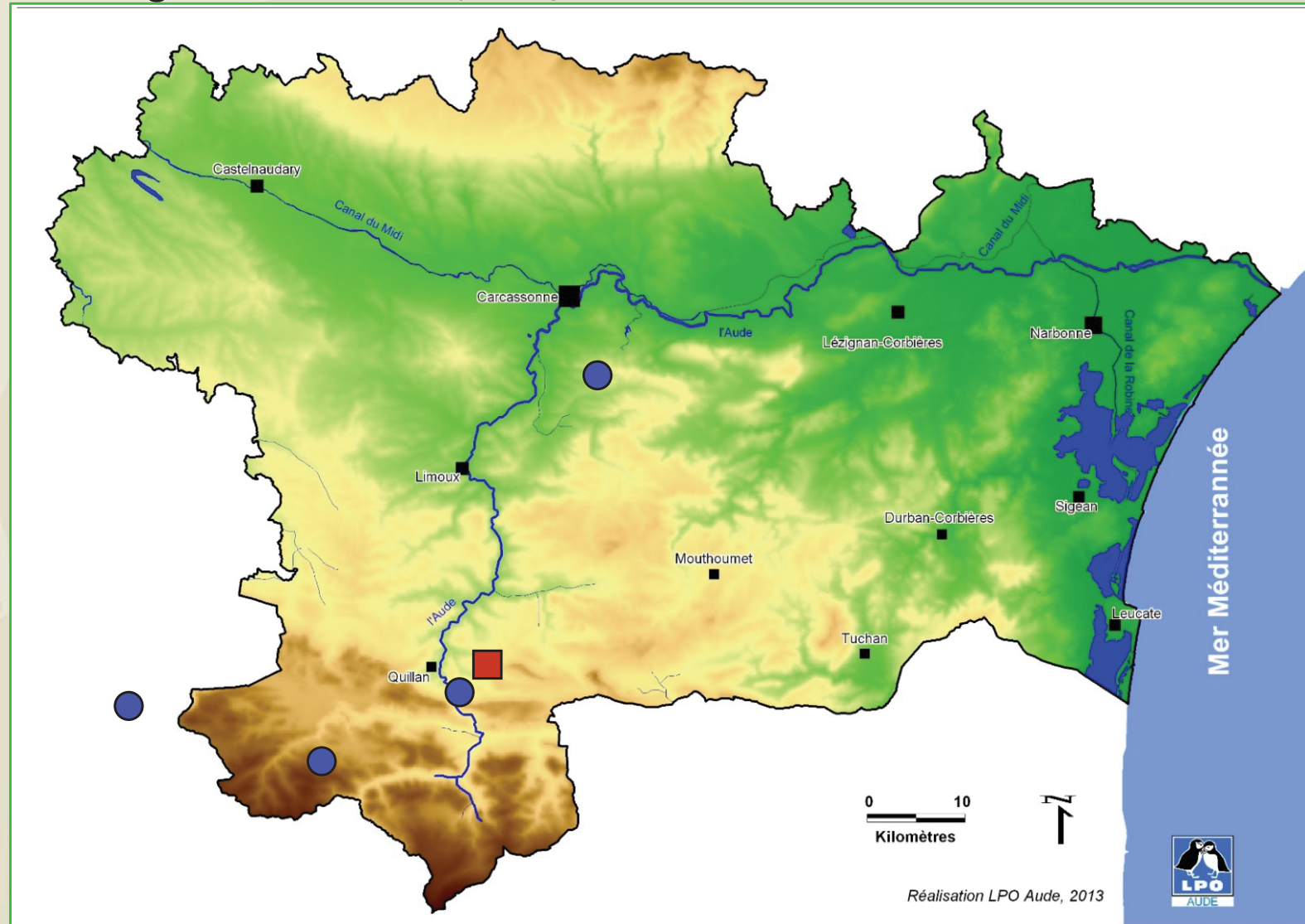


- New feeding places in 2008
- Installation of a pair in 2009
- First breeding attempt in 2010

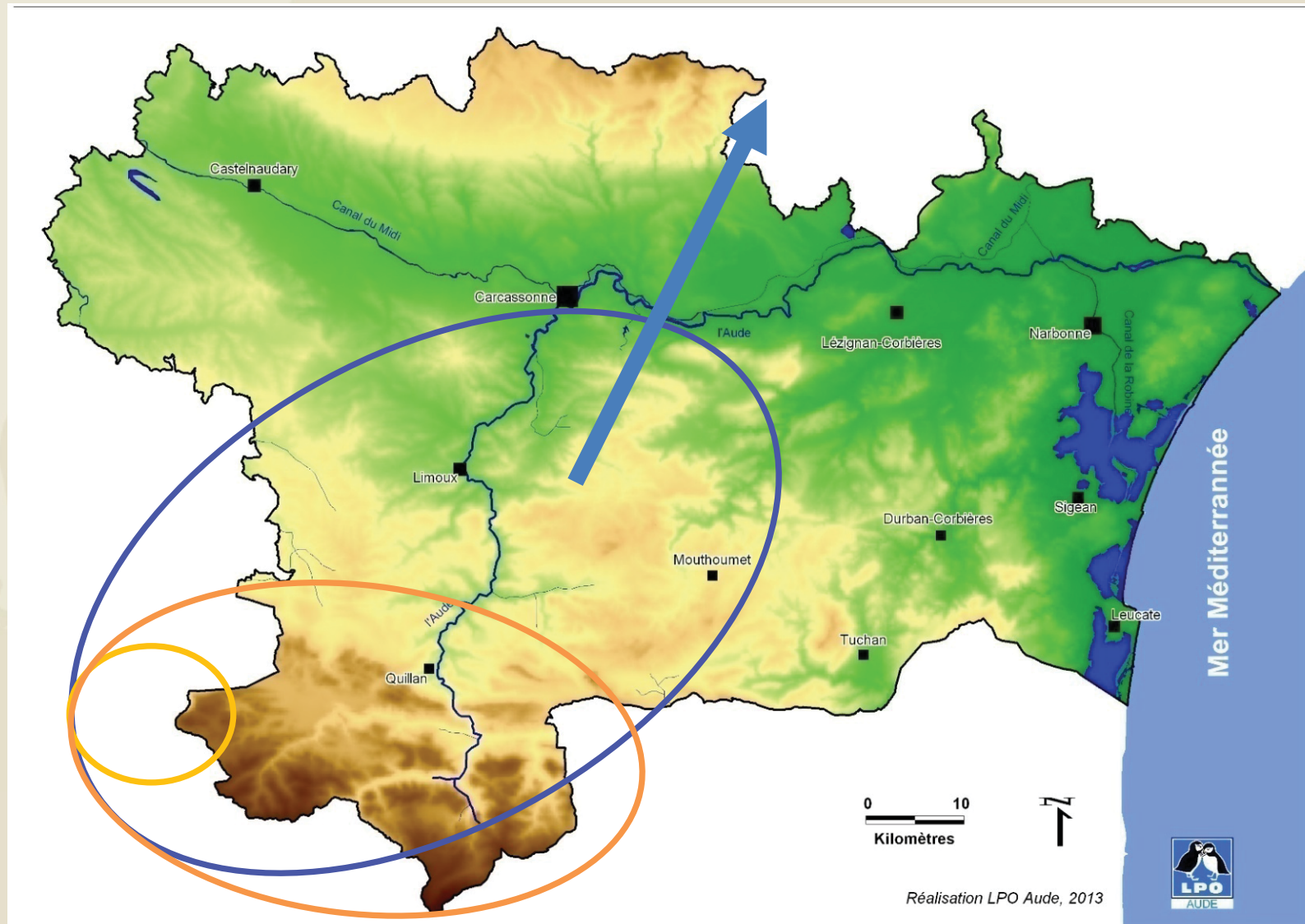
Food resources based on wild ungulates and extensive livestock

Network of feeding sites in Aude

- Specific light Bearded vultures feeding sites
- Farm feeding station (*individual feeding device*)



