

Censos de macromamíferos de monte en tres serras de Pontevedra (2009 – 2013)

Macromammal census in three mountain ranges of Pontevedra (2009 – 2013)

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RESUMO / ABSTRACT

No presente traballo expóñense os resultados dos censos de macromamíferos polo método IKA en tres itinerarios da provincia de Pontevedra.

Os resultados dos itinerarios IKA repetidos durante cinco anos (2009 – 2013), en primavera e outono, amosan a dinámica das poboacións de carnívoros e herbívoros. Incluímos cans (*Canis lupus familiaris*), ovellas mostrencas (*Ovis orientalis aries*) e vacas en extensivo (*Bos primigenius taurus*), porque son presas potenciais de lobos (*Canis lupus*) e os cans tamén son posibles competidores de carnívoros en xeral.

Analízanse polo miúdo as causas da dinámica de cada especie: caza, tratamentos silvícolas, roces, queimas controladas, outros cambios no monte, densidade de poboación humana e lexislación.

Destaca a escaseza de lebres (*Lepus granatensis*) e corzos (*Capreolus capreolus*) na comarca debida á inaxeitada xestión da caza. Tamén a estreita dependencia que teñen os tres grupos de cría de lobos detectados (*Canis lupus*) respecto aos garranos, ou cabalos salvaxes (*Equus ferus atlanticus*), desaparecendo os lobos alí onde os garranos foron retirados.

Citamos a presenza de carnívoros raros nos itinerarios: *Genetta genetta*, *Martes sp.*, *Felis silvestris*, *Mustela putorius*, *Lutra lutra*.

Concluimos resaltando a importancia, que ten para toda a comunidade de macromamíferos a presenza de fortes poboacións de garranos. Son os herbívoros – clave do ecosistema. Os outros herbívoros, carnívoros e carroñeiros benefíciense moito deles.

The aim of this paper is to present the results of the macromammal census obtained by Kilometric Abundance Index (KAI) in the province of Pontevedra.

The results of KAI itineraries that were repeatedly recorded during five years (2009-2013), during spring and autumn, show the dynamics of the populations of herbivores and carnivores. Dogs (*Canis lupus familiaris*), sheep (*Ovis orientalis aries*) and cows (*Bos primigenius taurus*), because they are a potential prey to wolves (*Canis lupus*), and dogs are also, in general, potential competitors.

The causes of the dynamic of each species is carefully analysed: hunting, forestry, controlled burning, other possible changes in the forests, human population density and legislation.

The scarcity of Granada hare (*Lepus granatensis*) and roe deer (*Capreolus capreolus*) and stands out due to the inappropriate hunt management. So does the direct dependence that the three wolf breeding groups detected (*Canis lupus*) have in relation to wild horses (*Equus ferus atlanticus*), with the result of the disappearance of wolves in those places where

the wild horses had been removed.

We will mention the presence of rare carnivores in the itineraries: *Genetta genetta*, *Martes sp.*, *Felis silvestris*, *Mustela putorius*, *Lutra lutra*.

We conclude stressing the importance that the presence of big wild horse populations has on the mammal population. Wild horses are herbivores – and therefore considered key components to the ecosystem. Other herbivores, carnivores and scavengers benefit from them.

PALABRAS CLAVE / KEY WORDS

Censos. Método I.K.A.. Pontevedra. Lobos. Macromamíferos. Dinámica poboacional. 2009 - 2013.

K.A.I. census method. Pontevedra. Wolves. Macromammals. Population dynamics. 2009 - 2013.

INTRODUCCIÓN

Sería imposible coñecer con precisión matemática as poboacións de macromamíferos silvestres en calquera territorio. Sempre que se pretende unha tarefa así, chégase á conclusión de que os censos teñen certa marxe de erro, pois cada censo apórtanos unicamente un fotograma, unha visión instantánea indirecta, do estatus dunha poboación nun momento dado.

Os censos de macromamíferos realizados polo método IKA (Índice kilométrico de abundancia) son aplicables a todo mamífero, que poida deixar rastros observables.

A realización de censos IKA en tres zonas da provincia de Pontevedra durante cinco anos seguidos, ofrécenos unha interesante visión da dinámica das poboacións de macromamíferos en dita rexión no período 2009 a 2013 inclusive.

MÉTODO

Realizábanse tres itinerarios IKA en primavera e tres no outono, seguindo pistas forestais transitables en todoterreo, que discorrían polo alto das serras. É dicir: por lugares onde solen deixar rastros os lobos.

Realizamos longos itinerarios en coche (22,3 a 25,7 km) a baixa velocidade. Parabamos en moitos cruces de pistas e camiños, onde baixabamos para observar e contar con detalle todo tipo de rastros nun treito total de 100 m en cada punto. Sempre os mesmos puntos de observación desde 2009 a 2013.

Itinerarios:

A: Serra do Acibal (A1) e Monte Cregos (A2): 22,3 Km, 40 puntos de observación.

B: Serra do Seixo (B1), O Coirego (B2) e Monte Castelo

INTRODUCTION

It is impossible to know precisely the number of wild mammal populations there are in a territory. When accomplishing a task like that, we come to the conclusion that censuses have a certain margin of error, as every census provides us only with an instant image of the state of a population at a given time.

Macromammal census obtained by KAI (Kilometric Abundance Index) are applicable to every kind of mammal that provides us with any trail.

By carrying out KAI censuses in three areas in the province of Pontevedra during five consecutive years we have been able to obtain an interesting view of the dynamics of the macromammal populations from the year 2009 until 2013.

METHOD

Three KAI itineraries were conducted each spring and each fall using the forest trails through the mountains. That is to say: through the places where wolfs usually provide us with trails.

After the first round, the same itineraries were repeated at low speed (22.3 to 27.7km). We would stop in many trail junctions to closely look at any trails in 100 meters in each observation point. These points would not vary during the years 2009-2013.

Itineraries:

A: Acibal mountain range (A1) and Mount Cregos (A2): 22,3 Km, 40 observation points.

B: Seixo mountain range (B1), O Coirego (B2) and Mount Castelo (B3): 25,7 km, 43 observation points.

C: Mount Galleiro (C1), Amoedo (C2) and A Fracha (C3): 24,3 km, 44 observation points.

(B3): 25,7 km, 43 puntos.

C: Monte Galleiro (C1), Amoedo (C2) e A Fracha (C3): 24,3 km, 44 puntos.

A poboación humana xoga un papel importante nos ecosistemas de monte. Veciños e comunidades de montes son quen decide os usos prioritarios da serra en cada caso: forestal, gandeiro, caza, cabalos salvaxes (garranos), etc. Os datos de densidade de poboación, media por municipios, así como o censo de garranos e vacún nas serras cruzadas polos itinerarios, resúmense na táboa 1.

Itinerario	Densidade media poboación	Garranos	Vacún
Itinerary	Average population density	Wild horses	Bovine
A	69,5 hab./km ²	350	120
B	26,6 hab./km ²	650-500	150
C	261,1 hab./Km ²	70-30	30

Táboa 1: Datos de densidade de poboación humana nos municipios dos itinerarios. Censo aproximativo de garranos e vacas montinas nas serras cruzadas polos itinerarios. Nos itinerarios B e C o censo de garranos pasou, respectivamente, de 650 a 500 e de 70 a 30 entre 2009 e 2013.

