Modification of power lines for the conservation of the **Bonelli's Eagle** in Spain

Final Congress LIFE Save the Flyers
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On Behalf of the LIFE BONELLI's Team:

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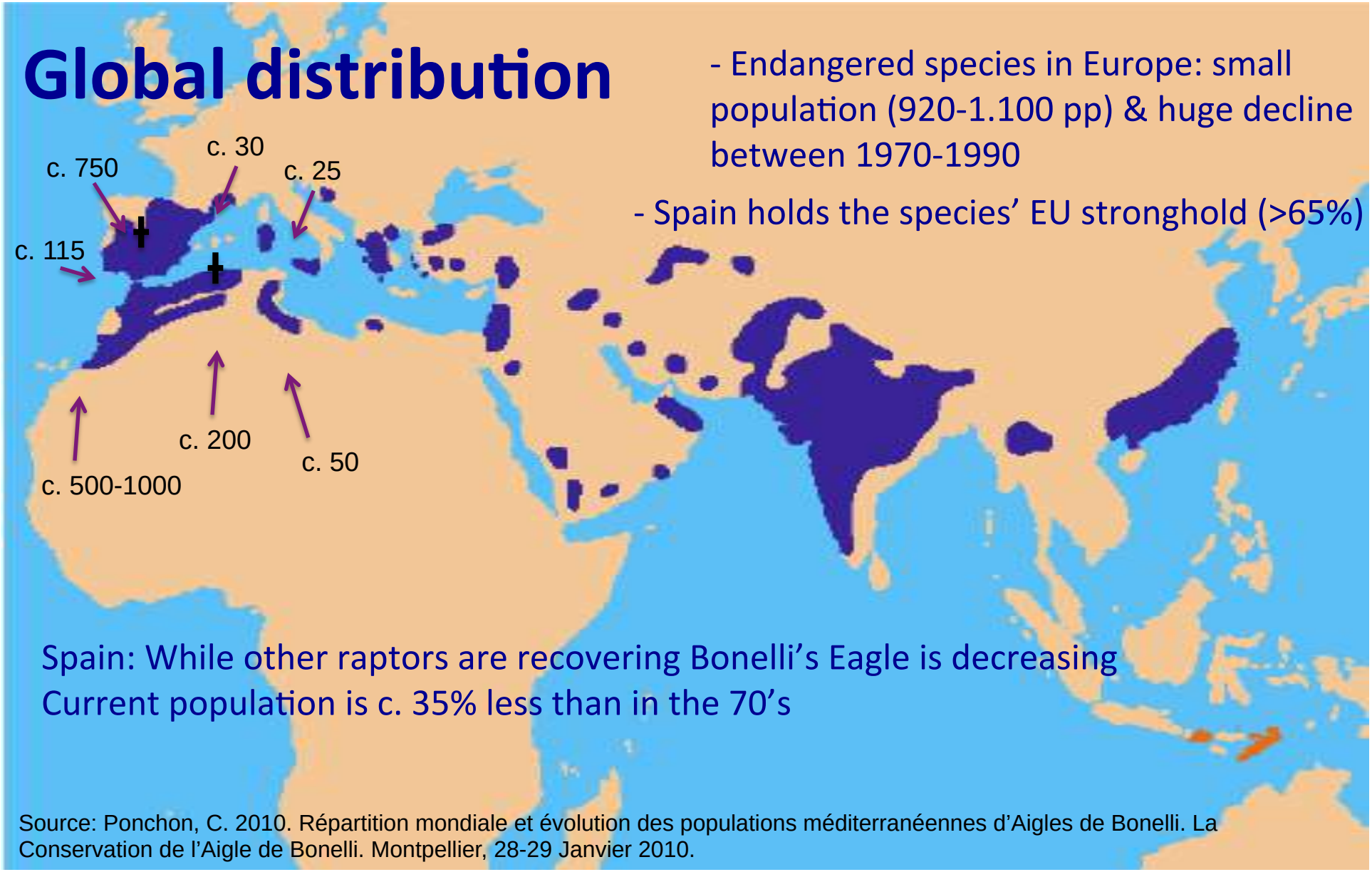
(LIFE12 NAT/E/000701)

Global distribution

- Endangered species in Europe: small population (920-1.100 pp) & huge decline between 1970-1990

