Spatial dynamics of wild boar population: insights from a hunters' survey

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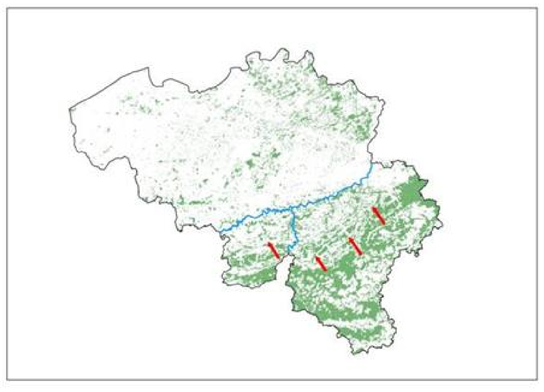
INTRODUCTION

Wild boar (*Sus scrofa L.*) population in Belgium as in most parts of Europe has increased dramatically during the last three decades. Several reasons may explain this increase: relative mild winter wheater condition, uncontrolled artificial feeding, more frequent mast production development of maize crop field and the difficulty of hunting (wild boar using slope and natural reserve as refuge areas). In Wallonia (Southern Belgium), as a consequence, the species have expanded its distribution area into agricultural landscape poorly forested. The impact of wild boar on agriculture and on road safety in these landscapes highlight the need for understanding factors shaping the spatial spread currently observed. To set up efficient management strategies in order to contain the population iti is important to increase the knowledge on the factors favouring the colonization process, however, movement of elusive animals over large spatial and time scale are rather difficult to understand. We present here partial advancement of an ongoing project based on a retrospective approach of wild boar population spreading in Wallonia (Southern Belgium).

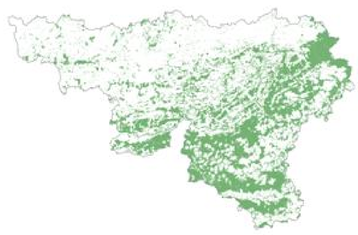


Direction of wild boar spread in Belgium

OBJECTIVE

The project aims at answering the following question: *What are the main environmental and agricultural factors that have affected wild boar progression towards northern part of Wallonia in Belgium? Hypothesis to be tested:*

- Wild boar spreading is facilitate along stream and forest corridors
- Development of maize fields have favoured the colonization of wild boar towards north of Wallonia



METHOD

Colonization map

Data on the spreading of wild boar since 1980 were inferred from a large survey proposed in 2010 to 15 Game Management Unit (GMU) situated northwards to the Ardennes regions. It is important to note that GMU in Wallonia are non-profit association based essentialty on volunteer, and as such do not possess any binding power on their members.

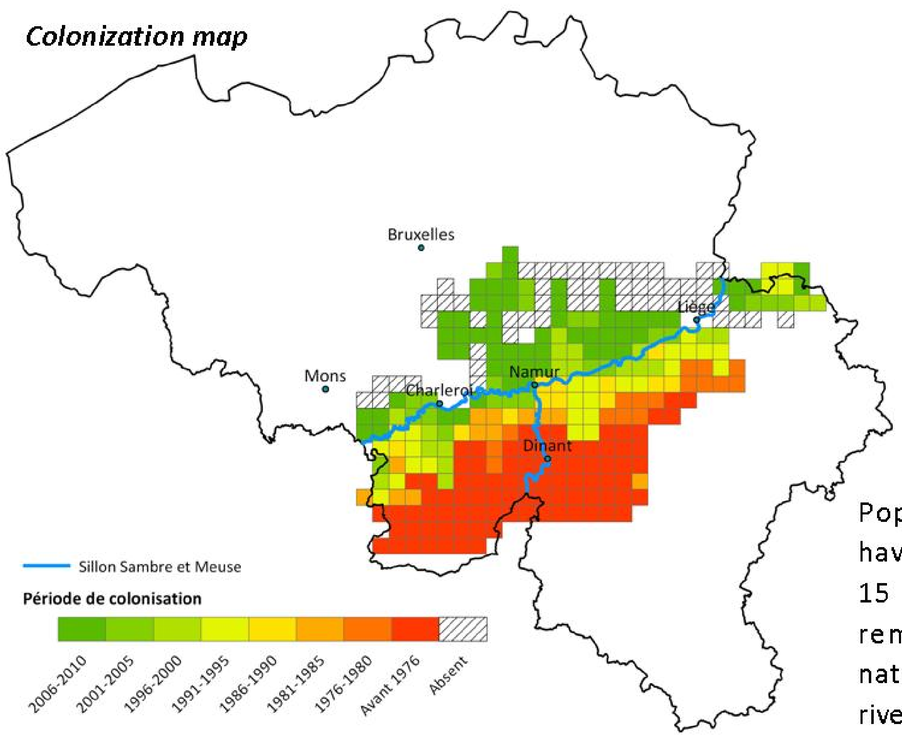
A questionnaire was sent by post to all gamekeepers members of these GMU. The questions aimed at knowing the current status (presence or absence) of wild boar, the types of presence (sporadic or regular), the starting period (time step of 5 years) of apparition of the species and the date of first wild boar shooting. The data collected were recorded into a GIS geodatabase. Limit of the hunting territories were digitised. Using the digitised hunting territories we derived a colonisation map at a 5x5 km grid scale. Grids with less than 5% of hunting areas were not considered for the analysis.