Table 1: Population density data in the itinerary municipalities. Approximate census of wild horses and bovine in the mountain ranges crossed by the itineraries. In the itineraries B and C the wild horse census changed from 650 to 500 and to 70 to 30 between 2009 and 2013 respectively.

As especies censadas:

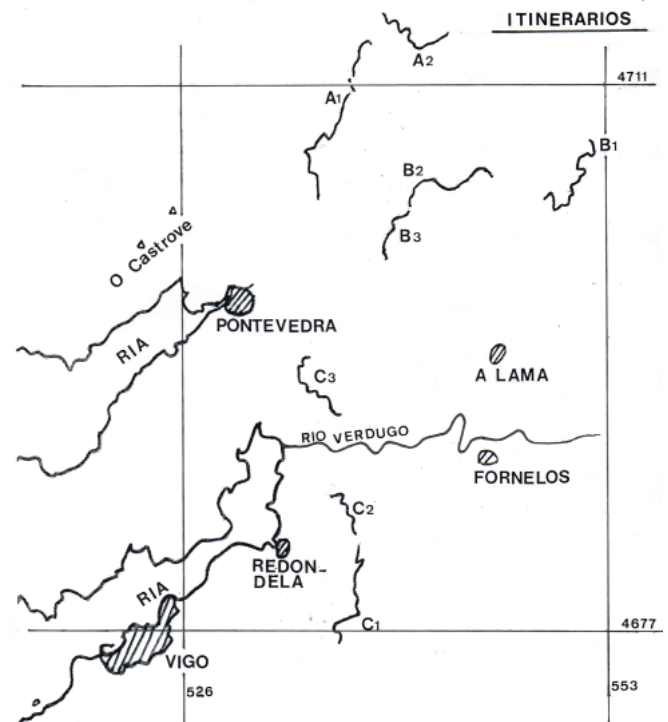
Salvaxes: Coenllo (*Oryctolagus cuniculus*), lebre (*Lepus granatensis*), esquivo (*Sciurus vulgaris*), corzo (*Capreolus capreolus*), xabarín (*Sus scrofa*), garrano (*Equus ferus atlanticus*), raposo (*Vulpes vulpes*), teixugo (*Meles meles*), lobo (*Canis lupus*). Tamén tomamos datos da presenza de ourizos cachos (*Erinaceus europaeus*) e toupas (*Talpa caeca*); pero non os temos en conta nos resultados.

Domésticas en extensivo: abandonadas (mostrencas) ou en paso no monte: vacas en extensivo (*Bos primigenius taurus*), ovellas mostrencas (*Ovis orientalis aries*), cans (*Canis lupus familiaris*). Todas son presas potenciais do lobo.

Carnívoros que aquí son raros tamén os tivemos en conta: marta - garduña (*Martes sp.*), tourón (*Mustela putorius*), gato bravo (*Felis silvestris*), martaraña, ou algaria (*Genetta genetta*).

Resultaba imposible contabilizar os rastros de vacas e garranos, por moi numerosos, así como as fozaduras dos xabarís. Limitámonos entón a indicar a porcentaxe de puntos nos que aparecían ditos rastros (frecuencia de aparición).

Human population plays an important role in mountain ecosystems. Neighbours and communities decide the uses of the mountain ranges: land-use, livestock industry, hunting, wild horses, etc. Population density data, measured by municipalities, as well as the wild horses and bovine census of the mountain ranges crossed by the itineraries are shown in table 1.



Itinerarios de IKA realizados KAI itineraries
 A: O Acibal – Cregos (22,3 km)
 B: O Seixo - O Coirego – Mount Castelo (25,7 km)
 C: A Fracha – O Galleiro (24,3 km)

Registered species:

Wild: Rabbit (*Oryctolagus cuniculus*), Granada hare (*Lepus granatensis*), red squirrel (*Sciurus vulgaris*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), wild horse (*Equus ferus atlanticus*), red fox (*Vulpes vulpes*), European badger (*Meles meles*), wolf (*Canis lupus*). We also collected data of the presence of European hedgehog (*Erinaceus europaeus*) and blind mole (*Talpa caeca*); but were not taken into consideration.

Abandoned domestic animals: cows (*Bos primigenius taurus*), sheep (*Ovis orientalis aries*), and dogs (*Canis lupus familiaris*). Potential preys of wolves.

Rare carnivores were also taken into account: marta (*Martes sp.*), European polecat (*Mustela putorius*), wildcat (*Felis silvestris*) and common genet (*Genetta genetta*). It was impossible to keep record of all the trails of cows,

As lebres, sempre escasas, localizábanse unicamente nun treito do itinerario B1, no alto da serra do Seixo. En ocasións resultaba difícil distinguir os rastros de lebres e coenllos. Só se consideraron como de lebre os que tiñamos total seguridade de que o eran.

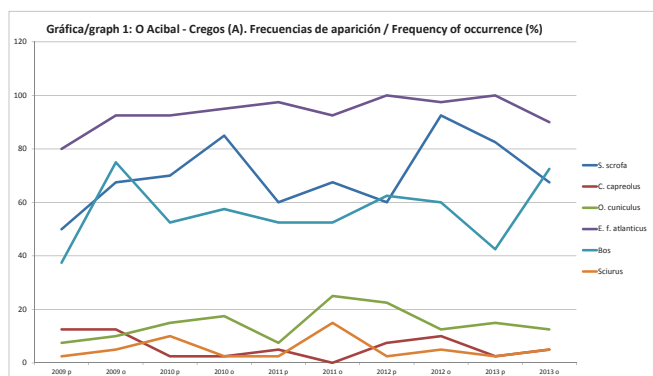
Ó longo do ano 2009 puxemos a punto un método de conteo de latrinas e esterco de coenllos. Por tal motivo non expoñemos os seus datos do ano 2009 nin da primavera do 2010 en forma de valores de IKA.

En resumo, reseñamos datos de frecuencia de aparición para os herbívoros: garranos, vacas, corzos, xabarís, esquivos, lebres e coenllos.

Tamén en forma de valores de IKA: corzos, lebres e coenllos.

Cans: ás veces concéntranse moitos rastros e excrementos onde os cazadores báixanos do remolque. Nesos casos consideramos un máximo de catro cans. Polo demais o criterio é o mesmo que para lobos e raposos.

Teixugo: en cada punto de observación cada rastro de pegadas valía por un indicio. As pequenas cuncas (escarbaduras) feitas polos teixugos nunca foron máis de catro por punto de observación, valorámolos por un indicio.



Os rastros de calquera especie que se atopaban entre dous puntos de observación sumábanse ao punto máis próximo. Cada resto de animal matado, ou depredado polos lobos era considerado como un rastro máis. Os poldros vistos racheados (mordidos) polos lobos contábanse como un indicio máis de lobos.

RESULTADOS

As gráficas 1, 2 e 3 recollen os datos de frecuencias de aparición de herbívoros.

wild horses and wild boars. We made restrictions and only indicated the percentage of points in which this trails appeared (frequency of occurrence).

The few hares were located in a section of itinerary B1, on top of Seixo mountain range. Sometimes it was hard to distinguish the trails of hares and rabbits.

