Effect of anthropogenic resources on wild boar (*Sus scrofa* Linnaeus, 1758) presence in the urban area of Barcelona

Master's degree in terrestrial Ecology and Biodiversity Management

Management and Diversity of Fauna and Flora specialization

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September 8th 2017

The study started in February 2017. The manuscript format is according to the normative of *Biological Invasions*.

The student, Cristina Recasens Gafas, has contributed to the following aspects of the study:

Components of the study	**Contribution of the student**
Project design	B
Data collection	B
Data processing	A
Statistical analysis	A
Redaction	A

A: entirely performed by the student; **B:** partially performed by the student, **C:** entirely performed by others.

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ABSTRACT

The wild boar (*Sus scrofa* Linnaeus, 1758) is an artiodactyl terrestrial mammal belonging to the Suidae family. It has one of the widest geographic distributions of all terrestrial mammals, and this range has been expanded by human agency. The species now occurs all over the world excepting Antarctica. The presence of wild boar has increased around cities, and in urban areas, in part due to feeding from human, leading to conflict with humans.

This study was developed in peri-urban area of Barcelona, which has Collserola Natural Park (CNP), next to it. CNP is the natural habitat for wild boar and the origin for the wild boars entering Barcelona.

Location and date of wild boar presences in the urban area of Barcelona were collected between 2010 and 2016. Location of potential feeding points (PFP), from anthropogenic origin, were collected in spring of 2017, finding 272 PFP. The aim of this study is describing and classifying PFP and contrasting them with wild boar presences in order to establish the attraction factors of these PFP for wild boars. Thus, General Linear Models (GLM) and classification and regression trees (CART) were used. Results showed that attraction to PFP for wild boars deepens on different factors, including distance to CNP, income per capita, position with regard to the "Ronda de Dalt", green areas and type of feeding point.

This information should be useful to reduce wild boar presences in the urban area of Barcelona by focusing specific management corrective measures on the most influential PFP.

Key words: wild boar, *Sus scrofa*, feeding points, (peri)urban area, pest control, Mediterranean environment

ACKNOWLEDGEMENTS

I would like to express my gratitude to all members of Servei d'Ecopatologia de Fauna Salvatge (SEFaS) for giving me the opportunity to developing this project. In particular to Jorge Ramón López Olvera, my research project director, Raquel Castillo and Carlos Gonzalez for their valuable advice and technical support and Carles Conejero for his advice during the field work.

INTRODUCTION

The wild boar (*Sus scrofa* Linnaeus, 1758) is an artiodactyl terrestrial mammal belonging to the Suidae family. It has one of the widest geographic distributions of all terrestrial mammals, and this range has been expanded by human agency. The species now occurs in pure wild or barely modified feral form on all continents excepting Antarctica, and on many oceanic islands. It has been classified as Least Concern by the IUCN (Jdeidi 2010).

The parallel growth of urban areas and wild boar populations in recent years has led to an increase of the presence of this species around cities and in suburban areas, often leading to conflict with local people (Cahill et al. 2012). Human-wild board conflicts include impact on abundance and richness of plant and animal species, crop damage, predation on livestock, vehicle collisions, (Massei et al. 2011) and direct and indirect contact of animals at feeding sites can lead to transmission of diseases and/or parasites (Briedermann 1986; Laddomada 2000; Kaberghs 2004; Putman, Staines 2004; Vicente et al. 2005a; Cellina 2008).

The season when wild boar presence is more frequent in urban areas seems to be related to climate. Thus, in cities with Mediterranean or subtropical climate, with hot dry summers such as Genoa (Italy), Haifa (Israel), San José, California (U.S.) or Barcelona (Spain), wild boar are mainly found in summer. Conversely, cases of wild boar habituation are also found in cooler, temperate regions (*e.g.,* Germany, Poland, UK, Japan, Switzerland) (Geisser and Reyer 2005; Cahill et al. 2012). In both contexts, impairment or prevention of wild boar rooting and foraging activity (as a result of soil hardening of the soil due to drought conditions in summer in Mediterranean areas, or due to snow cover or frozen soil in winter in colder regions) seems to drive wild boar behavior towards urban areas. In such conditions, urban and peri-urban environments are richer in resources for wild boar due to anthropogenic food (Geisser and Reyer 2005; Cahill et al. 2012). Anthropogenic food sources in peri–urban areas are varied, including both direct feeding and indirect (unintentional) feeding. Urban and peri-urban anthropogenic food resources include food left out for domestic pets or discarded rubbish, irrigated lawns, gardens, and other landscaped areas. Such feeding opportunities encourage daytime activity of the wild board and subsequently a loss of fear of people. Consequently, wild boar behavior is mere *habituation,* which is defined more by indifference from people (Wieczorek–Hudenko and Decker 2008; Cahill et al. 2012).

In the Collserola Natural Park (CNP), situated within the metropolitan area of Barcelona, wild boar have become habituated to humans and urban settings because of direct feeding by local residents and indirect feeding availability. As in other areas with similar climate from all around the world, wild boar are more attracted to peri-urban areas in summer because hardening of the soil makes anthropogenic food sources more abundant than natural environment resources during this season (Cahill et al. 2012). The supplemental feeding provided by people may increase local population density not only by improving breeding and survival, but also by encouraging wild boars to migrate to the sites where food is supplied (Dobson and Kjelgaard 1985; Boutin 1990; Sullivan and Klenner 1993; Newton 1998; Putman and Staines 2004; Cellina 2008). So, the availability of anthropogenic food sources attracts wild boars to peri–urban areas and the attitudes of urban residents towards wild boar have facilitated their habituation, either directly encouraging their presence by intentional feeding, or simply through indifference (habituation of people to wild boars) (Cahill et al. 2012).

