

Catalan Wild Boar Monitoring Programme lessons learned after 20 years of implementation

Rosell Carme^{1,2}, Ruiz-Olmo Jordi³, Navàs Ferran¹, Cama Albert¹,
Guinart Daniel⁴, Bassols Emili⁵, Vargas, Maria Josep³

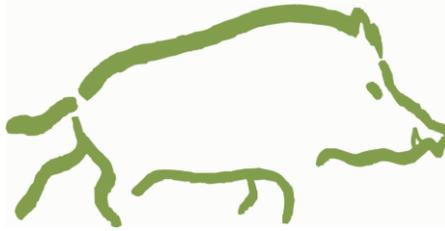
¹ Minuartia, Wildlife Consultancy. Catalonia, Spain

² University of Barcelona, Faculty of Biology. Catalonia, Spain

³ Ministry of Agriculture, Livestock, Fisheries and Food, Generalitat de Catalunya, Catalonia, Spain

⁴ Natural Park Zona Volcànica de la Garrotxa, Generalitat de Catalunya, Catalonia, Spain

⁵ Technical Office of Natural Parks, Diputació de Barcelona, Catalonia, Spain



Data registration: 170 hunting team volunteers and rangers

Project managers: J. Ruiz-Olmo i M.J. Vargas, DARPA; D. Guinart DIBA

Technical assistance: C. Rosell, F. Navàs, A. Cama, B. Pericas, MINUARTIA

Coordinators (for each study site):

Oriol Armet. Consorci de les Gavarres
Emili Bassols. Parc Natural de la Zona Volcànica de la Garrotxa
Manel Beneria. Reserva Nacional de Caça de l'Alt Pallars
Enric Bisbe. Consorci de les Gavarres
Joan Anglada. Consorci de l'Espai Natural de Guillerries-Savassona
Francesc Cases. Serveis Territorials del DARP a Lleida
Joan Curià. Reserva Nacional de Caça de Boumort
Juan Fernández. Reserva Nacional de Caça de l'Alt Pallars
Daniel Guinart. Parcs del Montseny i del Castell de Montesquiu.
David Iturria. Parc Natural de Montsant
Roser Loire. Consorci del Parc de la Serralada Litoral
Josep Maria López. Serveis Territorials del DARP a Barcelona
Rosa Marsol. Reserva Nacional de Caça de la vall de Boí
Xavier Olivé. Reserva Nacional de Caça de Ports de Tortosa i Beseit
Jordi Palau. Reserves Nacionals de Caça de Boumort i Cadí
Joan Roldán. Serveis Territorials del DARP a Barcelona
Marta Sala. Reserva Nacional de Caça de Cadí
Josep Torrentó. Parcs del Garraf, Olèrdola, Foix i Sant Llorenç del Munt i l'Obac.
Carles Casals. Serveis Territorials del DARP a Tarragona
Jordi Xifra. Serveis Territorials del DARP a Girona
Mireia Vila. Tècnica dels Parcs del Montnegre i el Corredor i Serralada de Marina

Generalitat de Catalunya
Departament d'Agricultura,
Ramaderia, Pesca i Alimentació

Xarxa de Parcs Naturals
Diputació de Barcelona

Espai Natural de les
Guillerries-Savassona
Xarxa de Parcs Naturals

Parc de la
Serralada Litoral
Xarxa de Parcs Naturals

Parc del Montnegre
i el Corredor
Diputació de Barcelona

Parc Natural
del Montseny

Parc Natural
de la Zona Volcànica
de la Garrotxa

Consorci de les Gavarres

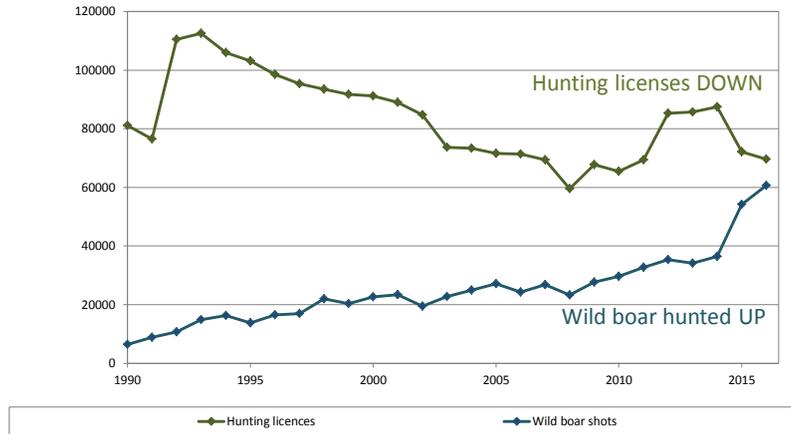


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Total number of wild boar hunted based on communication from hunters to hunting administration.
Data source: DARP (February 2018).