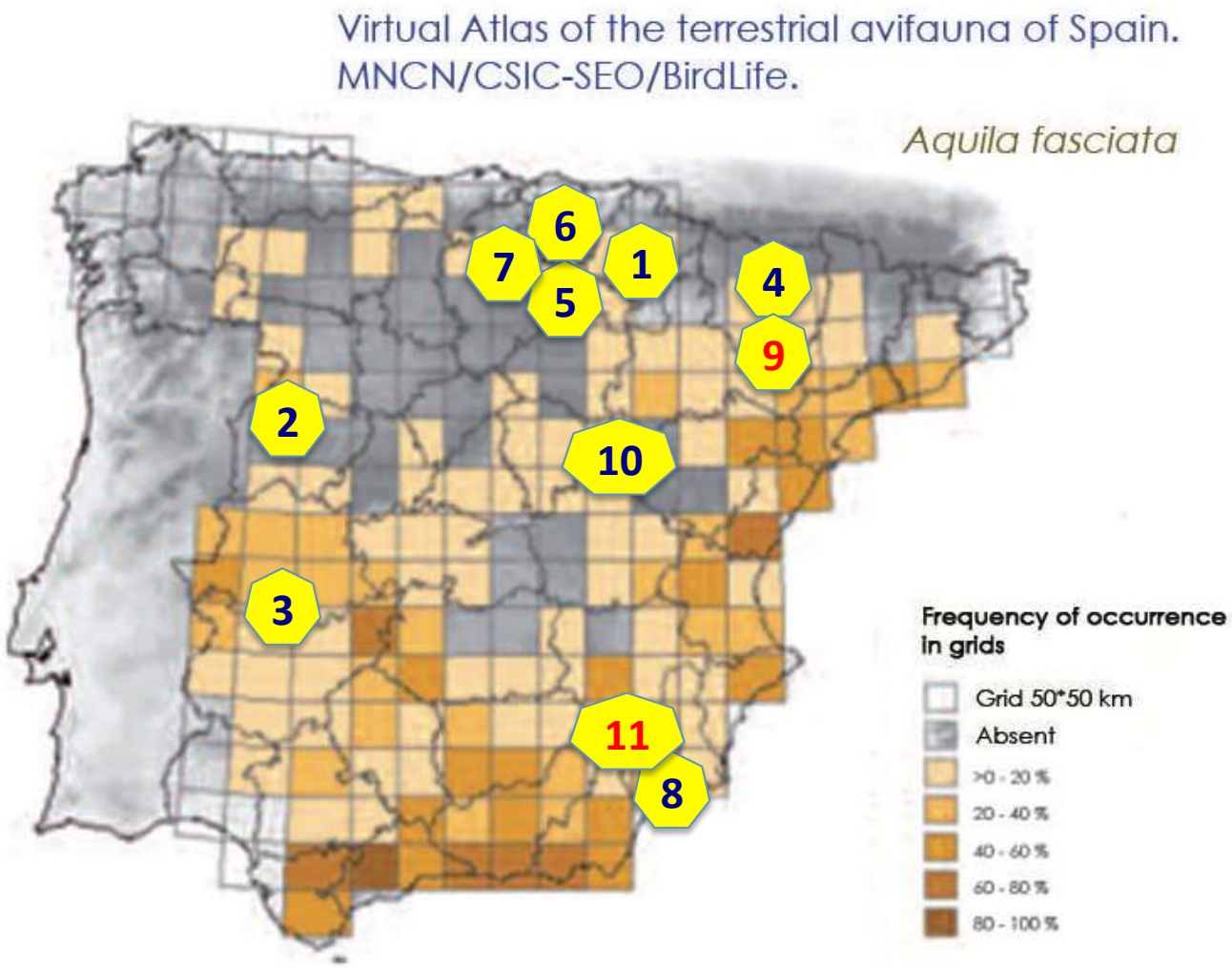
- Spain holds the species' EU stronghold (>65%)



Spain: While other raptors are recovering Bonelli's Eagle is decreasing
Current population is c. 35% less than in the 70's

Source: Ponchon, C. 2010. Répartition mondiale et évolution des populations méditerranéennes d'Aigles de Bonelli. La Conservation de l'Aigle de Bonelli. Montpellier, 28-29 Janvier 2010.

Main cause for the decline: electrocution, direct persecution (pigeon fanciers), disturbance in nesting areas (rock climbing), loss/deterioration of juvenile dispersion areas, rabbit decline (several illness).



11 LIFE Projects 1996-2007; very localized:

1. Navarra (1996)
2. Arribes del Duero (Castilla y León) (1997)
3. Extremadura (1997)
4. Sierra de Guara (Aragón) (1997)
5. La Rioja (1999)
6. Álava (2000)
7. Burgos (2002)
8. Sª Almenara, Murcia (2002)
9. Power lines in Aragón (2004)
10. Castilla-La Mancha (2007)
11. Power lines in Murcia (2007)

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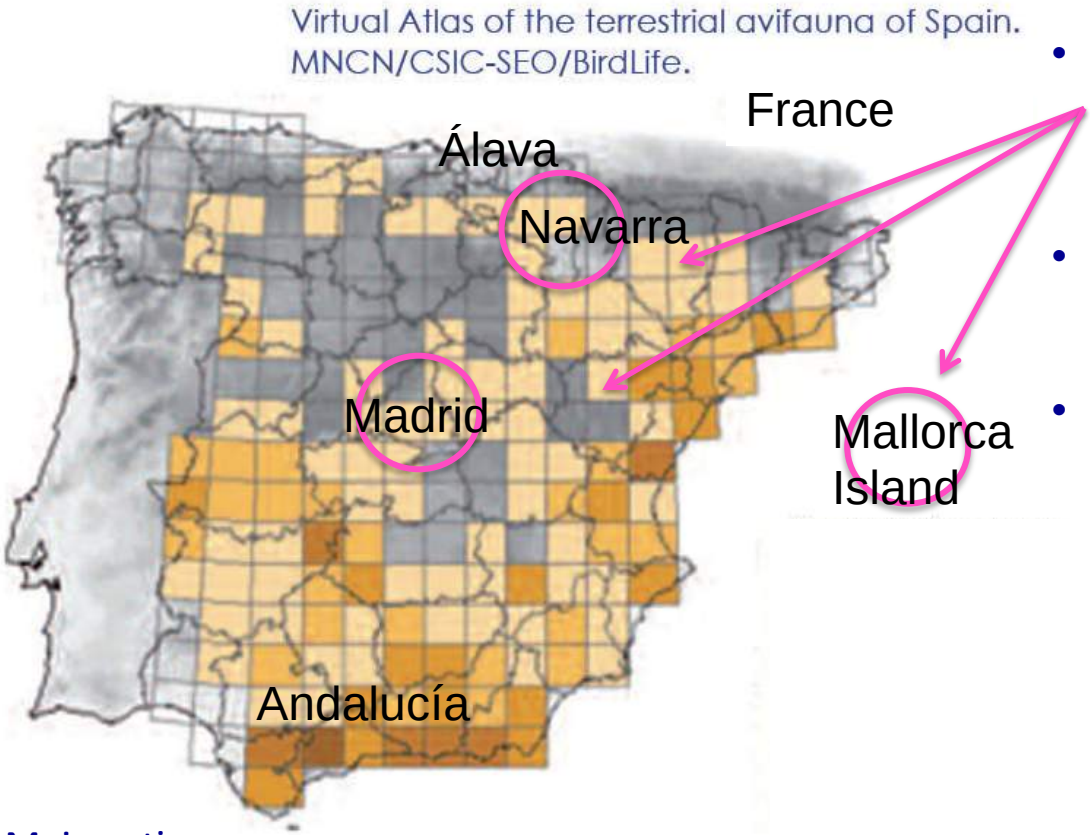