This study aims at describing and classifying potential feeding points (PFP) in the urban area of Barcelona, and contrasting them with wild boar presences in this same area in order to establish the attraction factors of these PFP for wild boars. The ultimate management objective would be reducing wild boar incidences in the urban area of Barcelona by identifying and reducing or modifying these PFPs.

MATERIALS ANS METHODS

Study area

The study was carried out in the urban area of Barcelona (Catalonia, NE Spain) (Figure 1) which has a surface area of 10.215,9 ha and a population of 1.608.746 inhabitants, so human population density is 15,747.5 inhabitants/km^2 (INE 2016).

The CNP (41° 25' 52'' N, 2° 4' 45'' E) is a Natura 2000 site situated in the middle of the Barcelona Metropolitan Area, occupying ~9,000 ha of mountainous (60–512 m a.s.l.) environment (Cahill et al. 2012). It is subject to important human pressure due to its proximity to the urban area of Barcelona. The wild boar population in the park is almost completely isolated from populations in outlying natural areas because of a continuum of urban areas and major transportation infrastructures, which surround CNP (Cahill and Llimona 2004).

This study focused in the five districts (from the ten which form the city of Barcelona) limiting with CNP, namely Nou Barris, Horta-Guinardó, Gràcia, Sarrià-Sant Gervasi and Les Corts (Figure 1), since distance to CNP is a major factor explaining wild boar presence in the urban area of Barcelona (Castillo et al.).

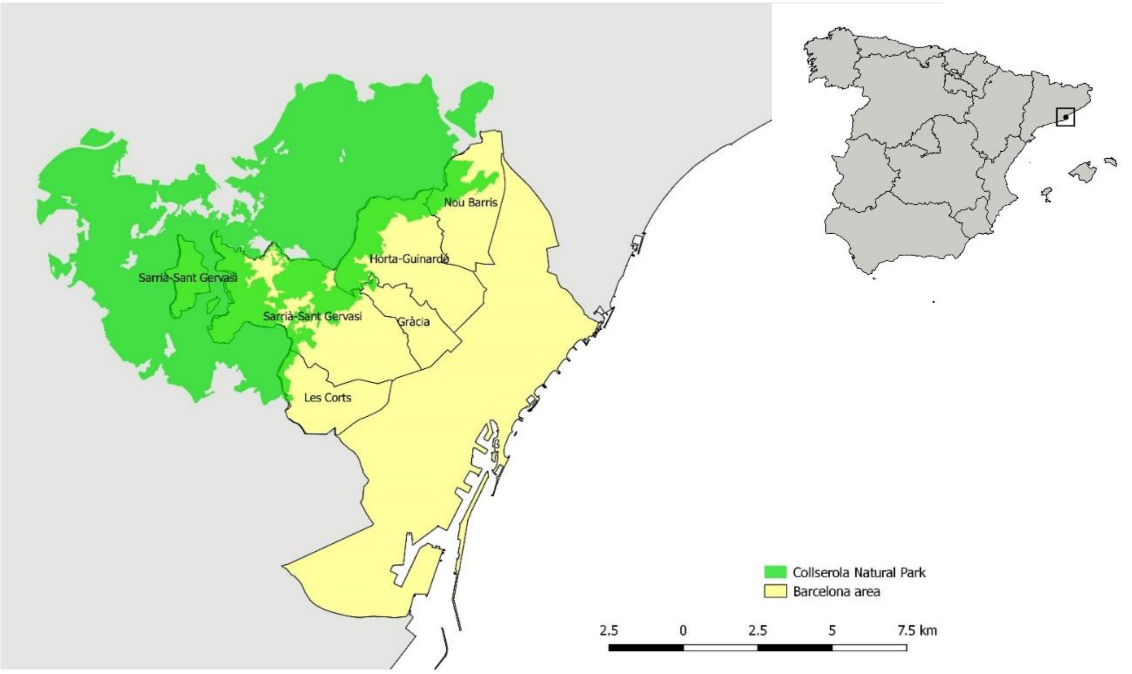

Fig. 1 Districts from city of Barcelona limiting with CNP (in green) where the study was carried out.

Data collection

Location and date of wild boar incidences were collected in the municipality of Barcelona by the Metropolitan Police between 2010 and 2016. These data included traffic accidents and wild boars seen in public areas (either healthy, alive, wounded or dead). During this period, the registered presences of wild boar in the urban area of Barcelona have increased progressively (Table 1).

Table 1. Presences of wild boar in the city of Barcelona by year, collected by the Metropolitan Police.

Year	Presences in Urban Area
2010	611
2011	676
2012	499
2013	764
2014	707
2015	681
2016	1101

Twenty one-kilometer long transects were designed and walked in the five districts of Barcelona city limiting with the PNC to detect and identify PFP. The transects were distributed among the districts according to the total surface area of each district (Table 2).

Table 2. Design of the transects by district.

Districts	District area (ha)	Percentage of area of district	Transect length (meters)	No. of transects in each district (rounded)
Les Corts	602	12.5	2503.64	3
Sarrià-Sant Gervasi	1789	37.2	7440.22	7
Gràcia	419	8.7	1742.57	2
Horta-Guinardó	1195	24.9	4969.84	5
Nou Barris	804	16.7	3343.73	3
TOTAL TRANSECTS			**20000**	**20**

Figure 2 shows the location of the 20 transects. One transect in Horta-Guinardó was divided in two different 500 meter sections due to spatial constraints.