Evolution of presence in Aude

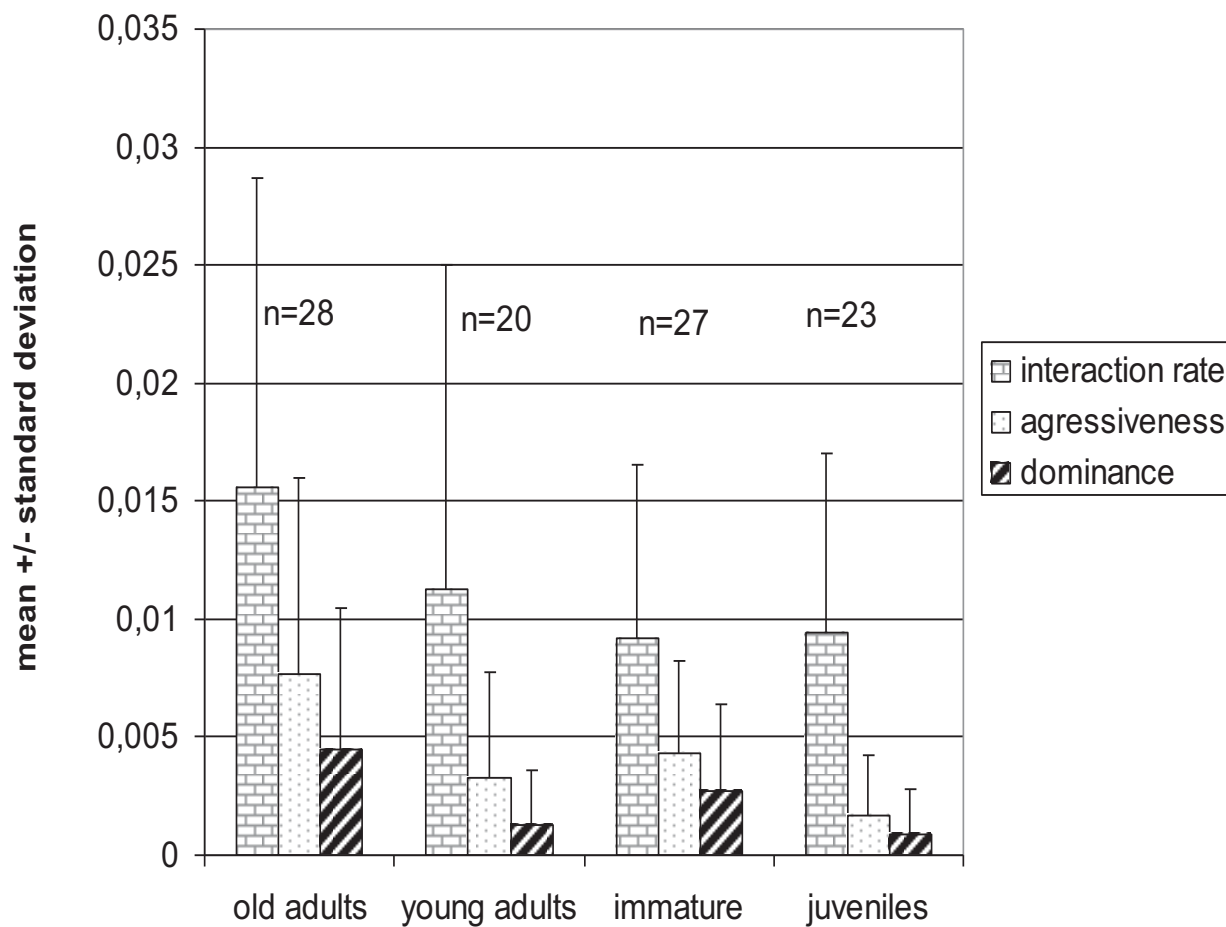




**FOOD AS A WAY TO MANAGE INTRA-SPECIFIC
COMPETITION**

Vulture Multi-species Action Plan

Competition for food: dominance



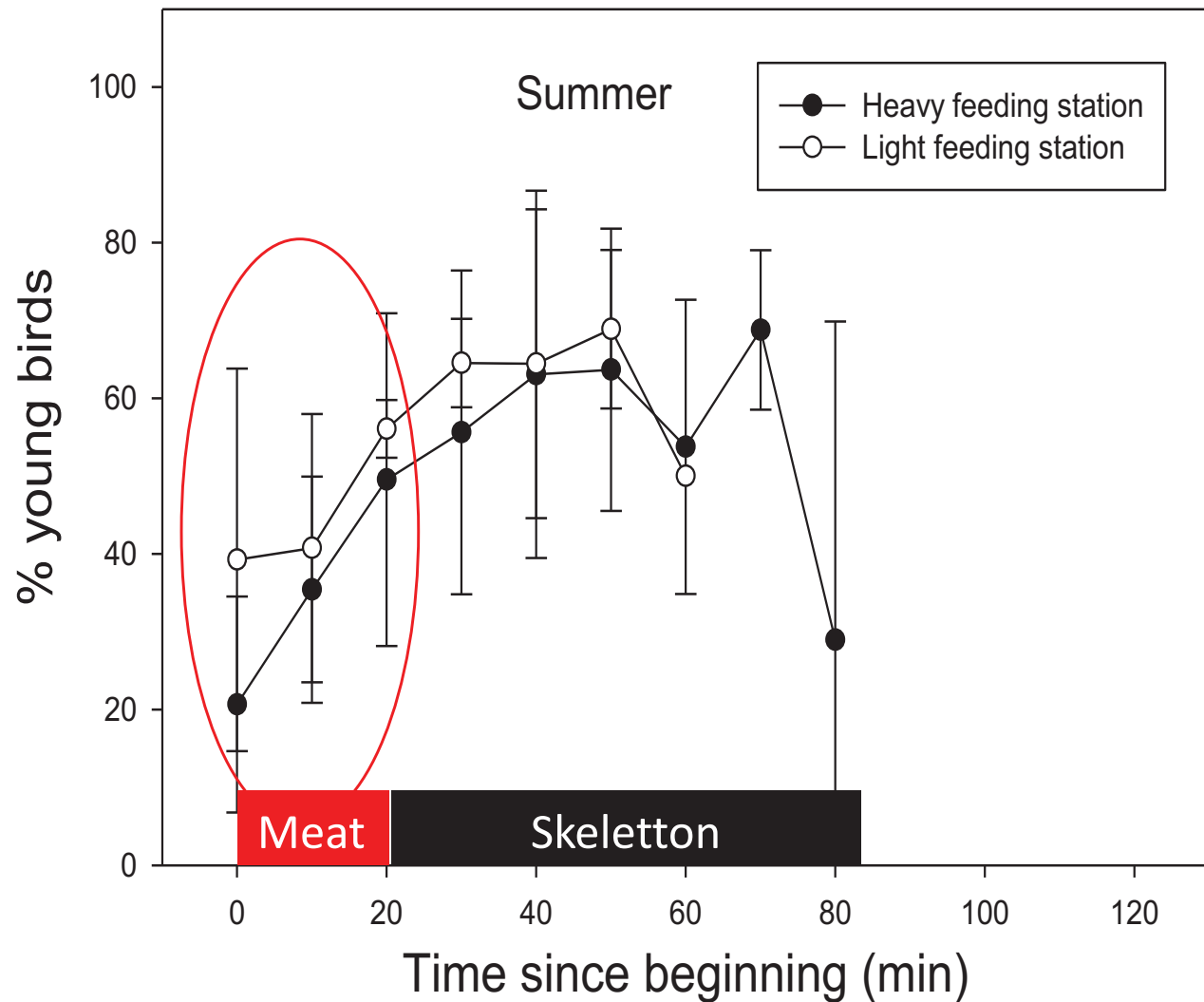
Videos of focal individual

Adults dominant over younger birds

No difference between Heavy FS / Farm FS

(Bosè & Sarrazin 2007 Ibis)

Competition for food: Age-ratio at feeding events



% young increases with time and is higher in Farm feeding stations



Adults predominant when meat, youngs when skeleton

→ young birds prospect more at light feeding stations ?