Only certain trails were considered to belong to hares.

We tried a new rabbit dung counting method throughout the year 2009. For this reason we do not show the data of year 2009 and spring of 2010 measured in KAI.

In short, we collected the frequency of occurrence data of herbivores: wild horses, cows, roe deer, wild boar, squirrels, hares and rabbits.

Also measured in KAI: roe deer, hares and rabbits.

Dogs: we sometimes found trails and excrements where the hunters take them out of the trailer. In those cases we considered a maximum of four dogs. The other criteria was the same as for wolves and foxes.

European badger: we found evidence on each track found in the observation points. The number of small tracks left by badgers was never higher than four, and were indicated as evidence.

The trails of any animal that were found in between two points were considered to be from the closest one. Each rest of an animal killed by a wolf was considered a trail. The foals that had been bitten by wolves were also considered an evidence.

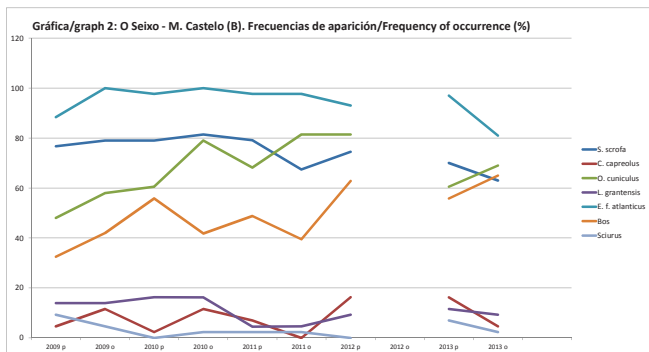
RESULTS

The following graphs show the frequency of occurrence of herbivores.

Hares: they only appear in specific points of the itinerary B1 (O Seixo). We can also observe a new tendency towards a decrease over the years. Since hunting is allowed (2008) the trails of this animal have become rare.

Sheeps: in itinerary C3 (A Fracha) the presence of wild sheep is frequently observed. This demonstrates the fact that more sheep are being abandoned in A Fracha.

As lebres: aparecen unicamente en puntos concretos do itinerario B1 (O Seixo). Observamos ademais unha tendencia a diminuír co paso dos anos. Desde o ano 2008 abriron indebidamente a súa caza e desde entón os rastros e avistamentos fixéronse raros.



Ovellas: no itinerario C3 (A Fracha) obsérvase a presenza de ovellas mostrencas con tendencia a aumentar. Isto pon en evidencia a crecente costume na Fracha de abandonar as ovellas vellas ou improdutivas no monte.

Os garranos: son moi frecuentes nos itinerarios A (Acibal – Cregos) e B (O Seixo – Monte Castelo): Salientamos a tendencia á diminución no itinerario B entre 2011 e 2013, debido á retirada total de garranos no Monte Castelo (B3).

Son menos frecuentes e numerosos no itinerario C, onde xa non eran abundantes e foron progresivamente retirados dos montes. O seu censo aí está reducíndose desde o ano 2010. Trátase de montes que soportan moita influencia urbana.

Vacas en extensivo: aparentemente aumenta a súa presenza entre 2012 e 2013, pero os censos feitos nas campañas de saneamento non o corroboran. O seu censo mantense bastante estable.

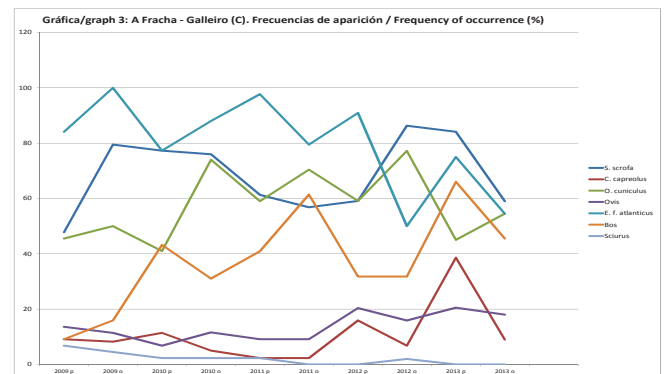
Xabaríns: raras veces superan unha frecuencia de aparición do 80%. Considerando a evidencia e persistencia dos seus rastros, concluímos que non son abundantes, nin están en aumento.

Corzos: teñen frecuencias de aparición case sempre por baixo do 15 %. Resulta claro que son bastante escasos nos tres itinerarios. O pico na gráfica do itinerario C na primavera do 2013 débese, a que se fixo baixo unhas condicións extraordinariamente favorables (máis dun mes seguido seco).

A gráfica 4 resulta moi aclaratoria, os valores de

Wild horses: frequently found in itinerary a (Acibal – Cregos) and B (O Seixo – Mount Castelo): we note the tendency towards a decrease on itinerary B between 2011 and 2013, due to the total removal of wild horses in Mount Castelo (B3).

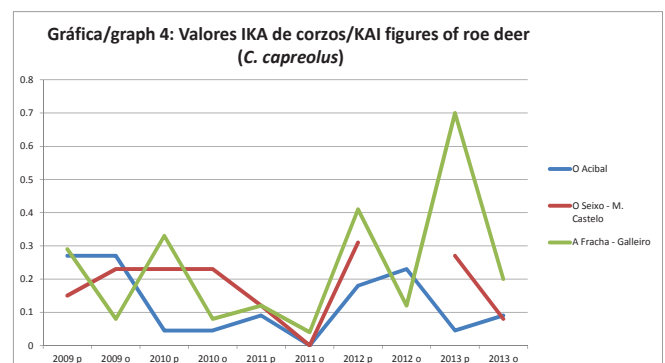
They are least frequent in itinerary C, where there did not used to be abundant, and they were also removed. The number has decreased since 2010, since the mountains are being affected by urban influence.



Cows: apparently, there is an increase in the number of cows between 2012 and 2013, but the censuses do not support this evidence. The census remains stable. Wild boars: they rarely exceed a frequency of occurrence of 80%. Considering the evidence and persistence of trails, we conclude that they are not abundant and are not increasing.

Roe deer: the frequency of occurrence is always below 15%. It is clear that they are quite rare. The peak of itinerary C in spring of 2013 happened due to the extraordinary good conditions in which the census was made (more than a month of drought).

Graph 4 is very clarifying, the figures of KAI never reached 1 and they only reached 0,5 once. These figures are significantly lower than the ones from the wolf.



IKA dos corzos nunca se achegaron a 1 e só unha vez, xa citada, superou o 0,5. Poñemos de relevo, que estes valores son inferiores ós que acada o seu depredador natural, o lobo.

Faise imprescindible un maior control da caza de corzos, tanto legal como furtiva. É impresentable o feito de que se estean concedendo máis licencias, precintos, que número de corzos hai nos coutos de caza, como puidemos comprobar no Acibal no 2013.

Esquívos: volvéronse raros ou moi raros nos tres itinerarios. A tala dos piñeirais para seren reemplazados por eucaliptos é, sen dúbida, a causa do seu forte declive na comarca. As gráficas 1, 2 e 3 evidencian esta penosa situación.