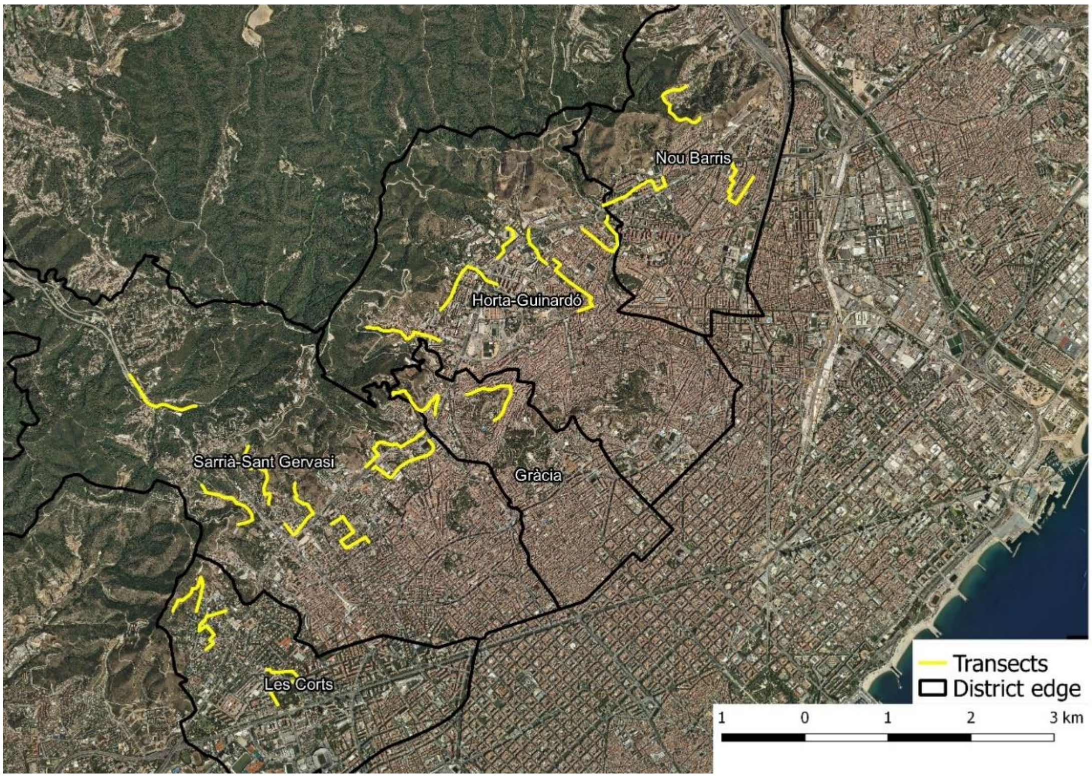

Fig. 2 Transects designed and walked in the five districts of Barcelona limiting with the CNP.

Beyond the total area of each district, transect design also included proximity of green areas in a 100-meter radius buffer and position relative to the "Ronda de Dalt" (an artificial barrier between CNP and Barcelona urban core area) as factors. All transects were designed in areas with medium urban landscape fragmentation, since fragmentation influences wild boar presences in the urban area of Barcelona (Castillo et al.).

The transects were walked between March and May 2017. A description sheet characterizing each PFP detected was filled out, including coordinates, feeding point type and site description (Annex, Figure 3). Six more feeding points previously detected by the Metropolitan police were further added beyond those located in the transects.

Variable creation

Three different response variables were created, including the number of wild boar presences in a 100, 250 and 500 meter radius around a PFP.

The explanatory variables included categorical and numeric variables. In Table 3 information about variables is summarized. The categorical variables were: (1) KIND_POINT, (2) 100m_GREEN_AREA, (3) GREEN_AREA, (4) RONDA and (5) WATER. The numeric variables were: (6) DIST_COLLSEROLA, (7) ATUR and (8) RENDA.

Table 3. Information about explanatory variables.

CATEGORICAL VARIABLES	
(1) TYPE_POINT	Type of PFP: direct feeding, accessible bins, no accessible bins, containers in good conditions, containers in bad conditions, cat food, food packages, vegetable patch, fruit trees and vegetation from the area
(2) 100m_GREEN_AREA	Presence or not of green areas within a 100m radius from the PFP
(3) GREEN_AREA	Whether the point is inside a green area or not
(4) RONDA	Position of the PFP between the "Ronda de Dalt" and CNP or opposite to the CNP with regard to the "Ronda de Dalt"
5) WATER	Presence of water sources around the PFP
NUMERIC VARIABLES	
(6) DIST_COLLSEROLA	Distance to CNP
(7) ATUR	Percentage of unemployed people (INE 2016)
(8) RENDA	Income per capita, taking 100 as a reference (INE 2016)

All the predictor variables were constructed by using the Geographic Information Systems QGIS v2.18.4 Valmiera (Quantum GIS Development Team 2014).

To create the distance to CNP variable Hub Distance tool was used (MMQGIS). All the distances were sorted to give a distance of 0 to the points that were inside the CNP. A buffer of 100m, 250m and 500m was created around each PFP to compare among the different distances and presences of wild boar inside each buffer were counted. Because of PFP were very close from each other, the 100m radius buffer was used, which decreased presence simultaneity for several PFP. In order to gain accuracy, the PFP data obtained from the INE (2016) were referred to the neighborhood (a smaller area) instead of the district.