(Duriez, unpublished)

Competition for food: prospection behaviours



GPS tracking of
individual griffon vultures



Pilot study in 2009



Competition for food: prospection behaviours

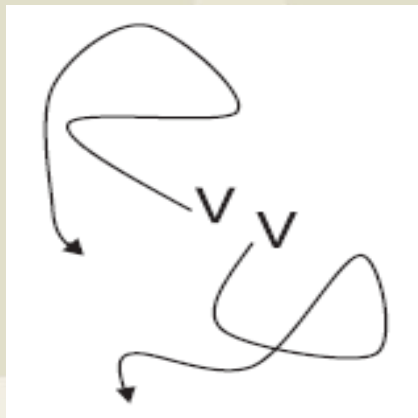


Vultures' foraging behaviour

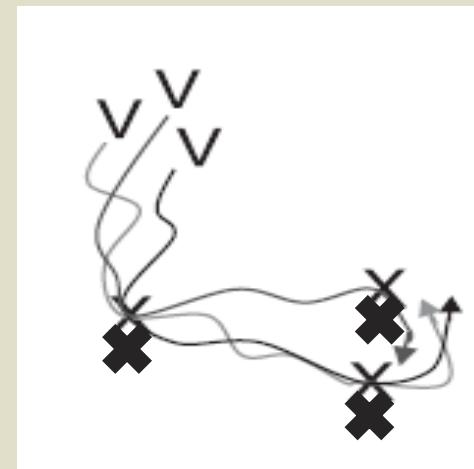
Forage and feed in group

Olivier Duriez – CEFE CNRS

With unpredictable resources
→ Random strategy?



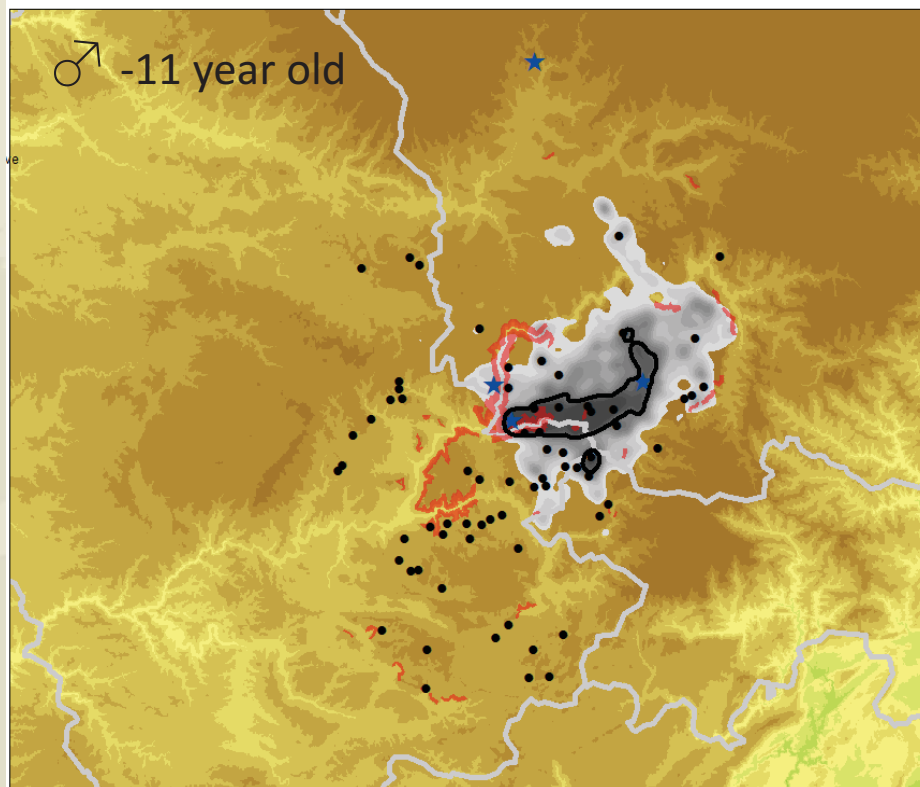
With predictable resources
→ Traplining strategy?



✘ Feeding stations

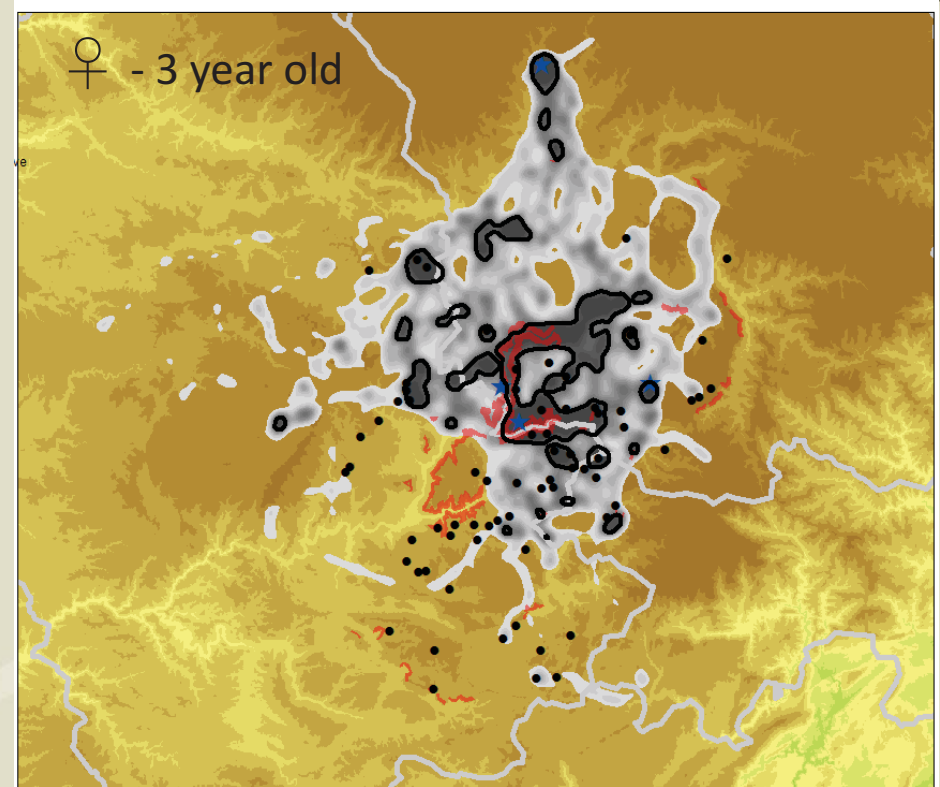
Results : Home ranges

A great variability in the characteristics of home ranges



Movement-based Kernel method (Benhamou, 2010)