Coenllos: sofren grandes fluctuacións en tódolos casos. Chama a atención a súa escaseza no itinerario A (Acibal – Cregos). Isto débese a que dito itinerario discorre moito entre masas forestais.

Constatamos, por entrevistas ás sociedades de caza, que a redución da poboación no itinerario C no ano 2013 débese a unha epizootia. Parece tratarse da pneumonía.

Baseándonos nos nosos datos, podemos dicir que, a día de hoxe, a epizootia está afectando moi seriamente ós coenllos dos tres itinerarios; pero especialmente aos que ocupan os montes de maior densidade de poboación humana. Aí, na primavera do 2015 estamos comprobando unha supervivencia inferior ó 5 % de coenllos respecto a 2012. As repoboacións feitas recentemente no Acibal (A1), Soutomaior (C2), Monte Castelo (B3) e A Conla – Sabucedo (fóra dos itinerarios) están demostrando ser un completo fracaso.

Os valores de IKA obtidos para coenllos e lebres (gráfica 5) poñen de novo en evidencia a gran escaseza de lebres e o perigo que corren de extinción na comarca, (e en boa parte da provincia), se non se toman medidas conservacionistas eficaces e con rapidez.

Raposos: As gráficas de raposos e cans teñen certo paralelismo.

Resulta frecuente, que os valores de IKA dos raposos aumenten no outono, pola crianza. Pero volven reducirse na primavera seguinte, pola mortalidade invernal,

A stricter control over roe deer hunt, both legal and poaching, is necessary. The fact that there are more licenses are being granted than the actual number of deer is unacceptable, as we could see in Acibal on 2013.

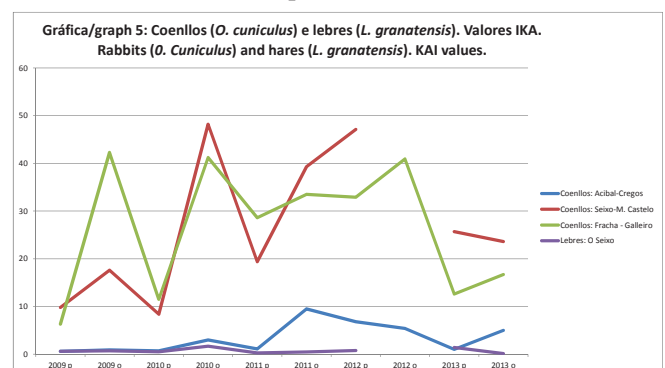
Squirrels: They have become very rare. Cutting down pine trees to replace them with eucalyptus has become the mayor reason for their decline in the region. Graphs 1, 2 and 3 show evidence of this sad situation.

Rabbits: they suffer changes in all of the itineraries. The scarcity of these animals is especially surprising in itinerary A (Acibal – Cregos). This is due to the fact that the itinerary goes through forests.

After the interviews with hunting societies were conducted we were able to confirm that the decrease of the population in itinerary C in 2013 happened due to an epizootic disease. It seems to have been rabbit haemorrhagic disease.

Based on the data recorded, we can state that, today, epizootic disease is having serious effects on rabbits in all itineraries, and especially on those who live in the mountains with high human population density. Those areas presented a survival rate of less than a 5% in spring of 2015 compared to 2012. The repopulations made in Acibal (A1), Soutomaior (C2), Mount Castelo (B3) and A Conla – Sabucedo (outside the itineraries) are a complete failure.

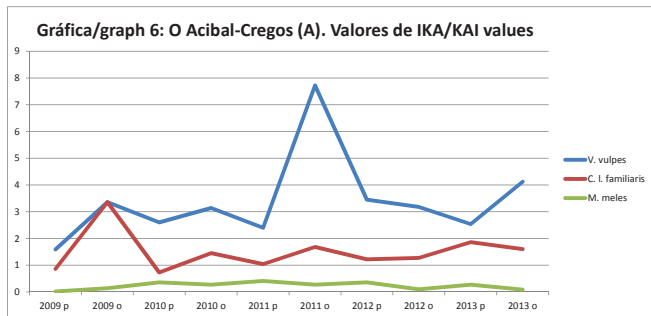
KAI values obtained for rabbits and hares (graph 5) reveal the scarcity of hares that there is, and the fact that they will be endangered species in the region if we not take measures to stop this.



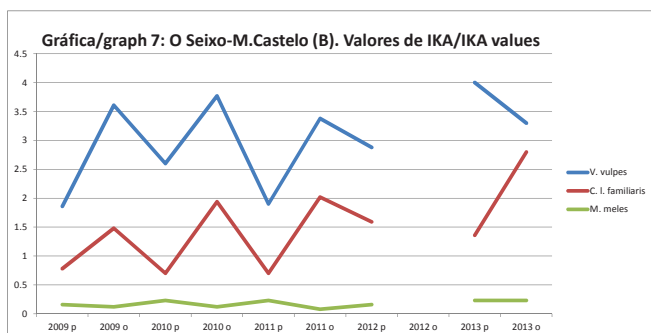
Fox: The graphs representing foxes and dogs are somewhat similar.

This is due to the KAI values rising during autumn, during

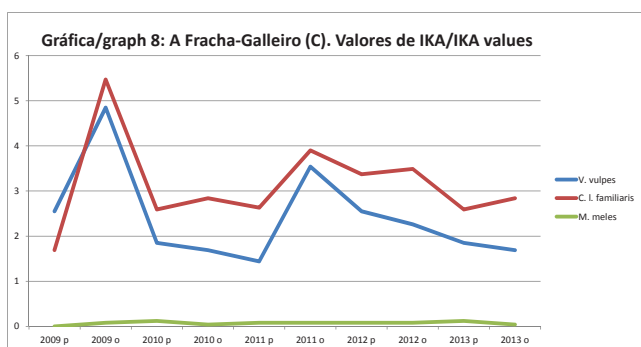
caza, etc. Por comparación, o aumento dos valores de IKA dos cans no outono débese á actividade dos cazadores.



Os raposos non son abundantes, pero manteñen boas poboacións nos itinerarios A e B, con valores de IKA entre 2 e 4; sendo algo menos numerosos no itinerario C, A Fracha - Galleiro (gráficas 6, 7 e 8). O pico con valor superior a 7 no Acibal débese, sen dúbida, a unha crianza moi exitosa en dito itinerario. A mosan certa adaptabilidade a ambientes humanizados e tamén se observan con frecuencia nas veigas, leiras, etc., xunto ás poboacións.



Os cans: son moi frecuentes e numerosos no itinerario C (A Fracha – Galleiro), o de maior densidade de poboación humana, onde os lobos son moi escasos e só aparecen raras veces. No itinerario C os cans campean libremente polos montes todo o ano, indicando a humanización destes montes.



Teixugos: os itinerarios non foron deseñados para eles, pois son máis frecuentes nas ladeiras baixas de

their breeding time. In spring they decrease again because of winter mortality, hunting, etc. As a comparison, the rise of KAI values of dogs during autumn is caused by the hunting activities.

Foxes are generally rare, but there are big populations in the itineraries A and B which present KAI values from 2 to 4; and are not commonly found in itinerary C, A Fracha – Galleiro (graphs 6, 7 and 8). The highest value, higher than 7, in the Acibal happened due to a successful breeding process. Foxes can adapt to human environments and are also found in meadows and properties.