Data exploration

Prior to all analyses, all the numeric variables were explored with simple plots, and multicollinearity amongst the explanatory variables was checked by constructing a pairplot using R software (version 3.3.2; R Development Core Team 2016) (Figure 4).

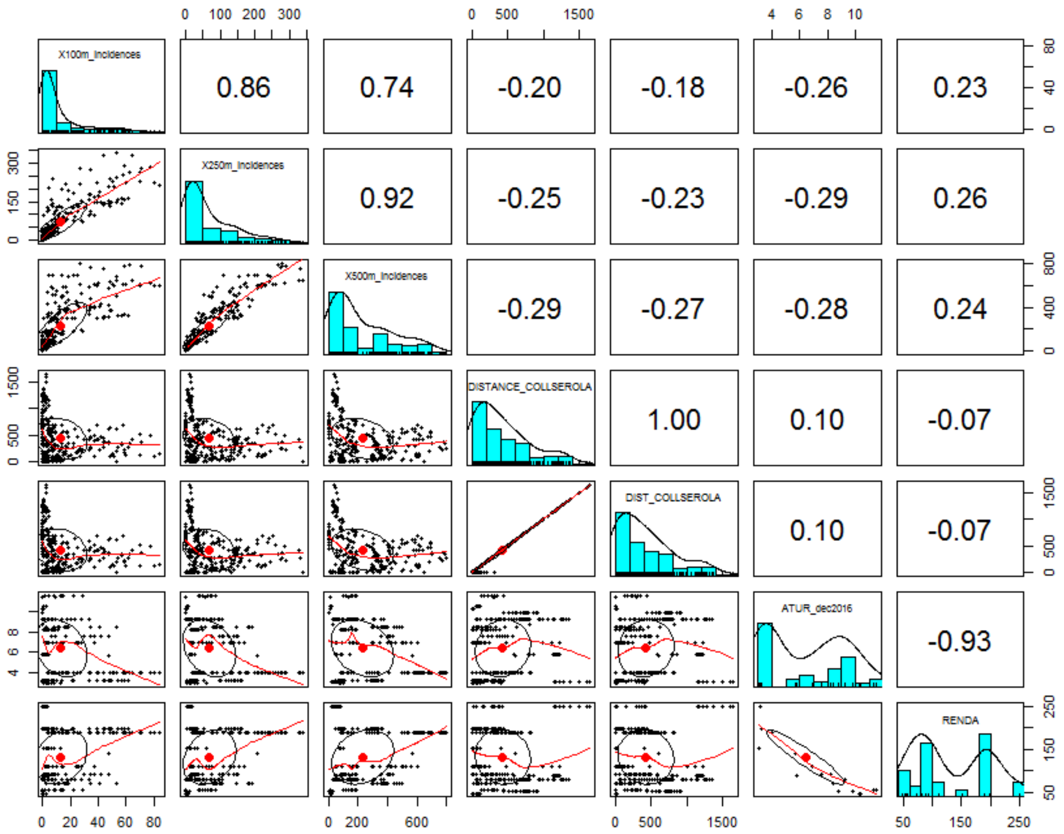

Fig. 4 Plot showing the correlations among the numeric variables.

Correlation coefficients between predictor variables of |r| > 0.7 was an appropriate indicator for when collinearity begins to severely distort model estimation and subsequent prediction (Dormann et al. 2013). As it can be seen in Figure 4, RENDA is correlated with ATUR in a negative way (r= -0.93), so, RENDA was used instead of ATUR because is easier to interpret. As can be seen, different radius buffer (100m, 250m and 500m) are positivity correlated between them (r > 0.7), thus, as mentioned before, only 100 meters one is used.

Modelling methods

CART

Classification and regression trees (CART) are ideally suited for the analysis of complex ecological data that require flexible and robust analytical methods, which can deal with nonlinear relationships, high-order interactions, and missing values. Despite such difficulties, the methods should be simple to understand and give easily interpretable results (De'ath 2000).

The original algorithm for CART consists of binary recursive partition of the data distribution defined by the explanatory variables (Breiman et al. 1984). Trees explain variation of a single response variable by repeatedly splitting the data into more homogeneous groups, using combinations of explanatory variables that may be categorical and/or numeric. At each split the data is partitioned into two groups, each of which is as homogeneous as possible, but also to keep the tree reasonably small. The size of a tree equals the number of final groups (De'ath 2000).

Each group is typically characterized by either the distribution (categorical response) or mean value (numeric response) of the response variable, group size, and the values of the explanatory variables that define it. Finally, the tree is represented graphically, and this aids exploration and understanding (De'ath 2000).

Trees can be used for interactive exploration and for description and prediction of patterns and processes. Thus, trees complement or represent an alternative to many traditional statistical techniques, including multiple regression, analysis of variance, logistic regression, log-linear models, linear discriminant analysis, and survival models (De'ath 2000).

CARTs were fitted using the rpart library developed by Therneau et al. (2013) and plotted using the rpart.plot library, an enhanced version developed by Milborrow (2012) for R software (version 3.3.2; R Development Core Team 2016), following the indications provided in (Carvalho 2013).

GLM

General Linear Models (GLMs) are mathematical extensions of linear models that do not force data into unnatural scales (Hastie and Tibshirani 1990). They are based on an assumed relationship between the mean of the response variable and the linear combination of the explanatory variables. Data may be assumed to follow any probability distribution which better fit the non-normal error structures of most ecological data. Thus, GLMs are more flexible and better suited for analyzing ecological relationships (Austin 1987). The purpose of the statistical model is examining if the measured predictors adequately explain the response, if the relationship between the response and the predictors is significant and to ascertain the contributions and roles of the different variables (Guisan et al. 2002).