- 2010-2011: 3 reinforcement/reintroduction projects started (Madrid, Mallorca, Navarra).
- Decided to afford the recovery of the species broadly, out of the region frontiers.
- Plus Andalucía, Álava (Basque Country) and France = **LIFE BONELLI**

Main actions:

- Reinforcement in Navarra (1 out of 8 pairs left), Madrid (2 out of 10 pairs left) and Álava (1 pair out of 7 left) & reintroduction in Mallorca (extinct in 1980').
- Power lines correction, to avoid electrocution
- Restoration of quality habitats for the species
- Awareness raising among sectors related (climbers, hunters, electric companies) and the general public.

- Beneficiary coordinator: GANASA-Gobierno de Navarra
- Partners: Junta de Andalucía, Madrid regional government, GREFA (Madrid), COFIB (Mallorca), Diputación Foral de Álava, LPO/BirdLife France.
- Period: 2013-2017 (5 years)
- Budgets: 2 million Euros

Released birds Madrid

- Period: 2010-2014
- 18 chicks released by hacking
- 9 died: 3 electrocuted, 5 predated during hacking, 1 unknown reason during dispersion.
- At least 5 seen again in the hacking area, but also some others wild or lost rings

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Released birds Navarra

- Period: 2011-2014
- 7 chicks released by hacking
- 3 died: 2 predated after first flight; 1 unknown reason during dispersion
- 3 seen before in the hacking area

Released birds Mallorca

- Period: 2010-2014
- 9 exemplars from recovery centres released using a large cage
- 2 died: 1 non adapted, 1 unknown reasons.

- 13 chicks released by hacking +1 wild bred
- 6 died: 4 electrocuted 1st year; 2 non adapted during nest dependence period

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No one abandoned the island.
1 breeding pair in 2014, and a possible second one for 2015

Correction of electric power lines
LIFE BONELLI

The action focuses in: Mallorca, Álava (Basque Country) and Madrid.

Huge effort already done thanks to previous LIFE projects and other initiatives.

Navarra (10.400 km^2) already modified more than 4.500 posts in the last 12 years, together with electric companies and private owners. This task will continue outside the LIFE.

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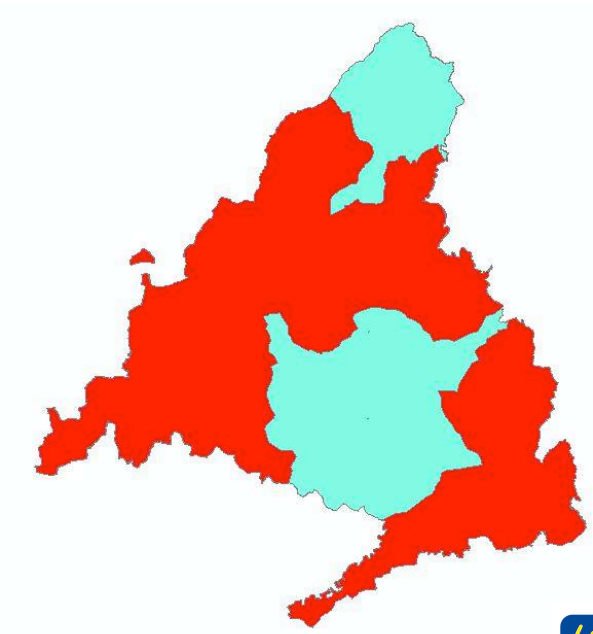
Correction of electric power lines
Before LIFE BONELLI

Álava (3.000 km^2): 14 lines (90 km, 177 posts) of Iberdrola and REE were modified in 2000 LIFE project, in breeding areas. Local government continued with 16 lines more. LIFE BONELLI will modify 4 lines more, in a feeding area of Bonelli's, Red Kite & others.

Mallorca (3.600 km^2): agreement between the electric company (ENDESA) and the regional government, 2.000 posts have been corrected since 1980 in Red Kite and Osprey hotspots. Mortality of Red Kite decreased from 20% to 12%.

Madrid (600 km^2): In 2010 the Regional government signed an agreement with Iberdrola company. A risk map was prepared and 400 corrections were done in two years. Previous corrections (90's) were done focussed on Imperial Eagle; some already became ineffective.



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Correction of electric power lines with LIFE BONELLI

Focussed to avoid electrocution / not collision

Risk maps in Madrid, Mallorca and Álava by December 2014

Remote monitoring & Field work to identify the most dangerous posts

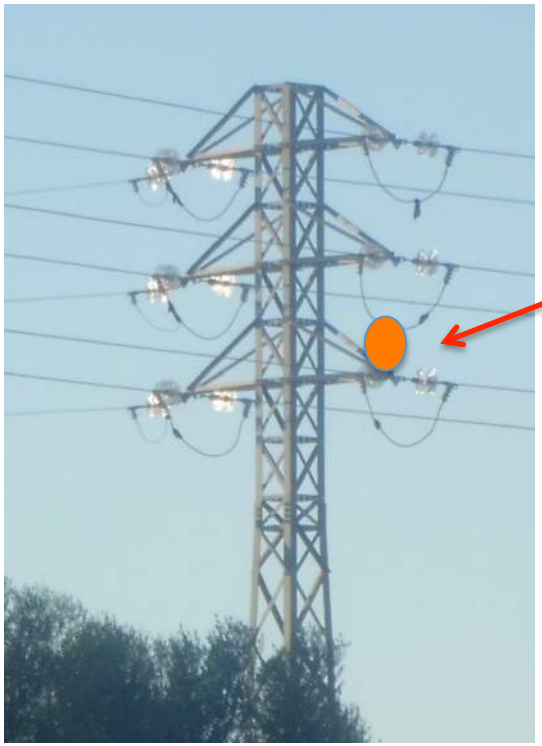
Modifications: Budget

- Mallorca: ± 400 posts; 125.000 euros
- Álava: 25.666 euros
- Madrid: 18.000 euros