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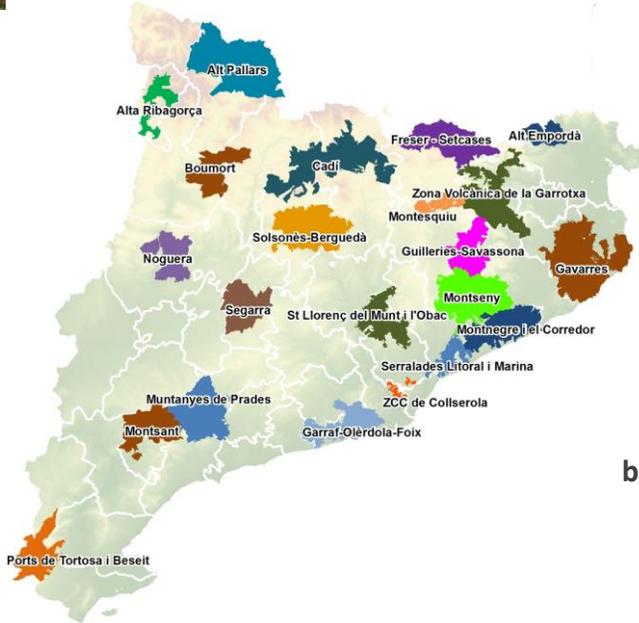
Data source: DARP (2018). Memòria anual de caça temporada 2016-2017

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- Traditional hunting drive hunts (battues) with dogs.
- Each hunter's team organise the battues in their hunting areas.
- Supplementary feeding is forbidden. Baiting allowed only by especial permissions.
- Hunting areas are NOT fenced.

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22 study sites
 Different regions
 170 hunting teams
 21 coordinators
 570.000 ha

In each site
 data from each
 battue are registered

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REGISTRATION - EACH BATTUE

- Date, Location, Surface
- Hunters and Dog numbers
- Wild boar observed
- Wild boar shot
- Sex and weigh

Integration data from ALL BATTUES
 carried on in each study site

RESULTS - STUDY SITE

- Hunting effort: N battues, Mean hunters per battue
- Wild boar shot per battue and per surface unit
- Hunting effectivity (hunted vs observed)
- Density estimation ($N=C/p$; Tellería 1998)
- Density indicator ($ID=C/SxHE$; captures per hunting effort)
- Sex ratio and weigh distribution

Catala

- 2018



Programa de seguiment de les poblacions de senglar a Catalunya
CARNETS DE COLLA SENGLAIRE
 SOCIETAT DE CAÇADORS Aguilera 0010/2011

SECCIÓ: [] REAJUST: [] CARNET: [] REAJUST: []

DATA DE LA BATUDA: 05/09/2015 CANTON: AGULERA
 DATA DE LA CAÇA: 05/09/2015 ÀREA DE CAÇA: G-10115
 NOM DEL LLOC: CANI PORTELL (G-10115) ALTRÈ

TOTAL DE CAÇADORS PARTICIPANTS: 45
 TOTAL D'OSIDORS: 20 SUPERFÍCIE APROX. DE BATUDA (HA): 150
 TOTAL DE SENGLARS CAÇATS: 0 TOTAL DE SENGLARS QUE S'HAN ESCAPAT: 4

DADES DE SENGLARS CAÇATS

SEXE	PES	OBSERVACIONS	CRIDAT
[]	[]	[]	[]

Registre: 1 de 1

DADES DE CABRIOLS CAÇATS

SEXE	PES	OBSERVACIONS	NOMBRE DE CABRIOLS
[]	[]	[]	[]

Registre: 1 de 1

CABRIOLS OBSERVATS A LA BATUDA (indoluc que NO s'han regiat)

TOTAL	MASCLES	FEMELLES	CRIBS	OBSERVACIONS
5	1	2	2	[]

ALTRÈS ESPÈCIES QUE S'HAN VIST DURANT LA BATUDA

ESPÈCIE	TOTAL VISTOS	OBSERVACIONS
[]	[]	[]

Registre: 1 de 125

Data from:

- 70.000 battues
 - 145.000 wild boar shot
- (Till April 2017)

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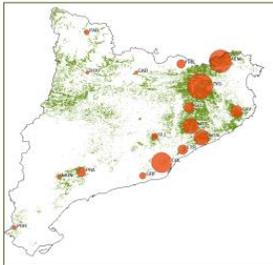
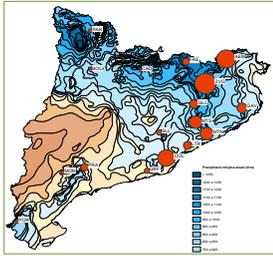


WBMP is providing useful information for management

1. Density estimation and population tendencies
2. Is hunting effort increasing?
3. How does number of hunters influence wild boar harvest?