Mean Area = $1022 \pm 600 \text{ km}^2$



Utilization density



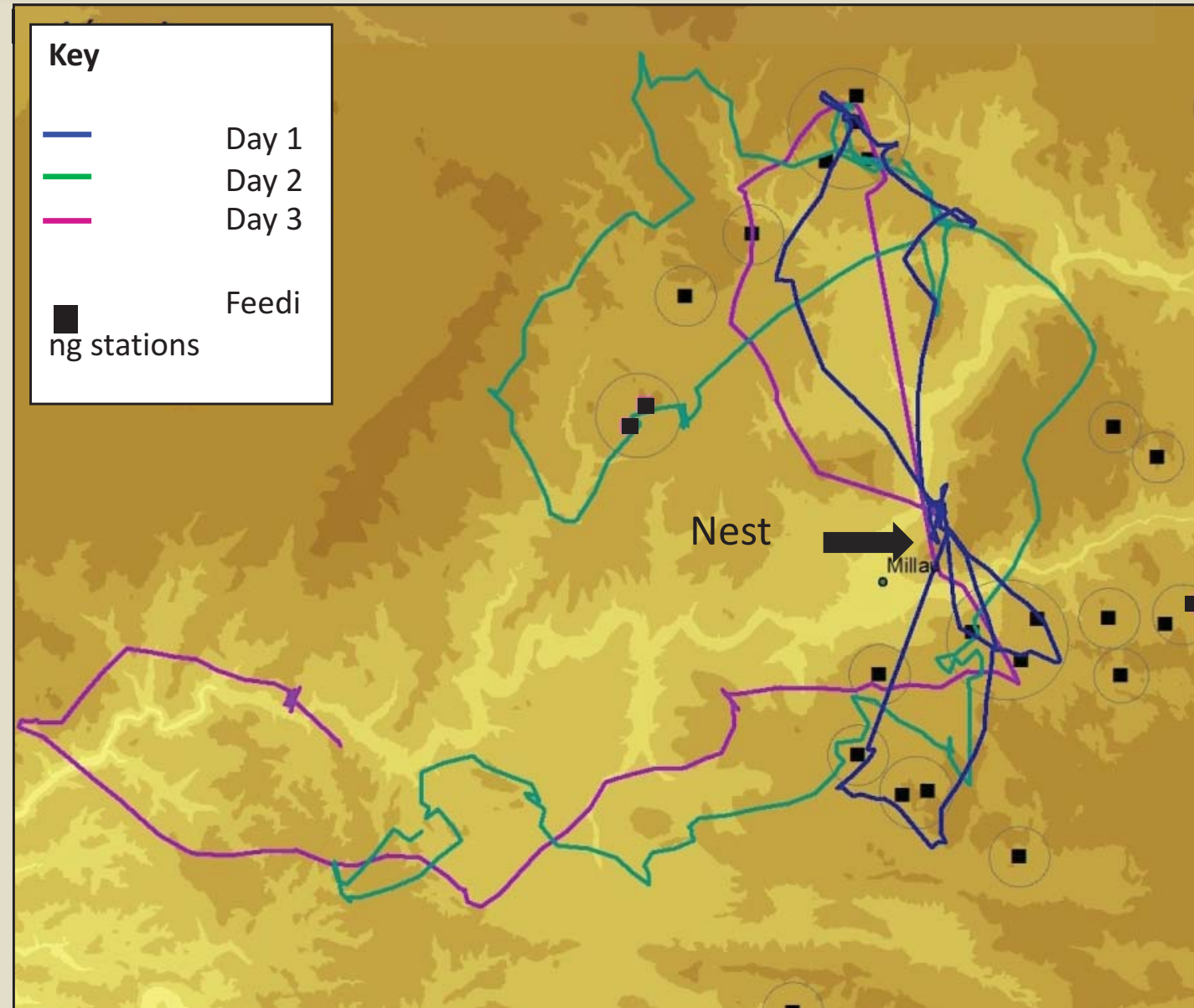
Feeding stations



Colonies

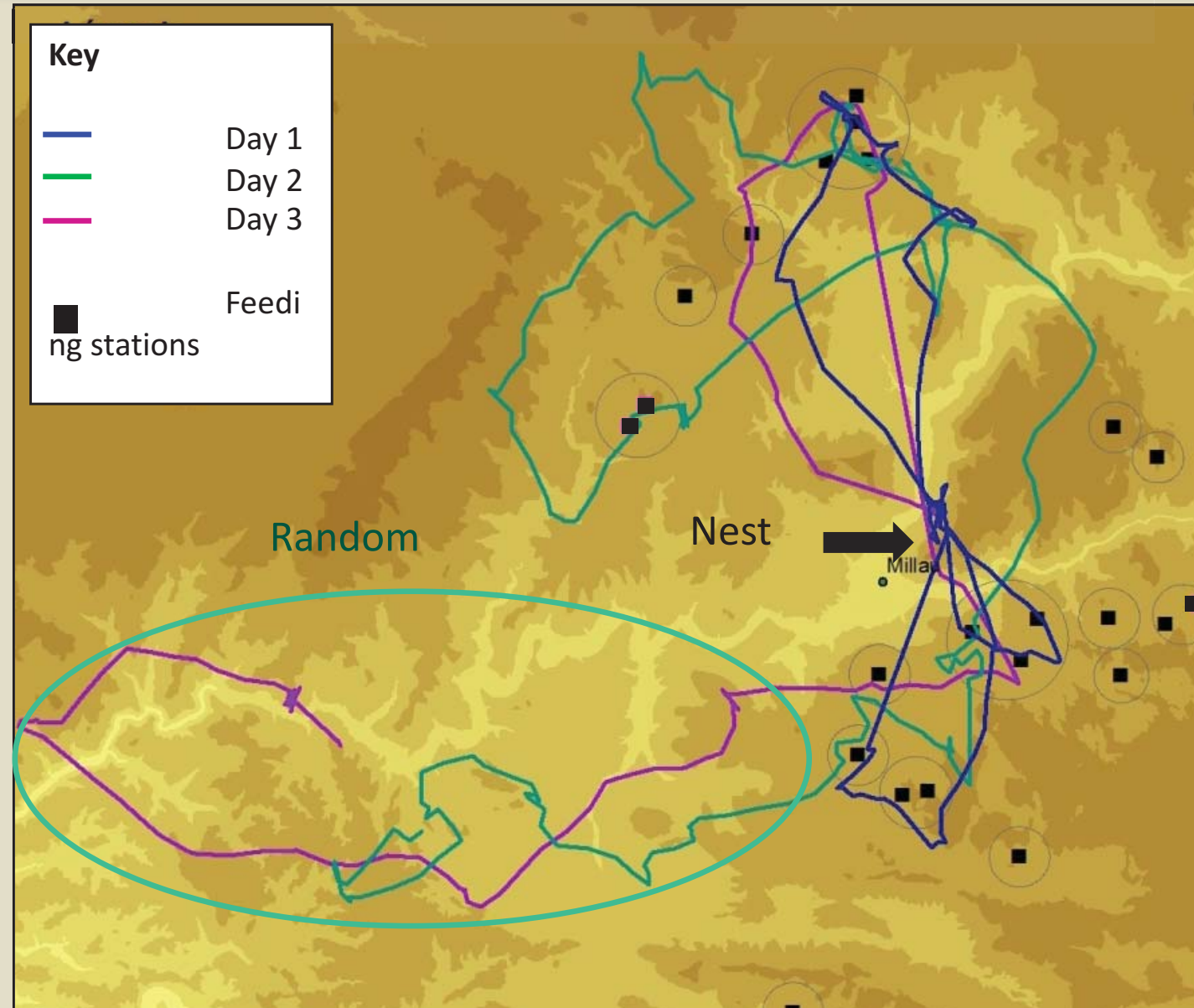
Females' home ranges contain more feeding stations /km².

Results : Repetitiveness of prospection routes



Results : Repetitiveness of prospection routes

Random foraging...

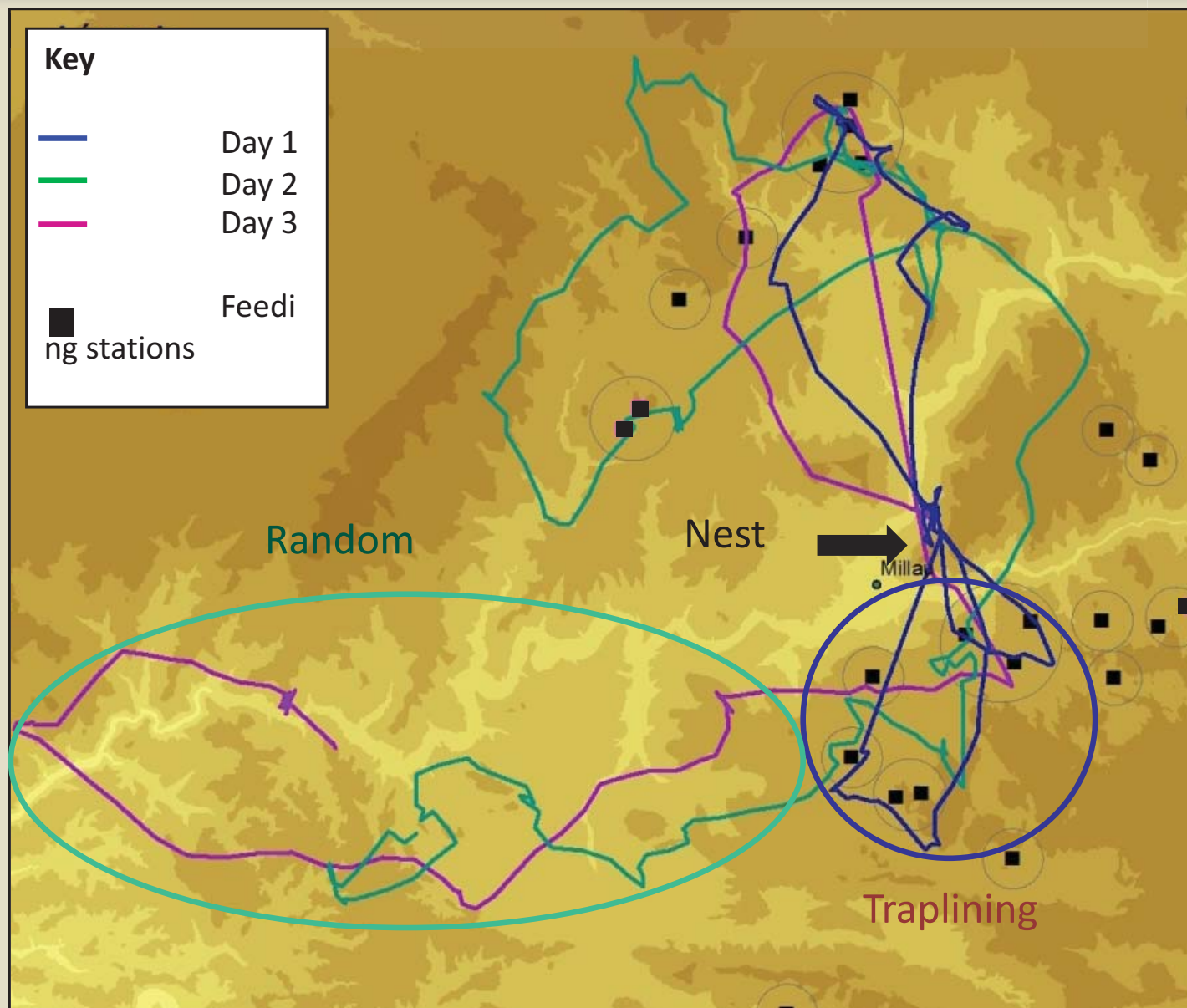


Results : Repetitiveness of prospection routes

Random foraging...