GLM were performed using the presence of wild boar around a PFP in a radius of 100m as response variable (numeric) and distance to CNP (numeric variable in meters) and type of feeding point (categorical) as explanatory variables. Because the response variable (presences) was numeric it was adjusted to a quasipoisson's distribution. The objective was detecting variability in the importance of a PFP to attract wild boars, considering distance to CNP as a covariable, since the points nearer to CNP have more probabilities to attract wild boar (Castillo et al.). The GLM were fitted using the Deducer library developed by Ian Fellows (2015) for R software (version 3.3.2; R Development Core Team 2016).

RESULTS

Exploratory analysis

Figure 5 shows the distribution of the 272 PFPs detected in this study, including the points identified by the Metropolitan Police beyond the transects.

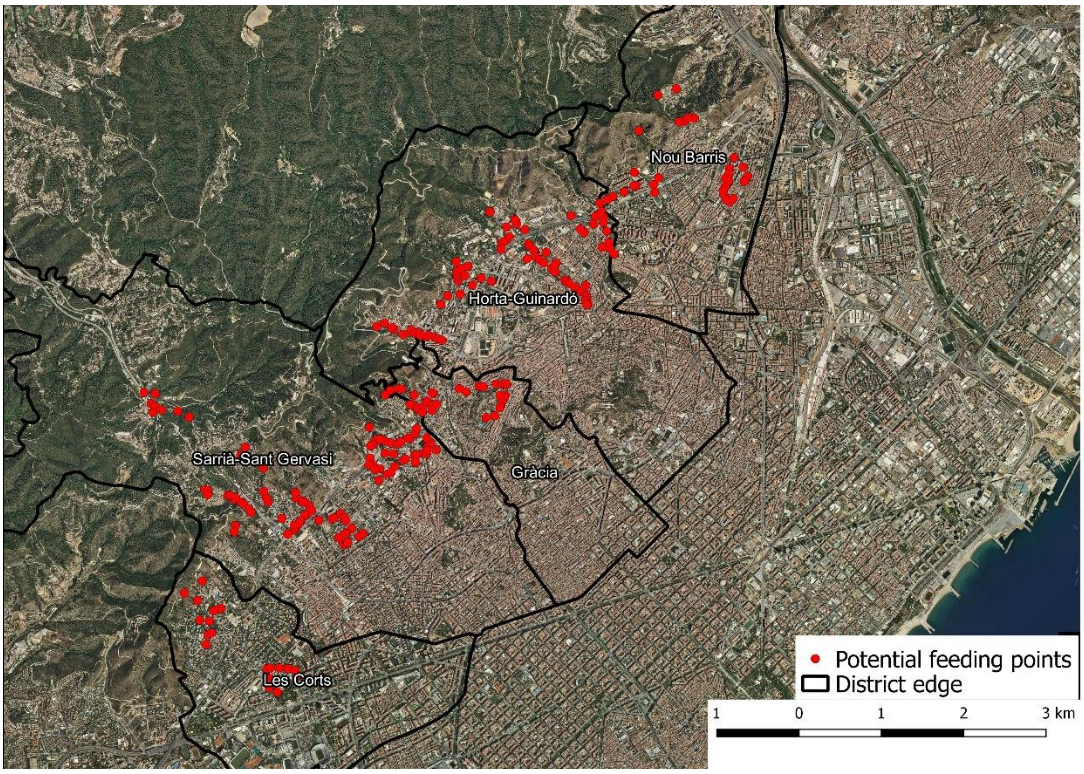

Fig. 5 PFPs inside the five Barcelona districts limiting with CNP.

The most common urban food source for wild boars were no accessible bins (83, 27%), followed by containers in good conditions (72, 23%), cat food (53, 17%), accessible bins (27, 8%), fruit trees (19, 6%), containers in bad conditions and vegetation (18, 6% each), packages (12, 4%), direct feeding by humans (9, 3%) and vegetable patches (3, 1%) (Figure 6 and Annex, Table 4). Although 272 PFP were identified, a total of 317 food sources were registered, since more than one food source could be identified in a PFP.

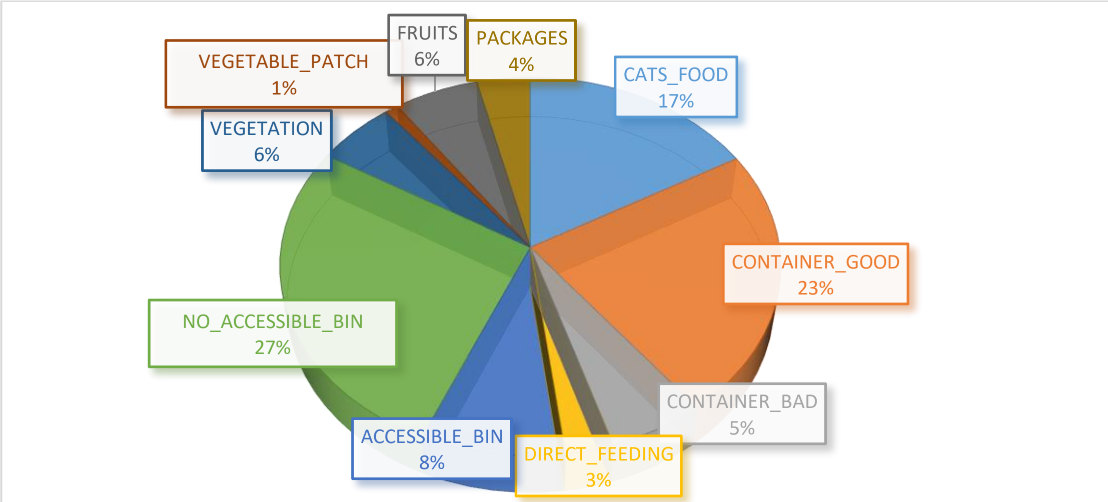

Fig. 6 Percentage of food sources identified.