Dogs: they appear frequently in itinerary C (A Fracha – Galleiro), the itinerary with the highest human population density, in which wolves are scarce and they rarely appear in the studies. In this itinerary dogs wander freely through the mountains all year long, a fact that shows the humanisation of the region.

European badgers: the itineraries were not designed for them, since this animals live in the low parts of the mountains, in the forests and meadows.

We would like to stress some facts that we observed:

They are rare (KAI values under 0,5), but they are stable and they even appear every year in the same points. They are more scarce in itinerary C (A Fracha – Galleiro), in the mountains that are under a bigger human influence. Habitat loss and degradation in itinerary C has a negative effect on badgers.

Wolves: three groups used to live in the mountain ranges which are crossed by itineraries A and B.

Graph 9 shows KAI values of the three itineraries. The results of the censuses of autumn are not better than the ones of spring, a potential indicator of how they suffer all year long due to poaching, apart from the fact that cubs do not leave a big amount of trails. Adult wolves can leave more trails during mating time (February and the beginning of March).

Itinerary A: a stable group consisting of adults, young animals and cubs raised in Acibal mountain range.

We observe many trails from wolves during 2009. They appear to be abundant too in 2008 and 2007.

ditas serras, entre bosques, leiras e veigas.

Salientamos un par de feitos, que observamos:

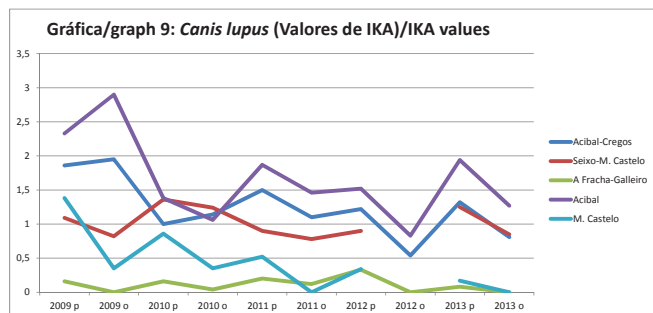
Son pouco frecuentes e pouco numerosos (valores IKA menores de 0,5). Pero son bastante regulares, con poucas fluctuacións. Incluso solen ser repetitivos nos mesmos puntos de mostreo ano tras ano.

Son máis escasos no itinerario C (A Fracha – Galleiro), nos montes máis humanizados. Non se adaptan a esas circunstancias tanto coma os raposos.

A forte degradación do hábitat, que se observa no itinerario C, incide negativamente sobre os teixugos.

Os lobos: tres grupos familiares de cría vivían nas serras cruzadas polos itinerarios A e B.

A gráfica 9 recolle os valores de IKA estimados nos tres itinerarios. Os resultados dos censos de outono non melloran aos de primavera e isto pode ser un indicador da presión, que sofren todo o ano por caza furtiva, ademais da escaseza de rastros que deixan os lobatos. Sen esquecer, cós adultos poden deixar máis rastros territoriais en tempo de celo (febreiro e primeiros de marzo).



Itinerario A: un grupo familiar estable e criando na serra do Acibal, con numerosos avistamentos de adultos, xoves e cachorros.

Observamos a abundancia de rastros de lobos no ano 2009 neste itinerario. Pero tamén eran abundantes no 2008 e 2007.

A explicación desta abundancia pode estar nas queimas forestais do 2006, cando unha boa parte desta serra quedou arrasada polo lume. Morreron no lume algúns garranos e corzos. E os que quedaron atopáronse en difíciles circunstancias.

Outra hipótese que manexamos é, que nos anos húmidos os garranos crían máis e mellor. De tal xeito, que os lobos dispoñen de máis alimento e, no ano seguinte,

An explanation of this abundance might be the controlled burnings of 2006, during which a part of the mountain range was destroyed by the fire. Some wild horses and deer were killed in it. And the ones who survived found themselves in bad circumstances.



Tras unha queima, acontecida en agosto do 2006 no Acibal, apareceron once eguas e tres poldros carbonizados. A Anduriña, serra do Acibal (A1) (agosto 2006). After a controlled burning in Acibal mountain range during August 2006, eleven carbonised mares and three foals were found in the mountains. A Anduriña, Acibal mountain range (A1) (August 2006).

An alternative hypothesis is that during wet years, wild horses reproduce more. Consequently, wolves have more food available and, in the next year, he will reproduce more too. Their number would increase after a response time of one year. Therefore, long term verifications will be needed.

The decrease in the number of wolves during autumn 2012 coincides with the death of the wolf (mother) by poaching and the consequent death of the cubs in September.

Itinerary B: two families. One in Seixo mountain range (B1) and the other one in Mount Coirego and A Arcela (B2). 2-month cubs, their mother and their trails were seen in both mountain ranges (B1 and B2).

Itinerary C: KAI values in this itinerary reflect the scarce presence of wolves since 2009.

We observed trails and collected reliable information of the presence of a group of 4 or 5 wolves in the mountains in 2006 and 2007, after years of absence. During winter 2007 we stopped finding trails, due to poaching.

Currently, the mountains are visited occasionally by some wolves that leave their usual territory. The size of the tracks of wolves proves that the animals are adult, and not young.

criarían mellor. Fariáanse máis numerosos, cun tempo de resposta dun ano respecto aos garranos. Pero isto necesitará comprobacións a longo prazo.

O baixón de lobos no outono do 2012 coincide ca morte, por caza furtiva, da loba e a consecuente morte dos cachorros, de catro meses, en setembro. Feito que puidemos comprobar no monte.

Itinerario B: dous grupos familiares. Un na serra do Seixo (B1) e outro entre monte Coirego e A Arcela (B2). Avistamentos de cachorros de dous meses e rastros de cachorros de 2 – 3 meses, acompañando á nai, simultáneos en ambas serras (B1 e B2) fundamentan a nosa opinión.

Itinerario C: os valores de IKA neste itinerario reflicten a escasa e pouco frecuente presenza de lobos desde o 2009.

Observamos moitos rastros e recollemos información fidedigna da presenza constante, e estable, dun grupo de 4 – 5 lobos nos montes deste itinerario nos anos 2006 e 2007, despois de once anos de ausencia. No inverno 2007 – 2008 deixamos de atopar rastros deles e os informantes coincidiron en indicarnos a súa ausencia; insinuando a súa caza furtiva con venenos.

Actualmente os montes deste itinerario son visitados ocasionalmente por escasos lobos adultos, que se desprazan fóra do seu territorio habitual. O tamaño das pegadas destes lobos correspondía a animais adultos e non a posibles xoves dispersantes.

O territorio que cruza o itinerario C está moi humanizado e as presas habituais dos lobos, os garranos, son escasas. O censo de garranos neste itinerario baixou duns 70 no 2008 a uns 30 no 2013. Estes montes están converténdose en áreas de recreo de Vigo e Pontevedra. Motos, quads, ciclistas, todoterreos, etc. transitan e compiten por estes montes en número alto, crecente e descontrolado desde o 2008.

O itinerario B3 (Monte Castelo): merece un comentario aparte.