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Environmental variables effects



GLM model with following variables

- Surface deciduous forests
- Surface crops
- Sex ratio
- Wild boar battues / 100 ha
- Annual and Summer temperature
- Annual and Spring Rainfall
- Hydric deficit



Source: Minuartia, Departament d'Agricultura Ramaderia i Pesca, 2016. Unpublished data.

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Environmental variables effects

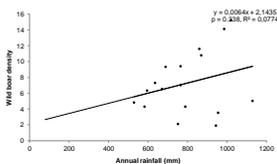
GLM Model

Variable	B – Model parameter	p-value
Intersect	-14.576	0.012*
Avg. Summer Temperatura (STemp)	0.667	0.001**
Avg. annual rainfall (RainF)	0.008	0.021*
Ratio of surface occupied by deciduous forests (DecFor)	0.101	>0.001**

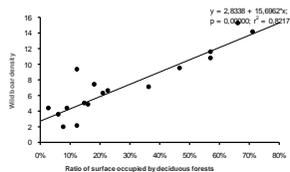
* 95% Statistical significance

$$\text{Wild Boar Density} = 0.667 * \text{STemp} + 0.008 * \text{RainF} + 0.101 * \text{DecFor} - 14.576$$

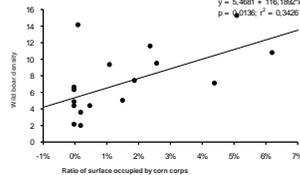
Annual rainfall



Deciduous forests



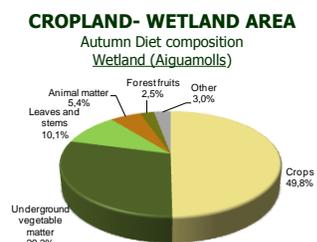
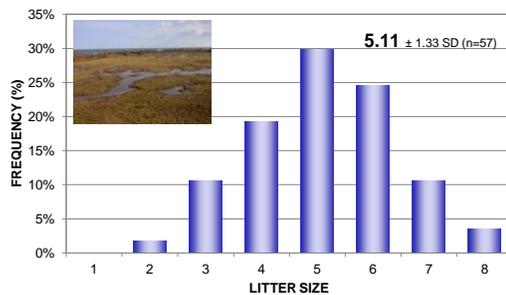
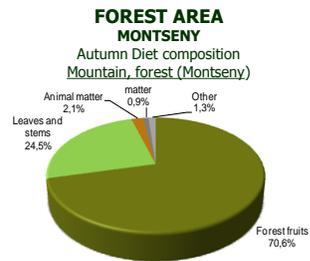
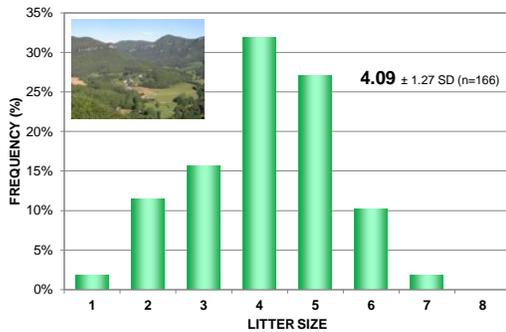
Corn crops



Source: Minuartia, Departament d'Agricultura Ramaderia i Pesca, 2016. Unpublished data.

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More food > higher productivity > higher density