Classification and Regression trees (CART)

Classification and Regression trees (CART) were fitted using a complexity parameter (cp) of 0.001, which means the tree was constructed to its maximum depth. The resulting tree had 17 splits. In order to prune the tree the complexity parameter with the most little xerror (0.49794) and a complexity parameter of cp= 0.0150575 was used. After that, the pruned tree had eight splits.

CART provides a measure of importance related to the time a variable is chosen to split the data. The most important variable in the pruned tree was distance to CNP: 37 times chosen, followed by RENDA (29), RONDA and 100m_GREEN_AREA (13, each one), TYPE_POINT (7) and finally for GREEN_AREA (1) (Figure 7).

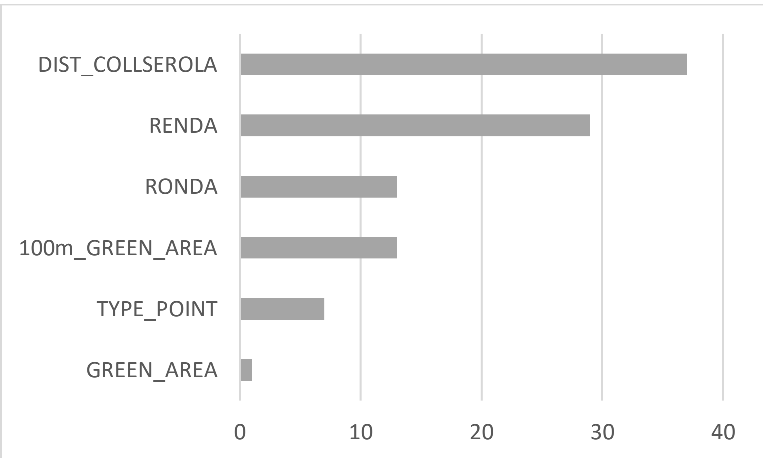

Fig. 7 Relative importance plot of the pruned CART.

As shown in Figure 8, the capacity of one point to attract wild boars depends on a combination of the factors included in the analysis. Numbers at the end of each branch are a mean of the number of presences inside the 100m buffer of a PFP, representing the capacity of a PFP to attract wild boars (a higher number means a higher attraction to that point). Thus, PFPs are more attractive to wild boar between 88 and 686 meters from CNP. In this distance, PFPs are more attractive if there is a green area within the 100m buffer of the PFP. Near a green area income per capita is important: it is more attractive if it is higher than 170 (100 is the mean). Then it is important how the PFP is situated from the “Ronda de Dalt”, with a lower attraction if beyond. If PFP is situated beyond “Ronda de Dalt”, type point is relevant: if PFP is cat food, no accessible bins and vegetable patch, it has a lower attraction than the other types. If income per capita is lower than 170 and the PFP is situated between “Ronda de Dalt” and CNP, then distance is again relevant, it has a higher attraction between 88 and 444 meters from CNP.

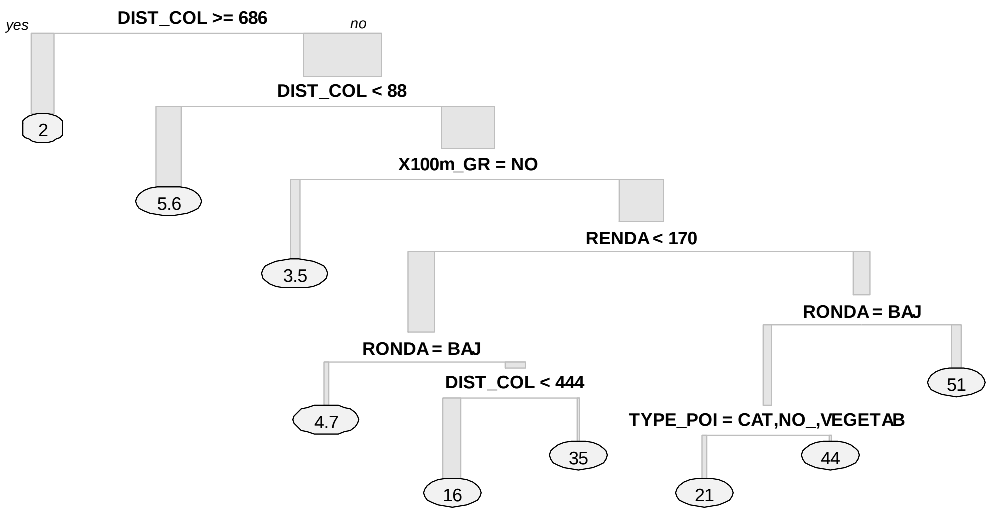

Fig. 8 Pruned tree with a cp= 0.0150575.

This CART with a cp= 0.0150575 has a rel error of 0.31115, that means the part of the tree that is not explain. Thus, taking this, number R^2 can be calculated: R^2=1-rel error. So, R^2 is 0.68885. That means that with this CART, 68.9% of the variance of the model can be explained. In ecology, more than 25% of the variance explained by the model it categorized as a large effect model, what means that results are good enough (Cohen 1988).