...But also

Traplining strategy



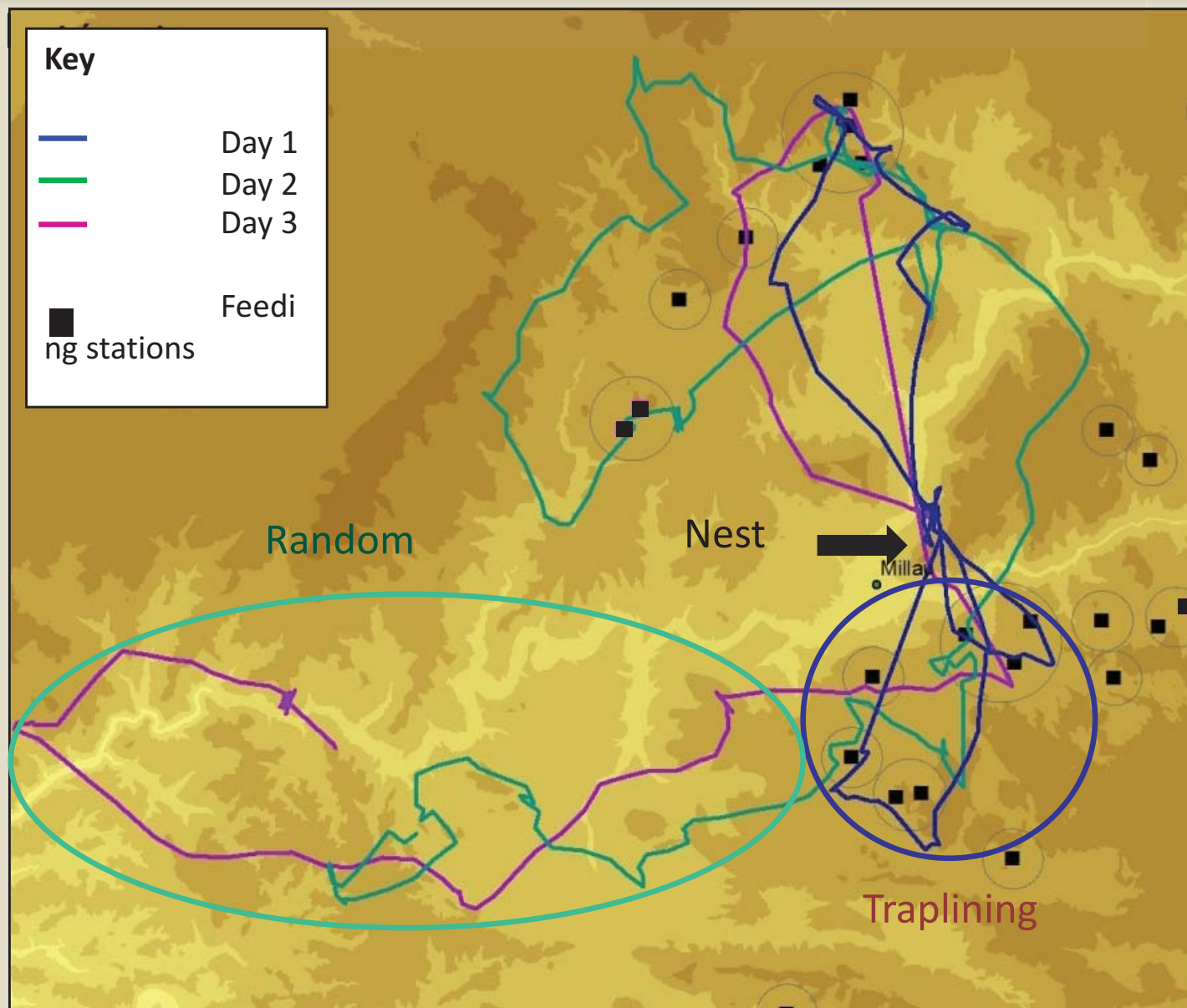
Results : Repetitiveness of prospection routes

Random foraging...