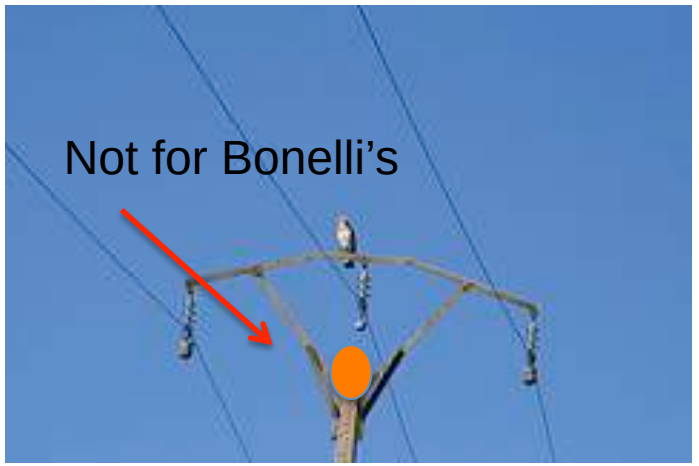
Correction of electric power lines with LIFE BONELLI in Mallorca

Designs sure for Red Kites & Ospreys are not sure for Bonelli's Eagle

Selection of perching area is different



Bonelli's Eagle



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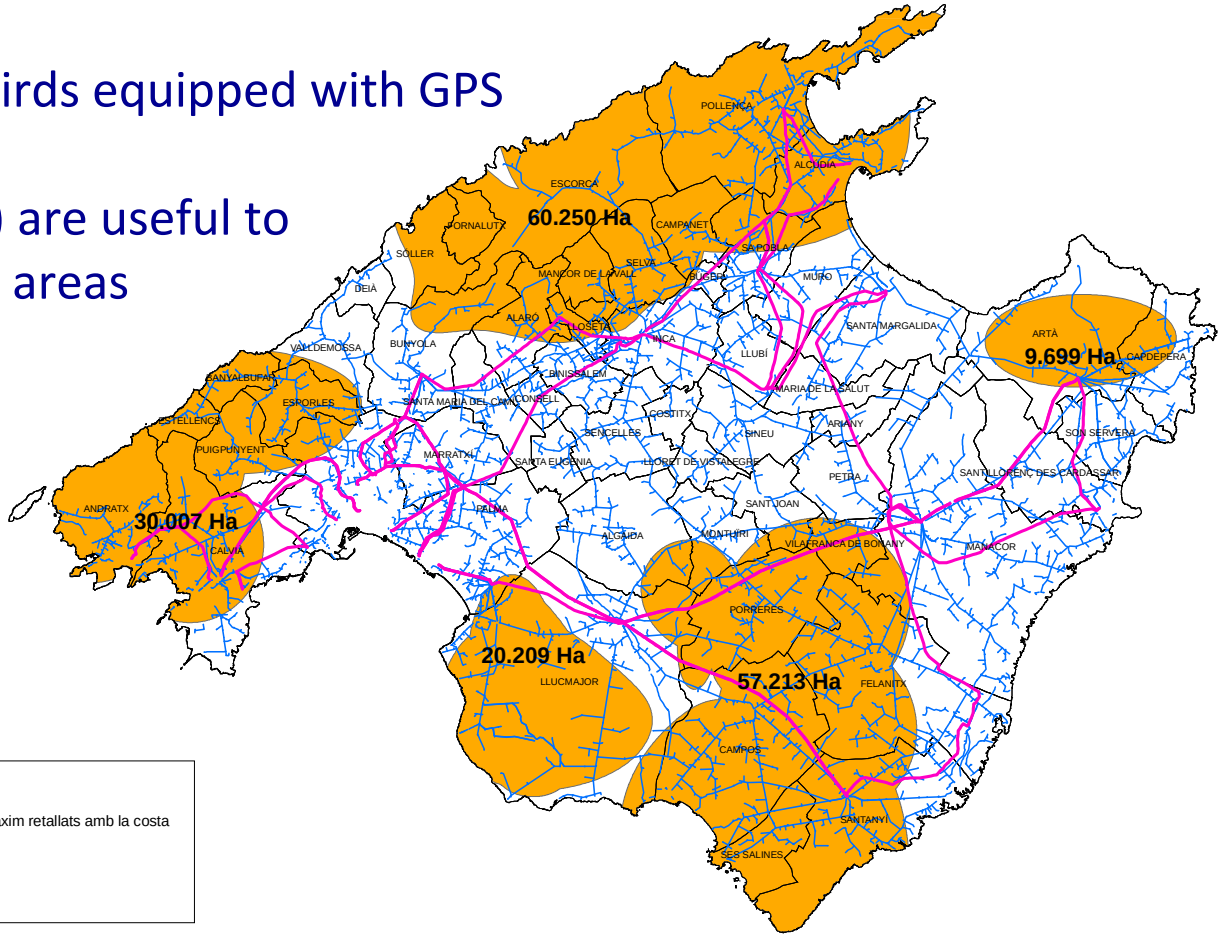
Correction of electric power lines
LIFE BONELLI in Mallorca