General Lineal Model (GLM)

Both distance to CNP (p=0.00576) and the type of PFP (p=0.000696) were significantly correlated with the number of wild boar presences in a 100 meter radius from a PFP, as was the interaction between these two variables (p=0.04) (Table 5).

Table 5. GLM results with its significance.

Response: 100m_incidencies

	Df	Chisq	Pr(>Chisq)	
DIST_CORREGIDA	1	7.6254	0.0057551	**
TIPO_PUNT	9	28.8145	0.0006964	***
DIST_CORREGIDA:TIPO_PUNT	9	17.5731	0.0404623	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

In Figure 9 can be seen that most attractive PFPs for wild boars are vegetation, with a mean of 25 presences, followed by direct feeding (22), containers in bad conditions and accessible bins (20), packages (18), fruits (15), vegetable patch (14), no accessible bins (12), cat food (10) and finally container in good conditions (8).

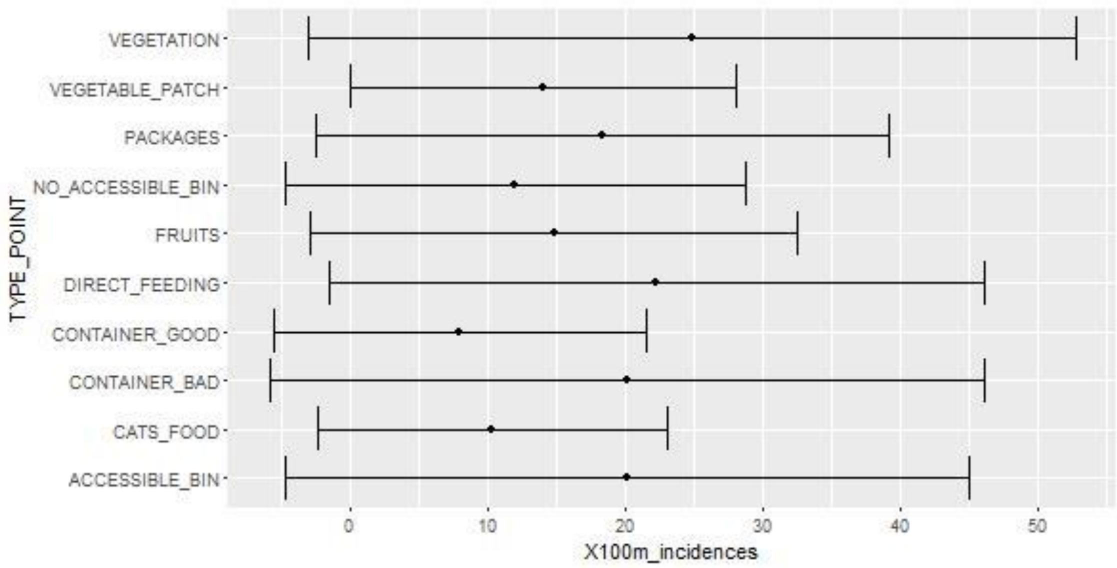

Fig. 9 Plot showing mean and standard deviation limits presences for each type of PFP

This GLM has a R^2 of 0.813. That means that with this GLM 81.3% of the variance of the model can be explained. As commented before, in ecology, more than 25% of the variance explained by the model is good enough (Cohen 1988).

DISCUSSION

According to results, the capacity of a PFP to attract wild boars to the area is not random. This study shows for the first time that the type of PFP has a statistically significant effect on wild boar presences in urban areas, although it was not among the most influential variables identified by CART. Vegetation, direct feeding, containers in bad condition, accessible bins and packages are more attractive for wild boars than cat food, no accessible bins and vegetable patches, as shown by CART and GLM. As suggested by Cahill et al. (2012) the increase of anthropogenic food available for wild boars (domestic rubbish, vegetable material from parks and gardens, pet food and direct feeding) might have attracted wild boar into urban areas during periods of scarcity. Although pet food is positively related to wild boar presence (Castillo et al.), the wider food resources scope analyzed in this study has allowed to detect PFP types more influential than cat food.

Another factor identified for the first time in this study as positively influential for wild boar presences in the urban area of Barcelona is income per capita. This effect can be related not as much to real wild boar presence but to wild boar perception by the human population. A more positive attitude towards animals can favor the urban presence of wild boar, and more educated and wealthiest people have more positive perception of animals, as shown by Kleiven (2004) for wolves. On the contrary, wild boar could not really be more abundant on the richest areas of Barcelona but being perceived more easily and frequently as a nuisance, and therefore create a higher number of incidences in these areas. Further analysis of the relationship between wild boar presence and perception, on the one hand, and social aspects as income, education and social status are required to clarify this point.

Some of the other factors identified by CART, such as distance to CNP, position with regard to the “Ronda de Dalt” and green areas, have already been previously identified as influential factors to explain wild boar presence in the urban area of Barcelona (Castillo et al.). Since CNP, where according to the aforementioned world trend wild boar population has been increasing in the recent years (Cahill and Llimona 2004), is the source of wild boars entering the urban area of Barcelona (Castillo et al.), logically the nearest to CNP, the more attractive a PFP is. The lack of attraction below a distance of 88 meters to CNP could be explained because these presences are so close to CNP that neighbors of that area are used to them, so presences may not be noticed.

Green areas are a food and water resource for wild boars, who are capable of successfully colonize and exploiting a wide range of habitats (Acevedo et al. 2006), including the interface between urban areas and either forest or agricultural landscapes, and even highly artificial urban green areas (Cahill et al. 2012, Licoppe et al. 2013). These resources are probably more used by wild boars in periods of scarcity, as suggested by Cahill et al. (2012). Moreover, during daylight hours, green patches can also be used as refuge, as urban adapted red foxes (*Vulpes vulpes*) do in urban environments (Harris 1981, Adkins and Stott 1998, Marks and Bloomfield 2006).