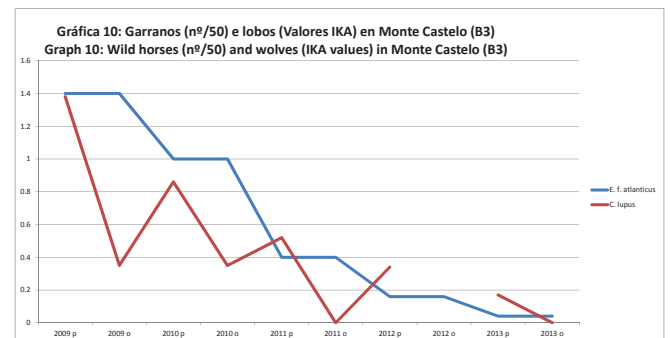
Monte Castelo atópase preto do monte Coirego – A Arcela e no mesmo cordal. Pero observamos en Monte Castelo un rápido descenso do número de rastros de lobos, pasando de valores de IKA de 1,3 no ano 2009

The territory across itinerary C is humanised, and the common prey of the wolf, the wild horse, is scarce. The number of wild horses decreased from 70 animals in 2008 to 30 in 2013. These mountains are becoming recreation areas in Vigo and Pontevedra. An uncontrolled amount of motorbikes, quads, bikes and cars travel and race in the mountains since 2008.

Itinerary B3 (Mount Castelo): deserves an independent commentary.

Mount Castelo is in the same hill range as Mount Coirego – A Arcela, and not far from it. But in Mount Castelo we observed a sharp decrease in the number of wolf trails (KAI values from 1,5 in 2009 to 0 in 2013 (graph 10).

It is not the case of human influence, since this area is less affected than Acibal (A1).



The only change observed between the years 2009 and 2013 in Mount Castelo was the complete lack of wild horses. In 2009 it had a headcount of 70-80, and in 2013, of 0. The owners sold all the wild horses after the enforcement of a decree about the identification of wild horses by the Government of Galicia (Decreto de Identificación Equina 142/2012).

Graph 10 reflects the facts mentioned. The enforcement of the decree negatively affects wild horses and wolfs.

In Castrove mountain range, indicated in the map, a foal was killed by wolfs in 2009. We also have reliable sources that informed us of seven dead foals that were seen next to two wolfs during the same years.

The trails seen in 2010 and the bites on the foals' legs in 2010 and 2011 confirm the presence of wolfs in Castrove since 2009 until 2011.

These wolfs could be coming and going from

a cero no ano 2013 (gráfica 10).

Non se trata dun caso de humanización do monte, pois actualmente é menos transitado có Acibal (A1).

O único cambio observado entre 2009 e 2013 no Monte Castelo foi a retirada total de garranos de dito monte. Monte Castelo pasou dun censo de 70 – 80 garranos no ano 2009 a ningún no ano 2013. Os besteiros venderon todos os garranos, como consecuencia da aplicación do recente Decreto de Identificación Equina (142/2012) da Xunta de Galicia.

A gráfica 10 reflicte estes acontecementos. Para os garranos e os lobos as consecuencias da aplicación deste decreto son evidentes e nefastas.

Sinalamos no mapa 1 a serra do Castrove, onde comprobamos a morte dun poldro polos lobos no 2009. Temos tamén referencias fidedignas de sete poldros mortos e de varios avistamentos de dous lobos neses anos.

Rastros que vimos no 2010, e poldros que apareceron mordidos nas patas nos curros do 2010 e 2011, confirman a presenza estable de lobos no Castrove desde 2009 a 2011 inclusive.

Pode tratarse de lobos procedentes do Acibal (A1), que van e volven, ou ben, que se estableceron definitivamente no Castrove neses anos. Recordamos que no Castrove nos anos 2008 – 2010 había unha poboación duns 200 – 220 garranos.

Sexa como fose, para chegar ó Castrove, tiveron que cruzar dúas estradas nacionais, unha autovía, a vía do tren, e pasar entre un polígono industrial e moitos chalés.

Actualmente o censo de garranos do Castrove descendeu moito a causa da aplicación do Decreto de Identificación Equina. A día de hoxe poden quedar uns 40 – 50 ou tal vez menos. No curro do 2013 apenas había 50. Tamén sería interesante comprobar o que pasou con eses lobos. É posible que se estea repetindo aquí o que sucedeu no Monte Castelo.

DISCUSIÓN E CONCLUSIÓNS

Recentemente os garranos foron elevados á categoría de subespecie (BARCENA 2009; 2012) baixo o nome de *Equus ferus atlanticus*. Na súa descrición ponse de

Acibal (A1), or could have already lived in Castrove during those years. In the area, during the years 2008-2010 there was a population of 200-220 wild horses.

Be this as it may, in order to get to Castrove, they would have had to cross two national roads, one highway, a railroad track, an industrial park and several houses.

Currently, the census of wild horses in Castrove has suffered a big decrease since the enforcement of the decree about the identification of wild horses (Decreto de Identificación Equina). Today the number of wild horses is not higher than 40-50. After the retrieving the wild horses from the mountains, less than 50 were counted. It would also be interesting to see what happened to the wolf. There is a possibility that the same as in Mount Castelo is now happening here.

DISCUSSION AND CONCLUSIONS

Recently, wild horses were raised to the category of subspecies (BARCENA 2009; 2012), under the name of *Equus ferus atlanticus*. Its description highlights the wild nature of this animals of Galicia.

The genetic studies suggest the high genetic diversity of wild horses in Northern Iberia region as well as in the Caspian Sea region (WARMUTH et al. 2011). It appears that those regions provided refugia for the wild horses during the Holocene and Glaciar period.

We consider the wild horses as part of the wild life of Galicia, in accordance with F. Bárcena (BARCENA 2012), because there is no document that states the taming of these animals.

Recent thesis studies reveal the importance of the wolf as a subspecies in Northern Iberia region (HERMIDA 2009). The thesis concludes with the statement of wolfs having revolutionary relationships with the wild horses as subspecies under the name of *Canis lupus gallaicus*.

The close relationship between wild horses and wolfs had already been insinuated in the management plan of the wolf in Galicia (XUNTA DE GALICIA 2008). More recently, several authors demonstrated the close dependence that the wolf population of West and North Galicia have with their favourite prey: wild horses.

relevo o carácter salvaxe de dita poboación de cabalos de Galicia.

Os estudos xenéticos ao respecto indican a alta diversidade xenética dos cabalos silvestres do norte ibérico (garranos, asturcón, potokka, navarro) así como dos cabalos da área do mar Caspio (WARMUTH *et al.* 2011). Todo parece indicar, que tales rexións actuaron como refuxios glaciares e holocénicos de cabalos salvaxes.

Polo feito de non haber ningún documento de domesticación dos garranos de Galicia, considerámoslos como parte da fauna salvaxe de Galicia, de acordo con F. Bárcena (BARCENA 2012).

Recentes estudos de tese recuperan para os lobos a validez da subespecie do norte ibérico (HERMIDA 2009). En dita tese conclúese cós lobos tiveron, e teñen, unha estreita relación evolutiva cos garranos e recupérase para eles o nivel subespecífico, baixo a denominación *Canis lupus gallaicus*.