- All released birds equipped with GPS

- Kernels (50%) are useful to identify critical areas



Llegenda

Càlculs provisionals polígons kenel màxim retallats amb la costa

Xarxa elèctrica

Alta tensió

Mitjana tensió

Environmental wardens have been trained to identify dangerous posts designs

2014

- We focussed on the most important dispersion area (orange circle)
- 5 teams of 2 people, 2 days
- 315 pylons checked

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Prioritization was need

According to design:
3 Very high: pin-type insulators, and/or jumpers wires above
2 High: circuit-breakers, angles, branching, transformers
1 Moderate: vault or 'boxer', double circuit,
0 Low 'Wishbone' designs, wood posts, already isolated/modified

According to use:
4: posts used by Bonelli's Eagle
3: Juvenile dispersion area or within a 1km radio from a nest
2: Prominent, or less 500 m of a presence zone
1: Other areas of potential use (kernels)
0: Not suitable habitat (Close to an inhabited area, no eagles' localizations nearby)

Prioritization was need

According to <u>birds already electrocuted</u>:

4: *Aquila fasciata*

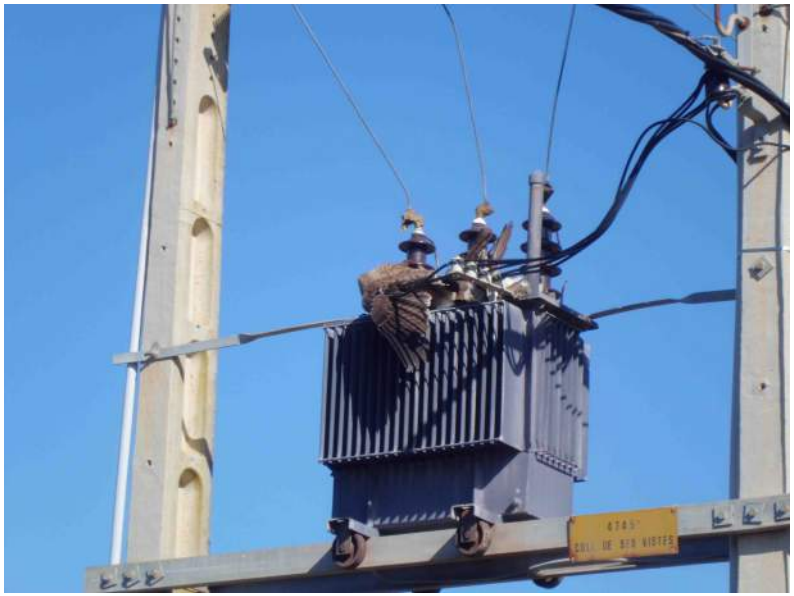
3: *Aquila pennata, Milvus milvus*

2: *Corvus corax*

1: *Larus michahellis*, other

0: No birds found

*1,25 per each individual



315 posts checked are being modified following the evaluation risk for Bonelli's Eagle

We've realized of the enormous work lacking to do!!

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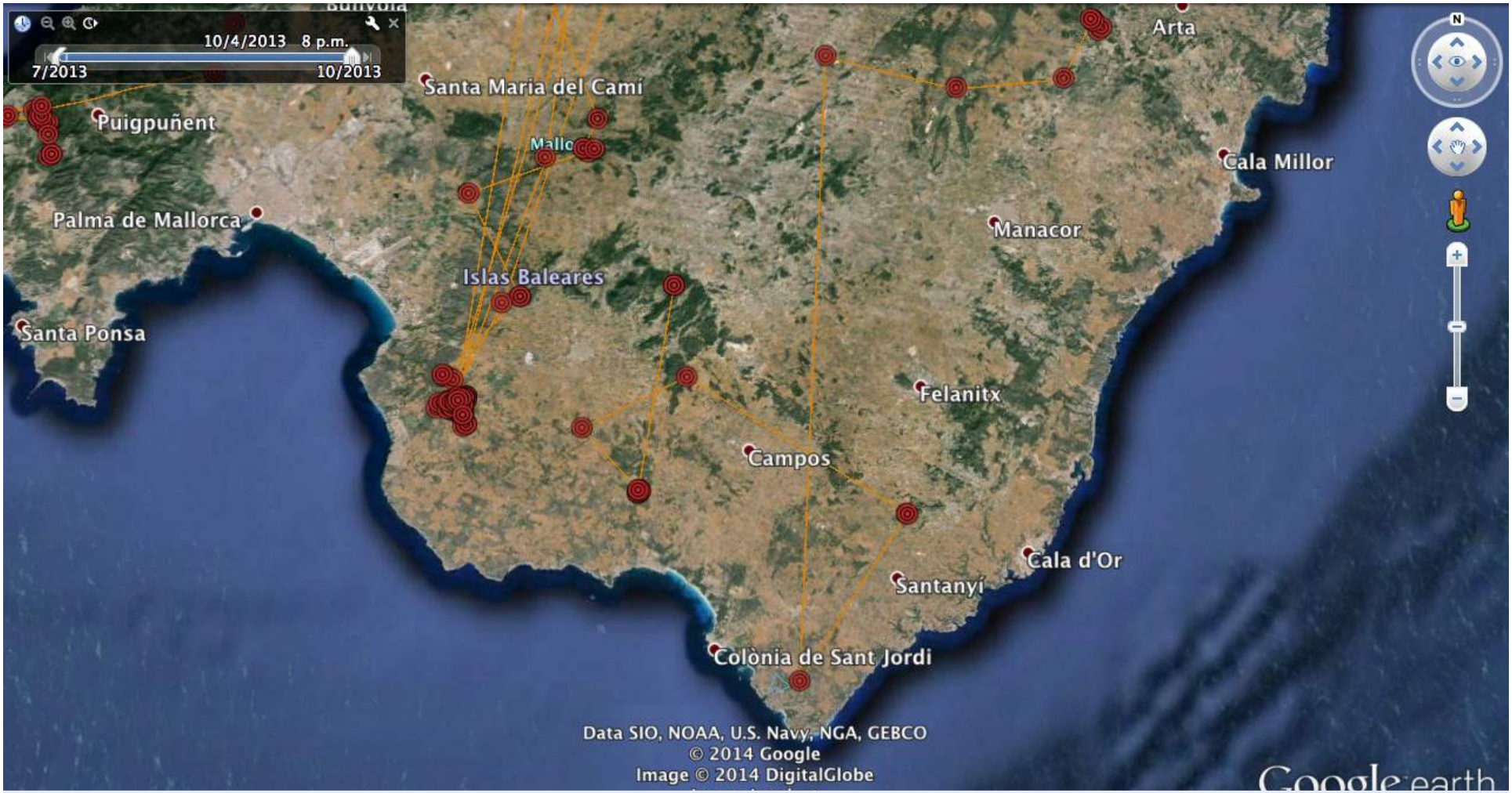