Another expected result is the fact that being above the "Ronda de Dalt" is more attractive to wild boar, because this highway poses a physical barrier for wild boars to cross it. The unwillingness or inability of individuals to cross roads can lead to population isolation, partly because road construction increases mortality risk for wildlife (Frair et al. 2008). In this case the isolation can be described as that wild boars stay in the part between "Ronda de Dalt" and CNP.

CONCLUSION

This study provides the first insights of the features of PFP that make them more attractive for wild boars in the urban area of Barcelona. Despite the fact that this study is in an initial process it can be useful to monitor and control of these PFPs and to reduce the presence of wild boar in the city of Barcelona. Further determining and characterizing the more attractive points will allow to undertake specific measures improving efficiency in order to decrease wild boar incidences in the urban area of Barcelona.

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ANNEX

SEFaS
Servei d'Ecopatologia de Fauna Salvatge

UAB
Universitat Autònoma de Barcelona

FITXA PUNTS D'ALIMENTACIÓ DEL SENGLAR

Data: __________ Hora: ___:___ Referència punt: ____________ Transecte:__________

Lloc (adreça): ____

Coordenades (UTM 31N ETRS89): ______________________________________

FOCUS D'ATRACCIÓ

Tipus de font d'aliment:

❑ Menjar de gats ❑ Alimentació directa ❑ Contenidors ❑ Papereres

❑ Vegetació de parcs/jardins ❑ Horts/conreus

❑ Altres: ____

Informació del punt**:**

Tipus d'aliment: ____

Quantitat: _________________ Disponible pel senglar: ❑ Sí ❑ No

Descripció (contenidors tombats, parterre furgat, etc): ____________________

____

Situació (terra, lloc elevat, etc): _____________________________________

Atraccions naturals:

❑ Cap ❑ Vegetació similar a l'hàbitat (alzines, etc) ❑ Refugi

❑ Aigua (fonts, basses, etc.)__________ ❑ Altres: _________________

INDICIS DE PRESÈNCIA DEL SENGLAR

Presència de femtes: ❑ No ❑ Si → ❑ 1-3 ❑ 3-6 ❑ >6

Presència de petjades : ❑ No ❑ Si → ❑ 1 animal ❑ 2-5 animals ❑ > 5 animals

Presència de furgades ❑ No ❑ Si → ❑ <2m2 ❑ 2m^2-5m^2 ❑ >5 m^2

En zona verda: ❑ No ❑ Si → ❑ <2m2 ❑ 2m^2-5m^2 ❑ >5 m^2

ENTORN FÍSIC

Tipus de cobertura: ❑ Prat ❑ Matollar ❑ Arbres ❑ Urbà

Indicar espècie o grup d'espècies predominants, si és possible: ________________________

ENTORN SOCIAL

Densitat d'edificacions:

❑ Nul·la ❑ Cases disperses ❑ Urbanitzacions difoses

❑ Urbanitzacions ordenades ❑ Edificis mitjos ❑ Alta densitat d'edificis alts

Transitabilitat a la zona (per persones, vehicles, etc): ________________________

Accessos a la zona per l'animal : ______________________________________

Referència fotogràfica:____________________________

OBSERVACIONS

Destrosses ocasionades: ____

Presa de mostres:____

Fig. 3 Data sheet used to describe PFP.

Table 4. Distribution of urban elements that can be PFP for wild boar along the different transects. NB: Nou Barris, HG: Horta-Guinardó, GR: Gràcia, SG:Sarrià-St.Gervasi, LC: Les Corts.

	NO_ACCESSIBLE_BIN	ACCESSIBLE_BIN	CONTAINER_GOOD	CONTAINER_BAD	CATS_FOOD	FRUITS	DIRECT_FEEDIING	VEGETATION	PACKAGES	VEGETABLE_PATCH	TOTAL
NB1	7	3	7	0	2	0	0	1	0	0	20
NB2	2	1	6	0	1	1	1	0	2	0	14
NB3	2	0	0	2	2	0	1	1	0	0	8
HG1	4	1	3	0	6	1	0	0	0	0	15
HG2	5	0	5	0	4	2	0	1	1	0	18
HG3	9	2	5	0	3	2	0	0	0	0	21
HG4	4	2	4	0	5	2	1	1	0	0	19
HG5.1	1	1	1	0	1	1	0	1	2	0	8
HG5.2	2	2	0	0	1	1	0	0	1	0	7
GR1	8	2	6	2	3	0	0	0	1	0	22
GR2	3	1	0	7	6	1	0	1	2	0	21
SG1	1	0	3	0	1	1	0	2	0	0	8
SG2	8	2	3	0	6	1	1	2	0	0	23
SG3	11	0	5	0	1	1	0	0	0	0	18
SG4	1	1	7	1	2	3	0	1	0	0	16
SG5	4	2	0	3	1	1	1	2	2	0	16
SG6	5	2	6	2	2	1	0	2	0	0	20
SG7	1	2	2	1	3	0	1	0	0	0	10
LC1	4	2	3	0	1	0	0	1	0	0	11
LC2	1	0	1	0	0	0	0	1	1	0	4
LC3	3	1	5	0	0	0	0	0	0	0	9
outside	0	0	0	0	2	0	3	1	0	3	9
	86	27	72	18	53	19	9	18	12	3	317