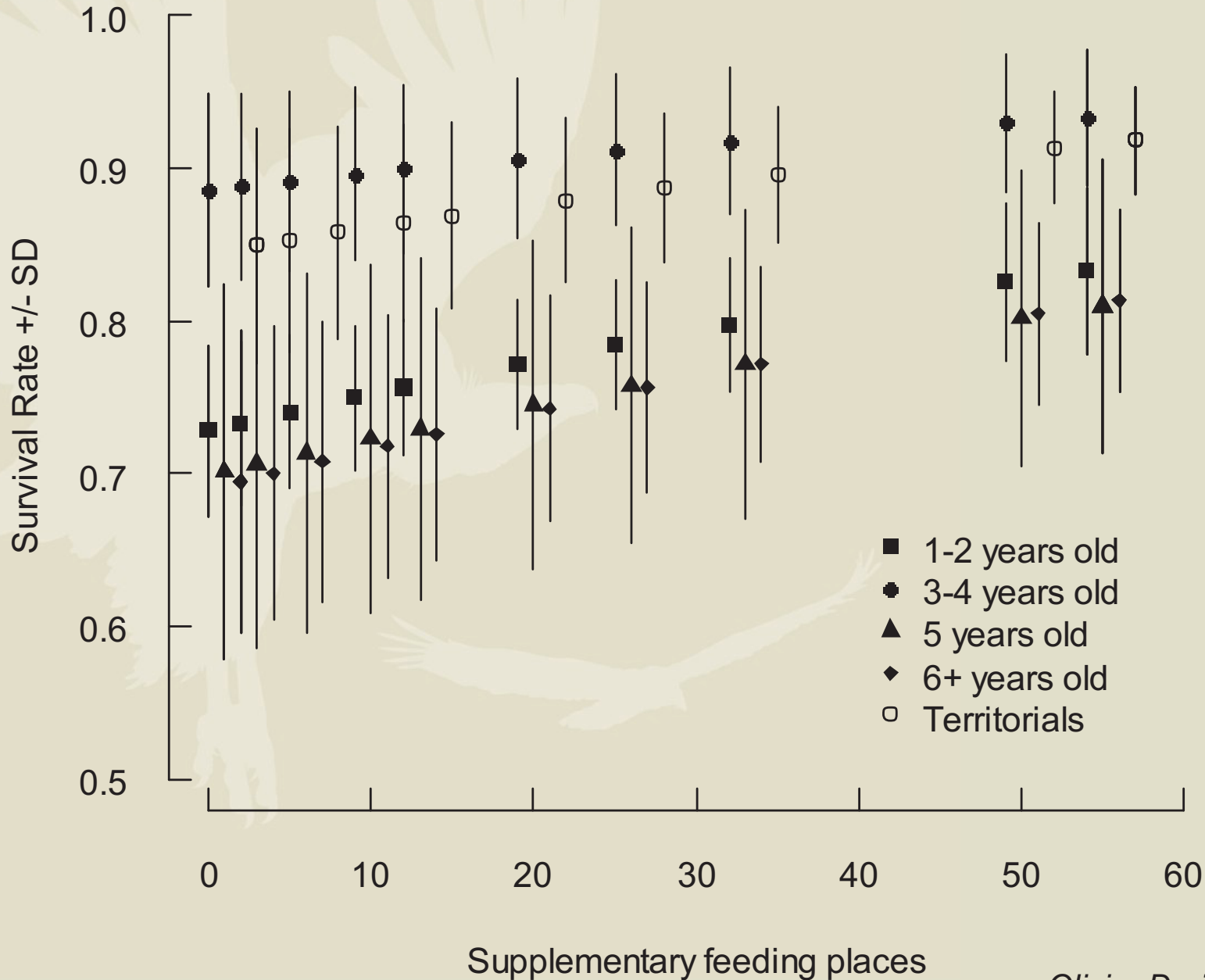
...But also

Traplining strategy

→ Confirmed by
repetitiveness analysis

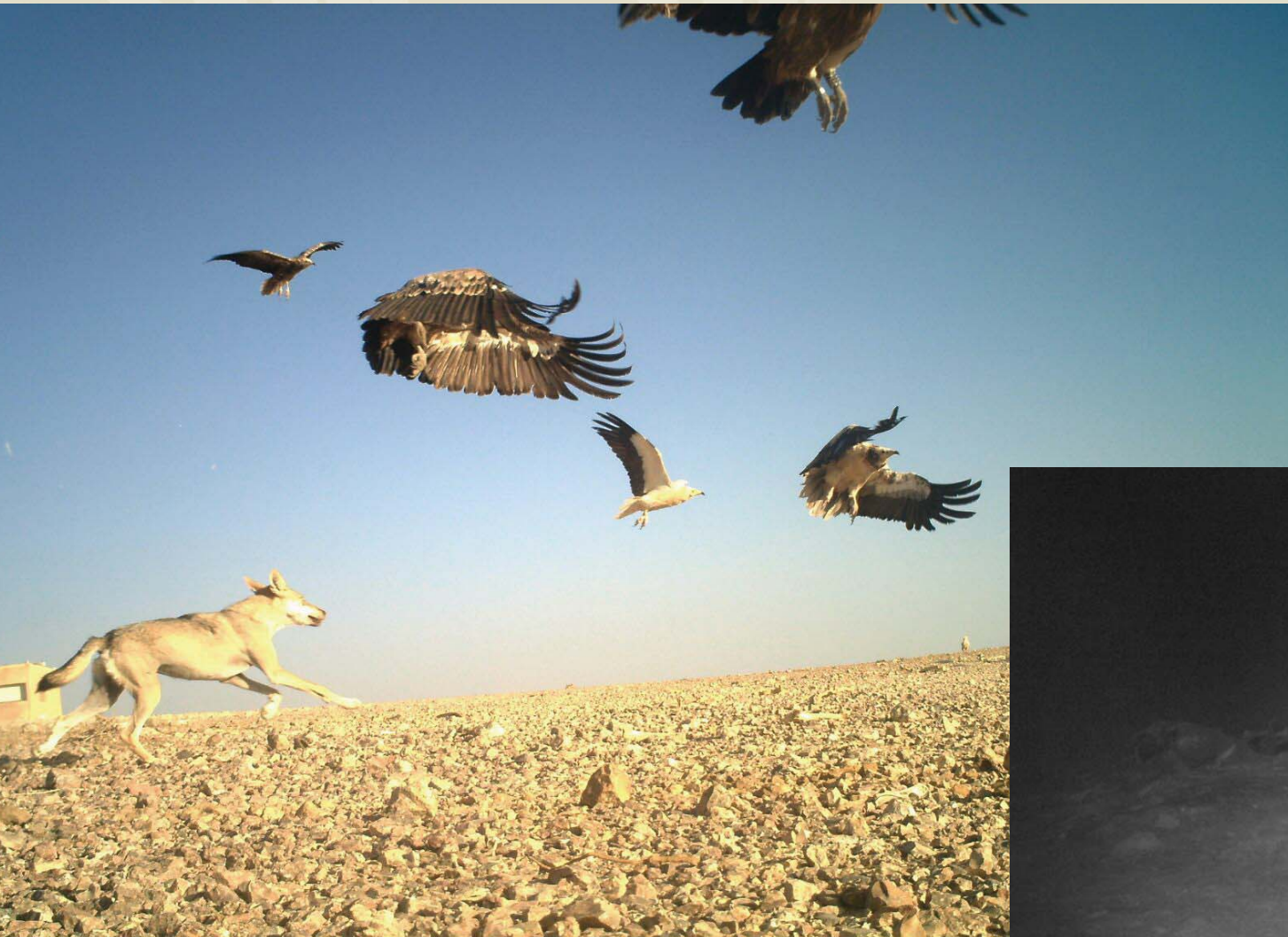


The impact of conservation actions on French vulture populations



Olivier Duriez – CEFE CNRS

Supplementary feeding improved survival rates



FOOD AS AN AREA OF INTERACTION WITH PREDATORS

Vulture Multi-species Action Plan



FOOD AS A FACTOR OF HUMAN
AND CONSERVATION DEPENDENCE

Vulture Multi-species Action Plan



First, you type « Spain », then « satellite overview », then choose « sheep » and at last, you click on « latest deceased »

WAYS TO IMPROVE FOOD AVAILABILITY

Vulture Multi-species Action Plan



VULTURE'S POPULATIONS DIRECT SUPPORT
EXEMPLE OF ITALY (FRIULI)

Vulture Multi-species Action Plan



VULTURE'S POPULATIONS DIRECT SUPPORT EXEMPLE OF BULGARIA

Vulture Multi-species Action Plan



VULTURE'S POPULATIONS DIRECT SUPPORT
EXAMPLE OF ISRAEL

Vulture Multi-species Action Plan

All feeding sites provides water as well! It is imperative for the vultures not less than food in some instances.



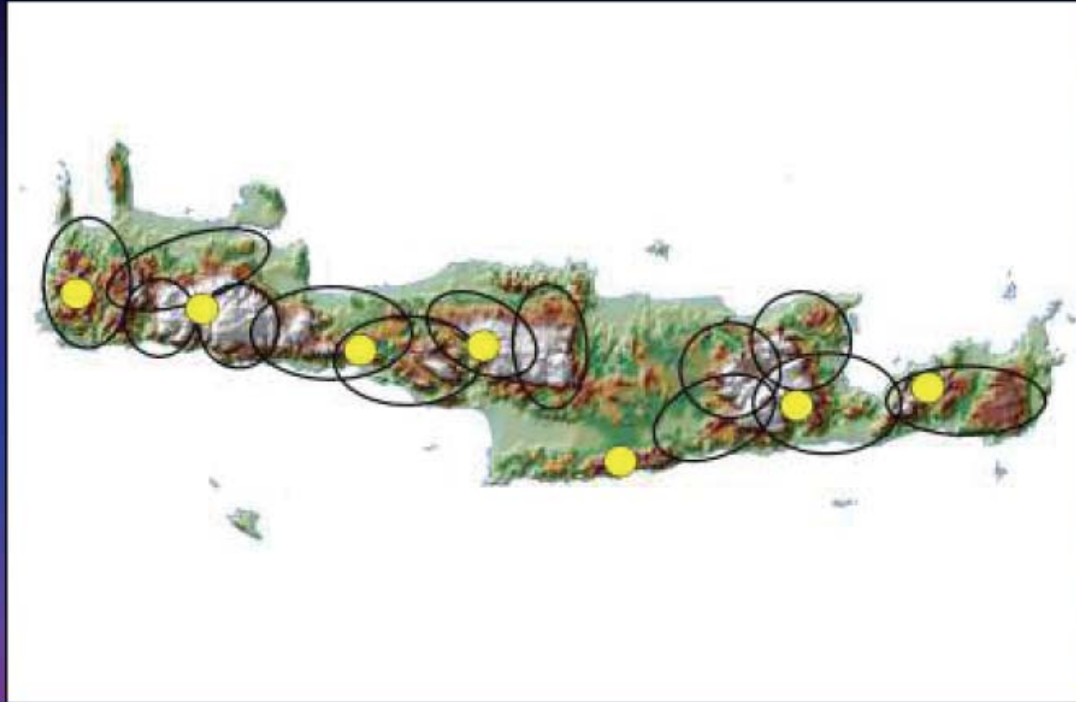
WATER AVAILABILITY IN ISRAEL

Vulture Multi-species Action Plan

Example of Crete



Feeding stations &
Bearded Vulture territories in Crete (2006)