A estreita relación entre garranos e lobos xa fora insinuada no plan de xestión do lobo en Galicia (XUNTA DE GALICIA 2008). Máis recentemente diversos autores (LLANEZA *et al.* 2012; LOPEZ BAO *et al.* 2013) puxeron de manifesto a estreita dependencia, que teñen as poboacións lobeiras do oeste e norte galego cas da súa presa preferida: os garranos.

No presente traballo destacamos a presenza estable de tres grupos familiares de lobos, un deles xa citado na bibliografía (LLANEZA *et al.* 2005). A presenza de lobos nas serras cruzadas polos itinerarios A, B2, B3 e C tamén foi citada na bibliografía (LLANEZA *et al.* 2009 a) sen facer mención á cría.

Aquí a distribución territorial dos lobos coincide con poboacións fortes e estables de garranos. Tamén concluímos, que aló onde foron retirados os garranos durante o período de estudio, os lobos tamén desapareceron. Iso mesmo sucedeu nestes anos no monte Faro de Vimianzo (LLANEZA, *com. pers.*) e tamén na Dorsal Galega Norte (BARCENA, *com. pers.*).

As flutuacións poboacionais dos lobos de aquí, poden estar relacionadas cas flutuacións na cría de poldros de garranos salvaxes, cun tempo de resposta dun ano. Os nosos censos de primavera de 2015 no Acibal (inédito)

The aim of this paper is to highlight the presence of three wolf groups, one of them already cited in the bibliography (LLANEZA *et al.* 2005). The presence of wolves in the mountain ranges crossed by the itineraries A, B2, B3 and C has also been cited in the bibliography, with no mention of breeding.

The territorial distribution of the population coincides with big wild horse populations. We also mention the fact that in the places where wild horses were removed during a study period, wolves also disappeared. The same happened during these years in Mount Faro de Vimianzo (LLANEZA, *com. pers.*) and in North Dorsal Galega (BARCENA, *com. pers.*).

The population fluctuation of wolves may be related to the fluctuation in foal breeding, with a response time of a year. Our censuses of spring 2015 in Acibal (unpublished) suggest that the hypothesis may be correct. These wolves bear poaching and the humanisation of the mountains. In those mountains with a big human influence, as in itinerary C, wolf would be rare. In the mountains where there are no longer wild horses, the wolf has disappeared.

KAI values between one and two were estimated for wolf in Ancares mountain range, where sometimes reach higher values (LLANEZA *et al.* 2009 b). The method used in Ancares was not the same as the one used here, and this must be considered. In Ancares, itineraries were short (1 to 7 km) and were done in places with an abundance of trails, in meeting points or “rendez vous”. The wild boar and roe deer population remained stable during this time. Wild boars are not very common, and roe deer are scarce. They could never substitute wild horses in the wolf’s diet.

Rabbits are related to brushwood. Here gorse (*Ulex sp*) is common, but also the common broom (*Sharotamnus scoparius*) and other brooms. They experience big population fluctuations and south of river Verdugo in 2013 they were affected by an epizootic disease that currently (2015) has divided the population into tens, especially in the humanised mountains. We can also observe how the clearing and herbicides have a highly negative impact on rabbits.

apuntan, a que esta hipótese pode ser acertada.

Estes lobos soportan caza furtiva e certo grado de humanización dos montes. Nos montes moi humanizados, no itinerario C, vólvense moi raros. Pero nos montes sen garranos desaparecen.



Caza furtiva. Loba cachorra de 10 meses morta de disparo de rifle nunha cacería de xabarís. Foi denunciada; pero non se sancionou nin ó coto ni aos cazadores. O Coirego (B2) febreiro de 2012.

Poaching. 10-month female wolf cub dead by gunshot during a wild boar hunting. It was reported, but never penalised. O Coirego (B2), February 2012.

Valores de IKA entre un e dous foron estimados para os lobos da serra de Ancares, onde ás veces superan moito eses valores (LLANEZA *et al.* 2009 b). Pero hai que considerar, que o método utilizado en Ancares non foi o mesmo que aquí; realizándose aló itinerarios curtos (1 a 7 km) en lugares de abundancia de rastros, nos puntos de encontro ou “rendez vous” .

As poboacións de xabarís e corzos mantivéronse bastante estables neste período. Os xabarís non son abundantes, e os corzos son moi escasos. Uns e outros nunca poderían substituír aos garranos na dieta dos lobos.

Os coellos aparecen moi ligados ás matogueiras. Aquí predominan as toxeirias (*Ulex sp*); pero tamén poden ser numerosos nas xesteiras (*Sbarotamnus scoparius*) e piorneiras (*Genista florida*). Teñen grandes fluctuacións poboacionais e ó sur do río Verdugo no ano 2013 víronse afectados por unha epizootia, que actualmente (2015) ten dezmadras a todas poboacións censadas, pero especialmente nos montes máis humanizados. Tamén observamos cós grandes rozados e os herbicidas aféctanlles moi negativamente nos puntos de mostreo afectados por estes.



Sotobosque de eucaliptal tratado con herbicida, dous anos despois da fumigación. Nos tres puntos de mostreo IKA que había na súa linde desapareceron: xabarín, corzo, lobo, raposo, teixugo e esquivos. Monte de Morañó (Campolameiro, xuño de 2014) Serra do Acibal (A1).

Eucalyptus undergrowth treated with herbicide, 2 years after spraying. In the three KAI sampling points the next animals disappeared: wild boar, roe deer, wolf, fox, European badger and squirrel. Mount Morañó (Campolameiro, June 2014) Acibal mountain range (A1).

Hares are very scarce and can only be found in Seixo mountain Range. They live in meadows surrounded by brushwood, where they can coincide with rabbits. Their population is in danger of extinction, and a recovery plan is needed in the province.

There are big and stable populations of foxes here, with appropriate levels of abundance in humanised areas (itinerary C). It is the carnivore that most easily adapts do its surroundings.



Xestido, O Seixo (B1). Hábitat ocupado por garranos salvaxes e vacas en extensivo. Frecuentado por coellos, lebres, raposos, xabarís e lobos. Visitado tamén, con menos frecuencia, por gato montés, teixugo, tourón, lontra e denonciñas (*Mustela nivalis*).

Xestido, O Seixo (B1). Habitat occupied by wild horses and cows. Frequented by rabbits, hares, foxes, wild boars and wolves. Less frequently by wildcats, European badgers, polecats, otters and least weasels.

On the other hand, European badgers are rare in

As lebres son moi escasas e atópanse unicamente na serra do Seixo. Viven nas campas e brañas arrodoadas de matogueira aberta. Aí poden coincidir cos coenllos. A súa poboación corre serio perigo de extinción na comarca, e necesita un urxente plan de recuperación en toda a provincia.

Os raposos manteñen aquí boas poboacións, bastante estables, que mesmo están en densidades aceptables en zonas humanizadas (itinerario C). Sen dúbida é o carnívoro de monte máis adaptable.

Pola súa banda os teixugos aparecen como pouco numerosos nos nosos itinerarios. Os itinerarios non foron deseñados para eles; pero inda así podemos concluír que son escasos, en base ós valores IKA obtidos e outras observacións nas ladeiras baixas destas serras.