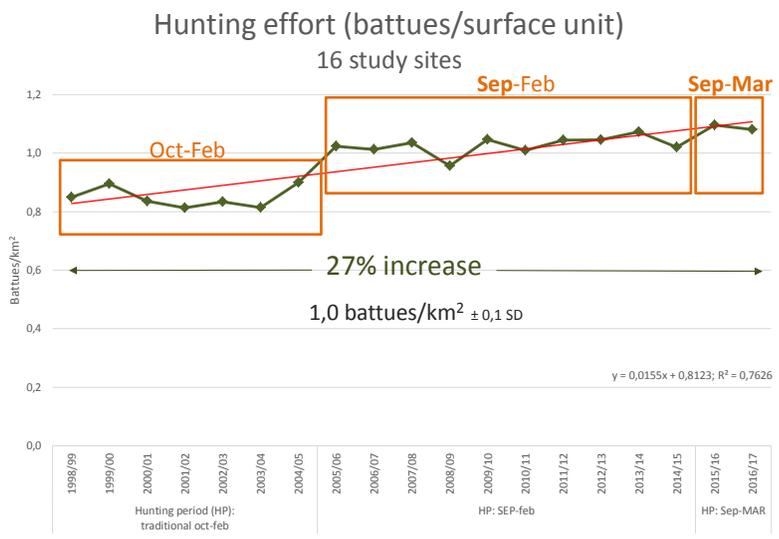
Font: Rosell 1998; Rosell et al 2008.
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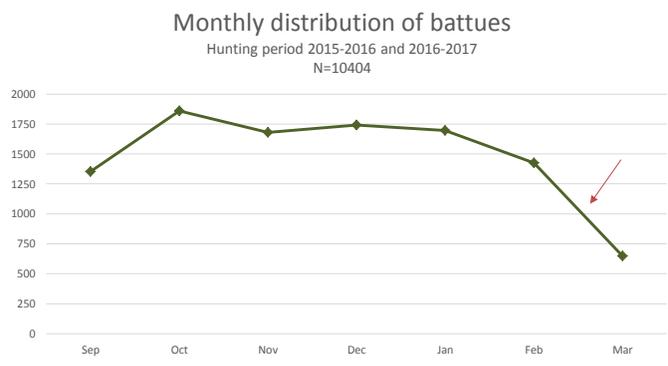
1. Density estimation and population tendencies
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Hunting effort



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Hunting effort: monthly variation



Low hunting activity in last month of hunting season:
2015-2016 : 44% teams are not hunting
2016-2017: 40% teams are not hunting

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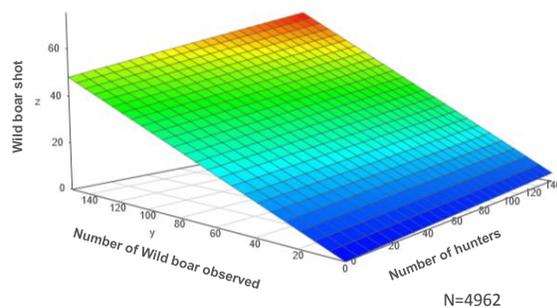


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1. Density estimation and population tendencies
2. Is hunting effort increasing?
- 3. How does number of hunters influence wild boar harvest?**

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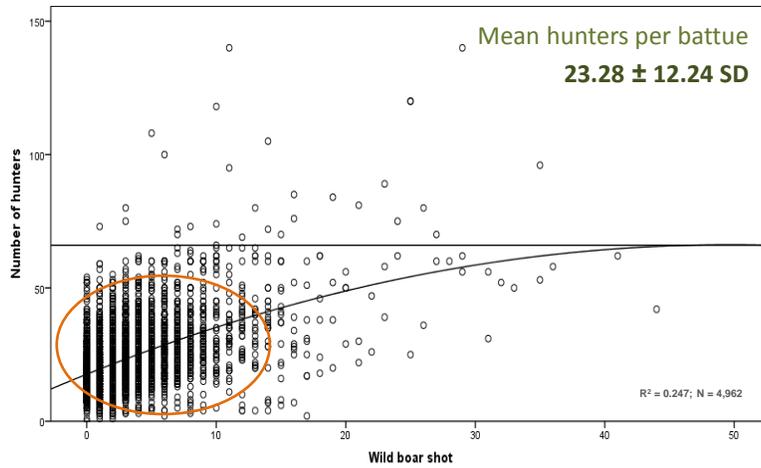
Influence of number of hunters on wild boar harvest



Number of wild boars present in the battue area
is the main factor.
Number of hunters also show an influence.

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Influence of number of hunters on wild boar harvest



An increase in the number of hunters participating in the battues may help to increase the harvest

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An arising conflict: belly pigs released into natural areas are crossing with wild boar



- **681 individuals registered in natural areas (282 shot or captured)**

Source: L. Riera, J. Ruiz-Olmo, C. Rosell, M. Mariné, en prep.



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- Sport hunting is a major factor to reduce wild boar population growth. Nevertheless its capacity to control populations in high density conditions is limited.
- **A better communication and cooperation with hunters** could allow to increase the effectiveness of battues.
- Other actions are needed **to reduce wild boar productivity**
 - **Reduction in the availability of food** is a major concern.
 - **Protection of croplands** is needed to avoid that wild boar use them as a source of food.
 - **Capture of feral pigs** (mainly pet belly pigs) that may cross with wild boar and increase the population productivity is an important issue.

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Rosell, C., Ruiz-Olmo J., Navàs, F., Cama, A., Guinart, D., Bassols, E. 2018. Catalan Wild Boar Monitoring Programme: lessons learned after 20 years of implementation. 12th Symposium on Wild Boar and Other Suids. Lázně Bělohrad, Czech Republic.