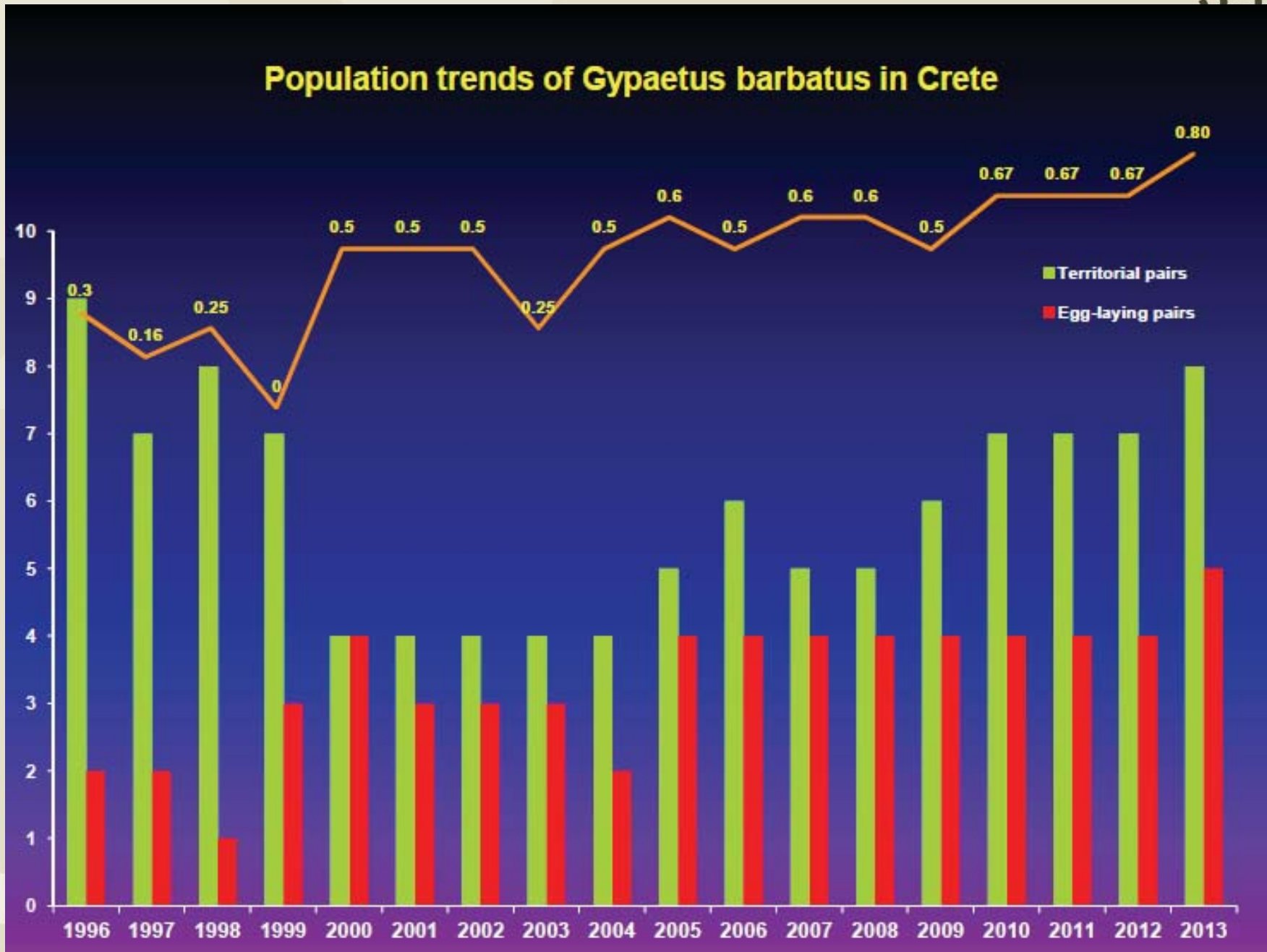


- 7 (+3) feeding stations
- Late October – early May
- Bones & offal (6 tones/yr)
- Rabbits (ca. 15/yr/pair)

Example of Crete



Structure
SAP



Heavy feeding stations



- « heavy » feeding sites
(Usually very close to colonies)
- carrions collected at local farms
- ➔ Food highly predictable in time and space
- ➔ Intense intra specific competition



Draft of a French farm feeding station

La placette d'équarrissage naturel dédiée aux Vautours percnoptères et aux milans

a : distance clôture à l'aire de dépôt : **8 m**

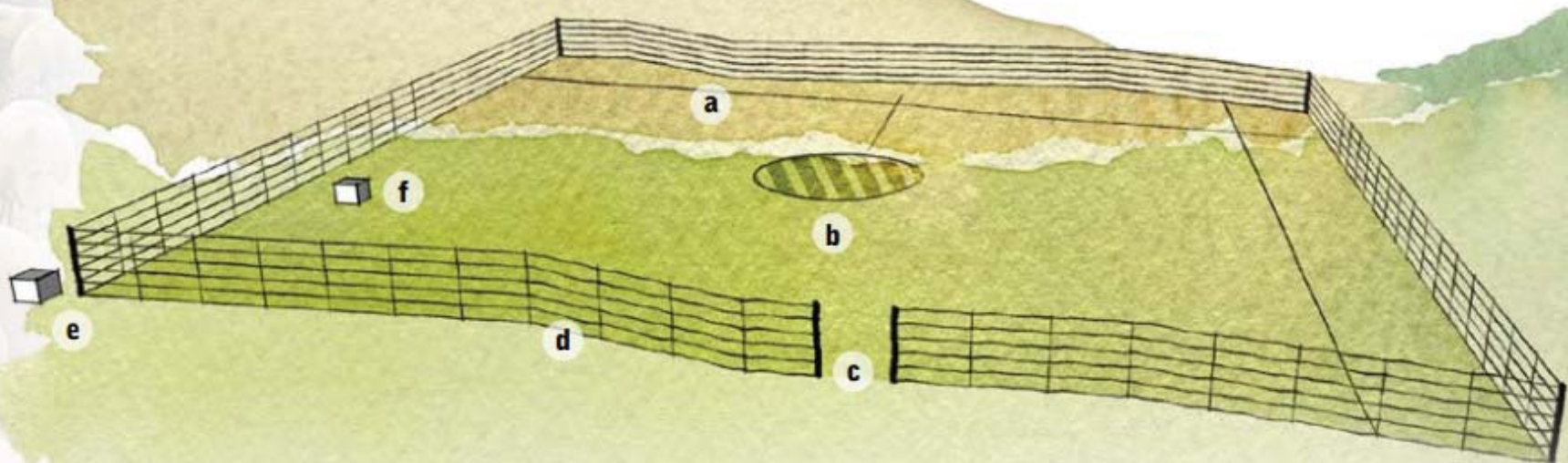
b : aire de dépôt des cadavres et des denrées alimentaires

c : porte d'entrée

d : clôture électrique 4 fils

e : panneau solaire, batterie et mise à la masse

f : station de suivi automatisée, alimentée par batterie auto /ou panneau solaire



La placette d'équarrissage naturel dédiée aux Vautours fauves et moines

a : distance clôture à l'aire de dépôt : **25 m**

b : aire de dépôt des cadavres et des denrées alimentaires

c : porte d'entrée

d : clôture avec grillage type Ursus

e : panneau solaire, batterie et mise à la masse

f : station de suivi automatisée, alimentée par batterie auto /ou panneau solaire

An exemple of a French farm feeding station



Another example with concrete plate and chain



A working Farm feeding station or « placette »



Photo : Olivier Duriez



SPECIFIC VULTURE'S FEEDING STRATEGIES AND DEVICES

Vulture Multi-species Action Plan

The conservation of Egyptian vultures

Objectives:

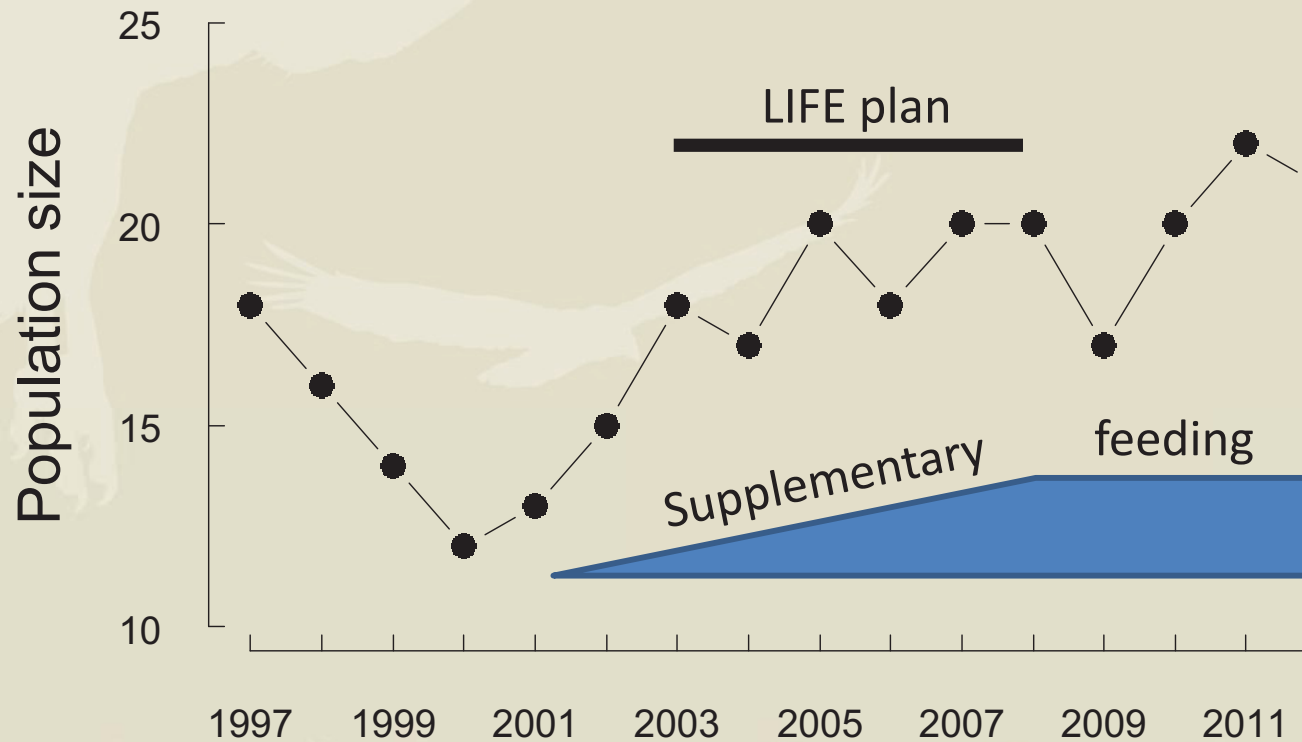
- Increase breeding performance
- Create attractive habitats for new pairs

Conservation actions:

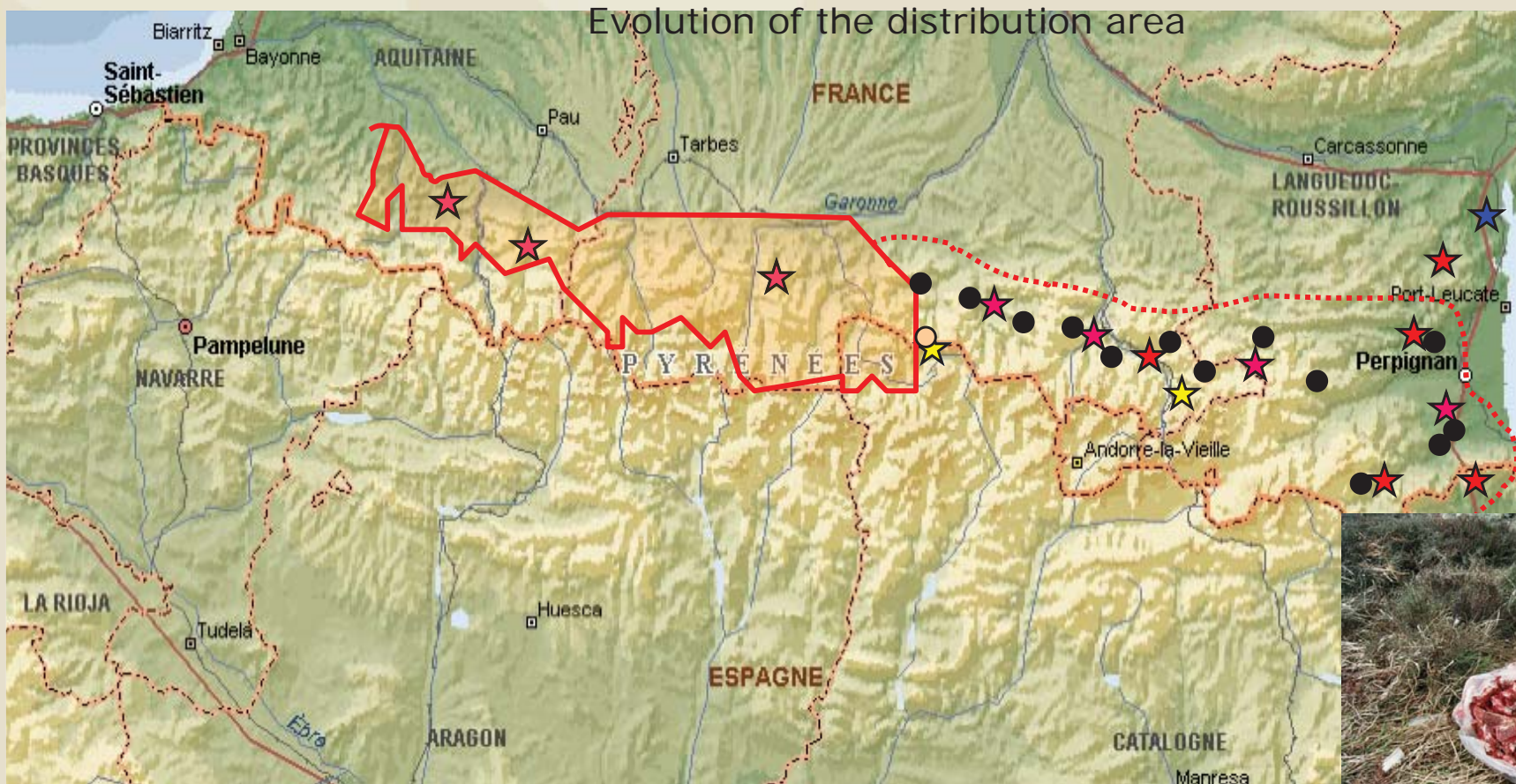
- Specific supplementary feeding
- Breeding survey against human disturbance









Result:



Exemple of « Light » feeding operations in Pyrenees



-  Distribution area before 1995
-  Feeding places 2011 (60 kg x 5 months in winter = \pm 300kg)
-  Feeding places « light » 2011 (< 100 kg / winter)
-  Feeding places 2012 (« corridor » project)
-  New pairs on the half oriental part of Pyrenees (1995-2011)
-  Actual distribution area

Light feeding operations show a positive effect on distribution
(no negative effect on productivity)



CONCLUSIONS

Vulture Multi-species Action Plan

Propositions of priorities to work on food as a potential threat



- Promote farm feeding stations and specific protected areas for extensive carcass provision (ex : ZPADEN in Spain)
- Create a corridor (continuity) of safe feeding devices all across Europe, Central Asia and middle East
- Promote specific feeding devices in relation to specific situations
- Increase the scientific studies related to vulture's food or feeding
- Promote the natural link between vultures and humans... Specific communication and actions
- Stay close to the farmer and implicate them in the conservation and vulture's food management
- Secure the sanitary regulations
- Work with hunters for use of lead free ammunition
- Reduce the open dumps



- Other suggestions ?...

Conclusions : arguments in favour of farm feeding stations



Benefits for vulture conservation :

- Reduces competition between vultures (adults/young), because food is unpredictable in time and space,
- Helps vultures increasing their foraging area
- Allows the presence of other scavengers (Eagles, Red Kites...)
- Provide safe feeding resources
- Favours the spontaneous discovery of other sources of food (dead domestic and wild animals...),
- Decreases the dependence on the conservation management,
- The acceptance of the vulture's presence is much helped in the region with many farm feeding stations which reduces the threats such as shooting or direct poisoning
- Involves farmers in vultures conservation
- Allows the record data, management of quantity, space and time occurrence

Conclusions : arguments in favour of farm feeding stations



Benefits for human :

- Helps the farmers to consider the vultures as “carrion managers”,
- Vultures remove the carcasses faster than any company,
- Prevent having human intrusion into the farm to collect carrions,
- More environmental friendly than industrial quartering companies,
- Lower risk of diseases spread due of carcass transportation between farm and factory,
- Enhances the link between farmers and vultures,
- All these, make the Farm feeding station a perfect tool to maintain this long term benefit between human and scavengers.

Thank you for your attention...





Vulture
Multi-species Action Plan
European Regional Workshop