So we needed to prioritize more! two ways:

1.- Using the localizations of tracked birds to know intense use areas and revise the lines there.

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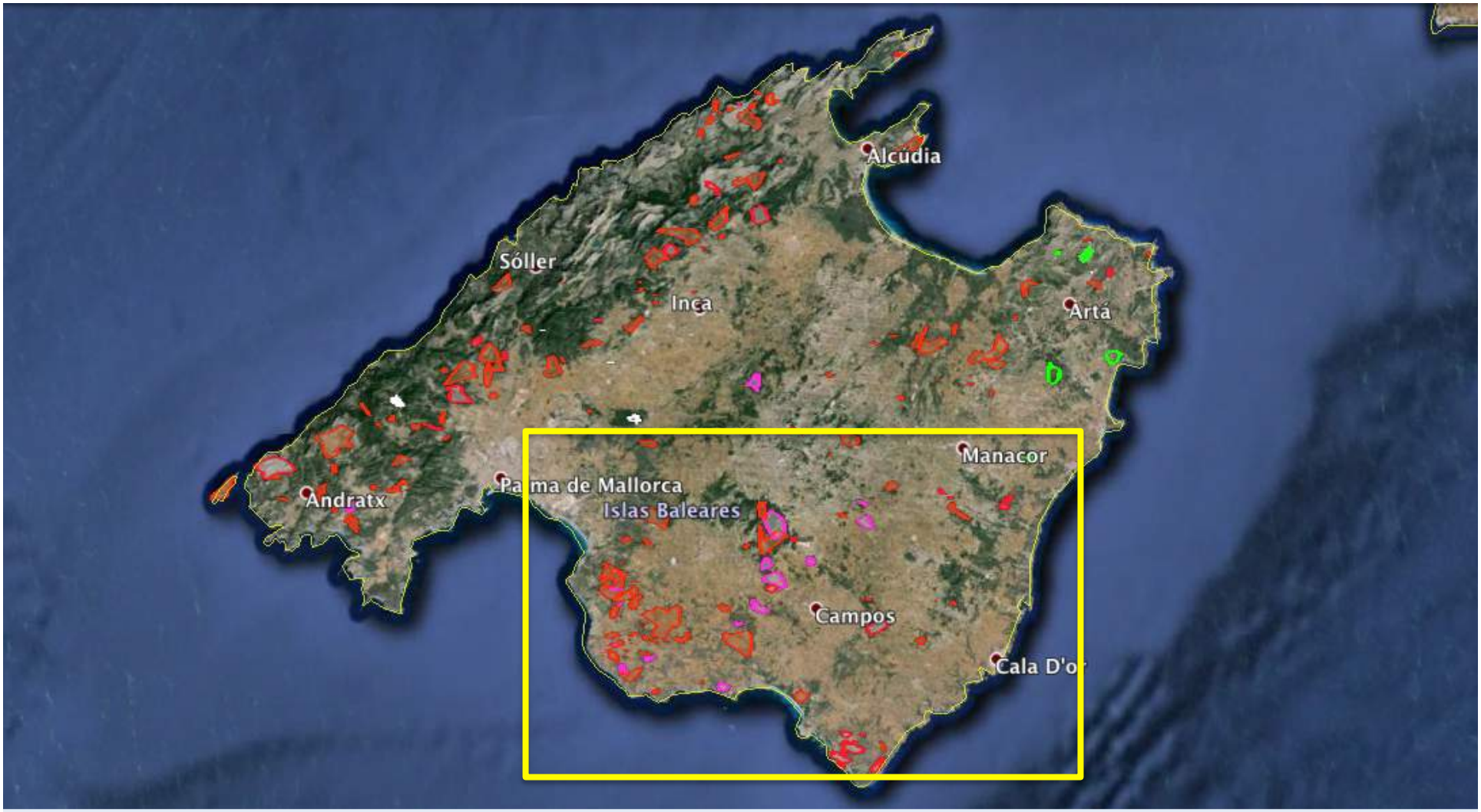
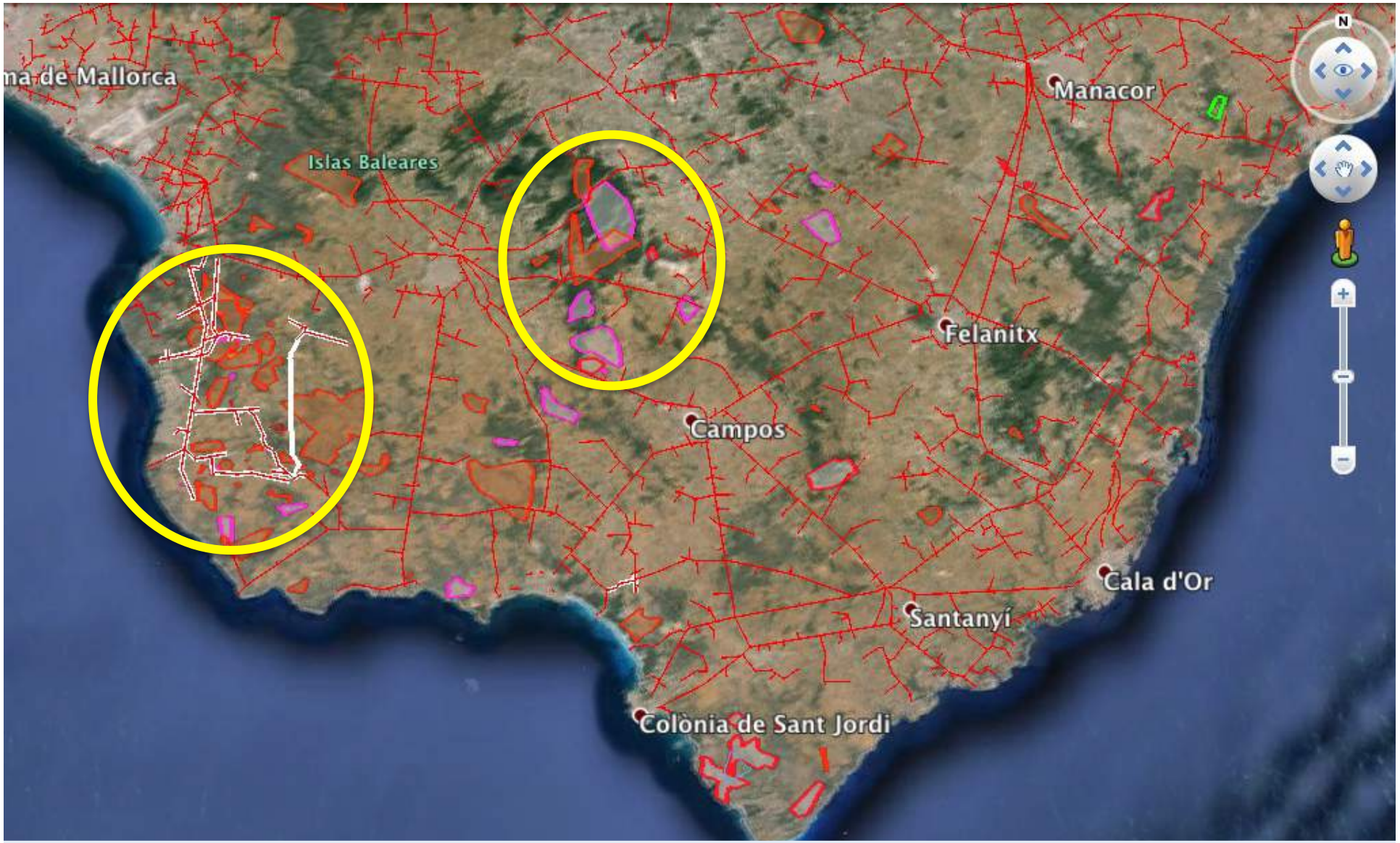
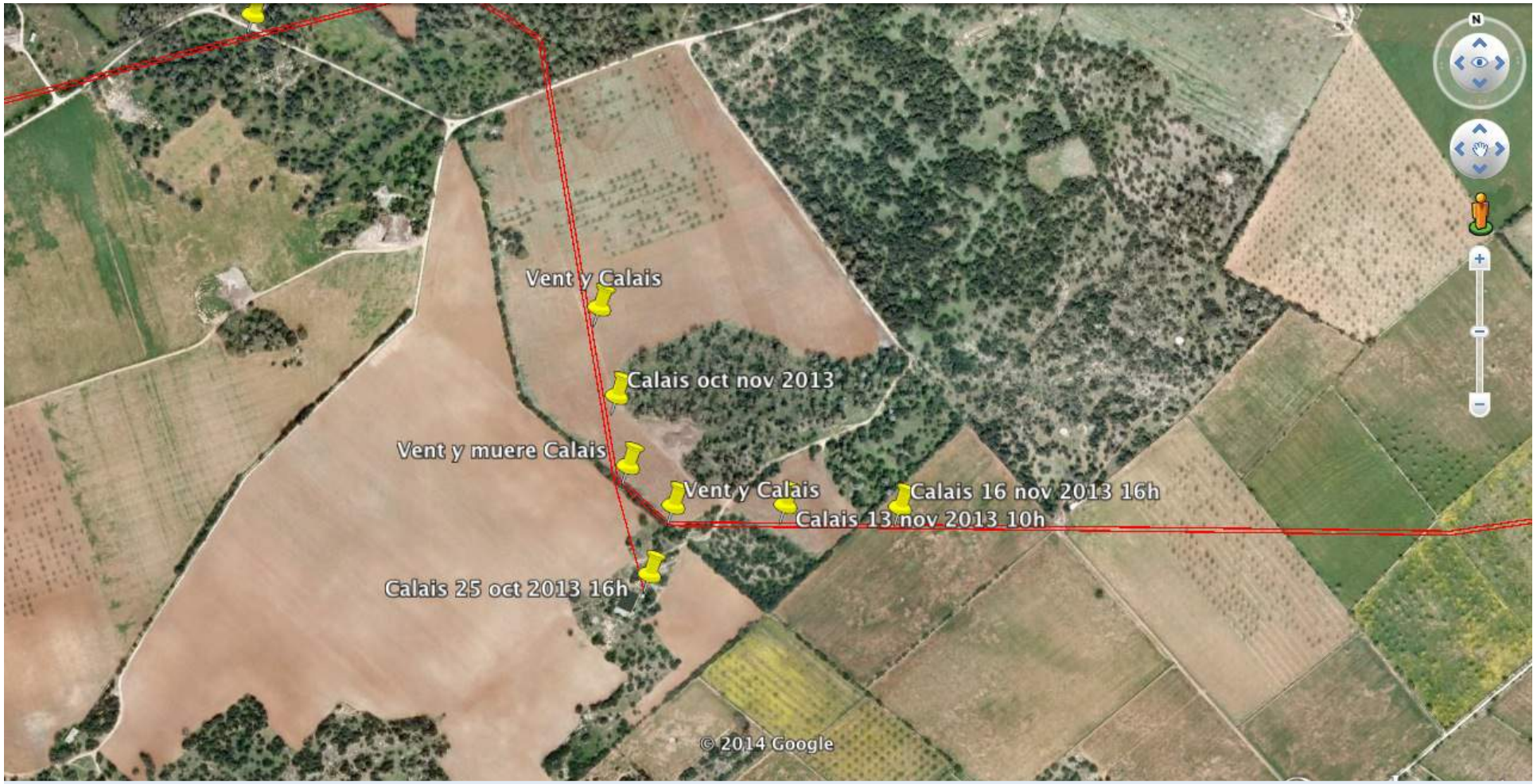