Outros carnívoros, que ocasionalmente deixaban rastros nos itinerarios de IKA. Son realmente raros: gato bravo, lontra, tourón, algaria e *Martes sp.*, (máis probablemente *Martes foina*, en base a cinco avistamentos nosos realizados pola comarca, que sempre foron de *Martes foina*).

O gato bravo (*F. silvestris*) localizábase en pioneiras e campas nos montes máis despoboados. O tourón (*M. putorius*) sempre preto de regatos, brañas e charcas, o mesmo hábitat da lontra (*L. lutra*). *Martes sp* aparecía na beira de bosques. As algarias (*G. genetta*) tiñan unha letrina, utilizada pouco tempo, sobre unhas rochas nos petróglifos de Cequeril.

Alteracións no hábitat:

Faise unha chamada de atención sobre o trato inaxeitado, que a Xunta de Galicia lle da ás matogueiras, realizando queimas controladas e subvencionando rozados a matarrasa de gran extensión. Ademais as queimas expoñen o solo a erosión e desertificación por rápida perda de fertilidade (GOMEZ - REY *et al.* 2013, a; GOMEZ - REY *et al.* 2013, b).

No período no que realizamos este traballo comprobamos a queima controlada de 51 hectáreas de monte na ladeira norte do L.I.C. Seixo – Cando (itinerario B1), realizadas en ladeiras con pendentes de entre 22 e 50 %. No 2008 unha queima controlada na ladeira occidental arrasou 30 hectáreas de monte. No ano 2014 repetíronse

the itineraries. These were not designed for them; they are scarce according to KAI values obtained in the low slopes in this mountain ranges.

Other carnivores, that occasionally left trails in KAI itineraries, are rare: wildcats, otters, polecats and martens (most likely *Martes foina* according to sightings in the region) among others.

The wildcat (*F. Silvestris*) can be found in meadows in the most deserted mountains. Polecats (*M. putorius*) are always found near small rivers and ponds, in the same habitat as otters. (*L. lutra*). *Martes sp* were found near forests. Genets (*G. genetta*) had a latrine for a short time on some rocks in Cequeril petroglyph.

Disruption of habitats:

We draw attention to inappropriate handling that the government of Galicia gives the shrubland, carrying controlled burnings and financing the damaging of shrubland. Controlled burnings leave the earth exposed to erosion and desertification due to the fast loss of soil fertility (GOMEZ - REY *et al.* 2013, a; GOMEZ - REY *et al.* 2013, b).



Queima controlada realizada por axentes da Consellería do Medio Rural. Tiña 600 m de fronte e afectou a unhas 13 Ha de monte, cunha pendente media de 35 %. Fragas – O Acibal (A1) (marzo de 2015).

Controlled burning by the ministry of rural development. It was 600 m long and affected 13 Ha of the mountain, causing the loss of 35% of Fragas – O Acibal (A1) (March 2015).

During the time we carried out the work we witnessed the controlled burning of 51 Ha in the North of Seixo – Cando (initerary B1), carried out in slopes between 22 and 50%. In 2008, a controlled burning in the western slope destroyed 30 hectares of land. In 2014 the same burnings were repeated, affecting 9 hectares of land in the North, five of which were done over already burned land in 2012. IN map 2 we show the affected areas.

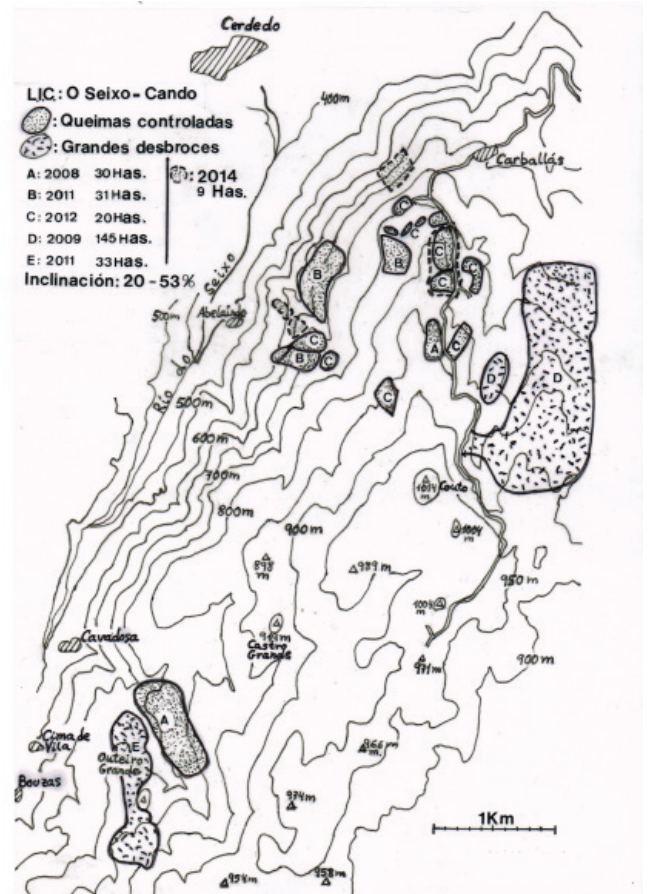
ditas queimas, afectando a 9 hectáreas de monte na ladeira norte, das cales cinco foron sobre terreo queimado no 2012. No mapa 2 indicamos as zonas de dito L.I.C. afectadas

Os garranos modifican o hábitat. Limitando o crecemento dos toxos favorecen á biodiversidade herbácea (RIGUEIRO *et al.*, 2012; MOSQUERA, 2013). Non esquezamos que cada garrano adulto come entre 1,7 e 2 toneladas anuais de toxos (BARCENA *com. pers.*). Son a única especie herbívora grande salvaxe en Europa. Deberían considerarse herbívoros – clave no sentido en que se aplica dito concepto en África (LEAKEY & LEWIN 1997).

Abrindo claros no bosque e matogueiras, os garranos favorecen aos coellos e lebres, pois ambos aparecían moi ligados a eles nos itinerarios de IKA. Os corzos tamén atopan mellor pasto. Neste período observamos como os xabarís, raposos e voitres aproveitaban as carroñas de garranos salvaxes, que deixan os lobos. Comprobamos o asentamento dun grupo de 20 Voitres (*Gyps fulvus*) e e dous Voitres negros (*Aegypius monachus*), dispersantes, en 2012 – 2013 no L.I.C. Seixo – Cando, (itinerario B1).

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Mapa 2 - Map 2

The wild horses change the habitat. By limiting the growth of gorse they favour the herbaceous biodiversity (RIGUEIRO *et al.*, 2012; MOSQUERA, 2013). We must not forget that each horse eats an amount of 1.7 to 2 tonnes of gorse each year (BARCENA *com. pers.*). It is the only big wild herbivores species in Europe. They should be considered herbivores – key in the sense that applies to the concept in Africa (LEAKEY & LEWIN 1997).

By creating glades in the forests, wild horses favour rabbits and hares, since these appeared linked to them in KAI itineraries. Roe deer also find grazing easier. During this period we observed how wild boars, foxes and ravens take advantage of carrion of wild horses that wolves leave behind. We also saw a settlement of 20 griffon vultures (*Gyps fulvus*) and cinereous vultures (*Aegypius monachus*) in 2012 – 2013 in Seixo – Cando, (itinerary B1).

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