Areas of intense use

Birds not flying over, but staying. N=17



We can select the most risky power lines

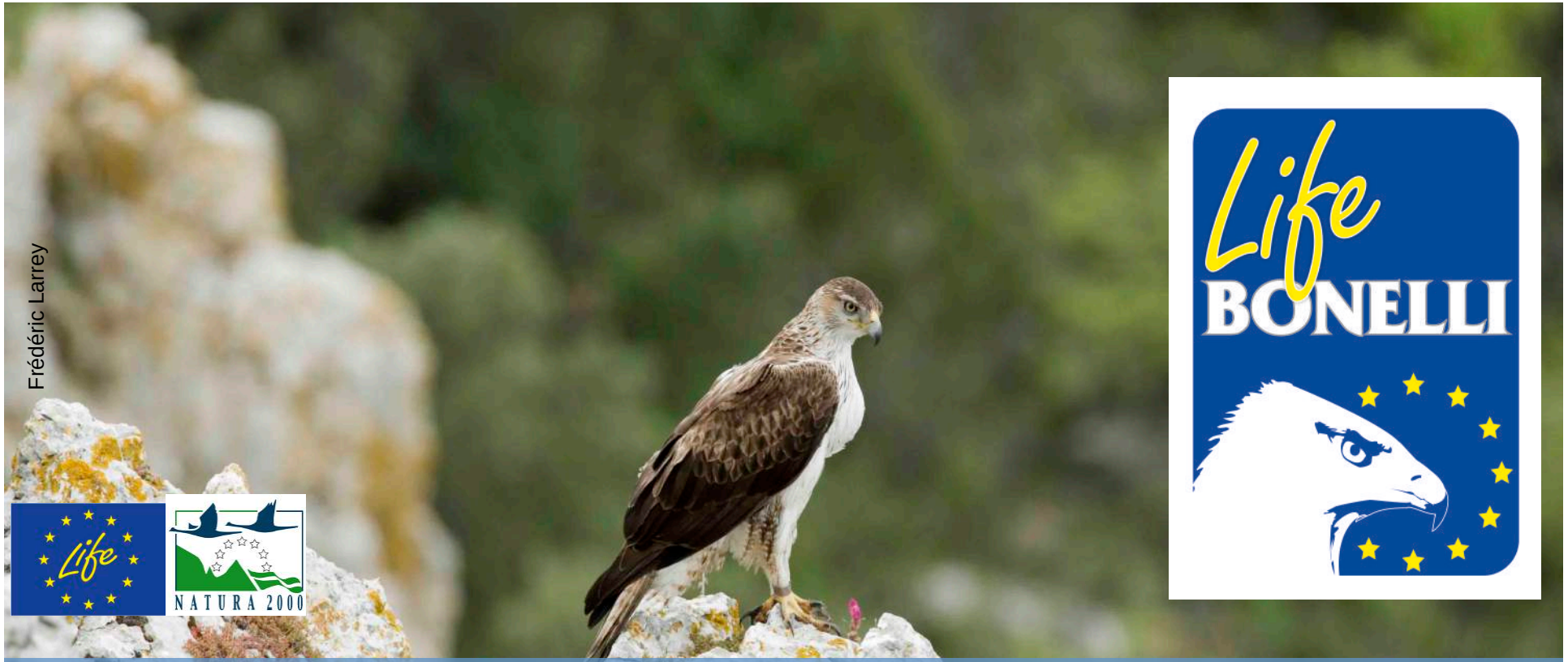


2.- In addition, when we detect an eagle perches on electric posts, we visit the line, prepare a report and send it to the electric company to modify if necessary.

Thanks to an agreement between the Balearic Government and ENDESA (the only company distributing electricity) modifications are done very quickly.

Nis Ludmark Jensen

A safer habitat for the incipient Bonelli's Eagle population in Mallorca by 2017



Collaborators to the Balearic Islands Government:

RED ELÉCTRICA DE ESPAÑA

endesa

MORTITX

La Reserva Puig de Galatzó, Fundació Natura Parc, UFCS (Union Française des Centres de Sauvegarde de la Faune Sauvage), Comunidad de Madrid, Junta de Andalucía, Generalitat Valenciana, Generalitat de Catalunya, Junta de Comunidades de Castilla-La Mancha.