Influence of environmental and anthropic variables

Landscape composition (with particular emphasis to forest and maize areas), topography and human activity were studied as contributing factors to explain the spatial dynamic of wild boar population. For the period considered (1980 to 2010), the forest cover into the survey area is considered to be the same. Maize cover have highly change during the period considered. Retrospective analysis, based on hidden Markov chains using the software Arpentage (developped by J.-M. Mari (2002)) will be used to rebuilt maize cover during the considered period. Concretely the idea is to study the neighbourhood influence of these factors on spatial population processes that may influence wild boar range change between two time periods. Currently we are seeking for the most appropriate methods to put into relation these factors with the observed colonisation pattern.

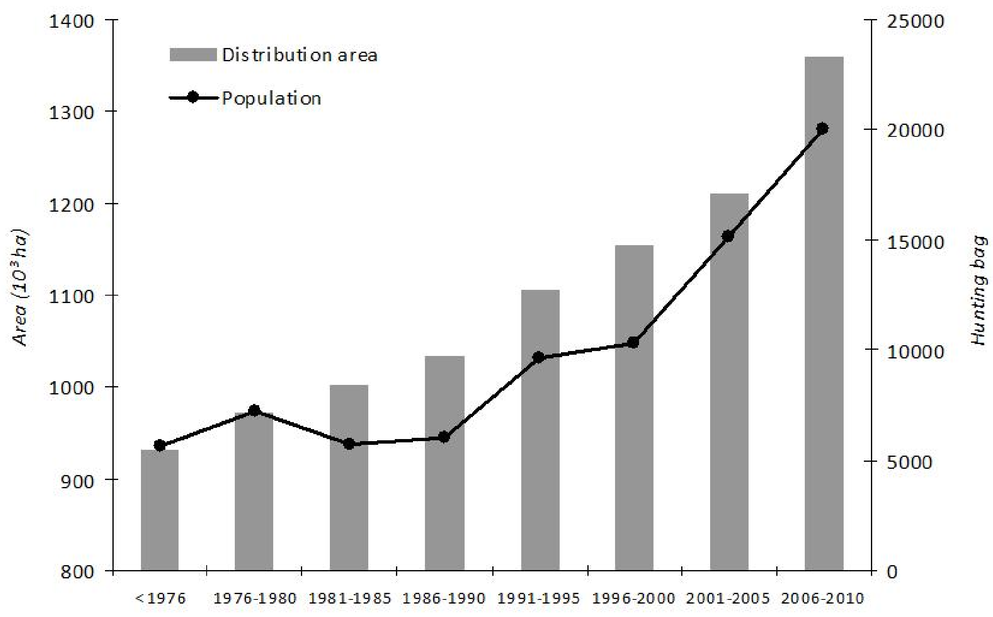
PRELIMINARY RESULTS

1303 questionnaires were sent in 2010. 470 correctly filled questionnaires were sent back. Response rate is of 36.1%. The hunting territories participating to the survey cover 20% of the total surveyed area and are largely well distributed to cover the whole area.



Population of wild boar have progressedUntil last 15 years, wild boar have remained south to the natural barrier create by rivers Meuse and Sambre.

Linking the colonization map with the hunting statitistics we may see that wild boar spread is accompanied by an important change in the wild boar range



PERSPECTIVES

Further work will consist in:

- validation of data from hunter through analysis of official hunting statistics. This also in order to consider the influence of wild boar abundance in the colonization process (density dependent effect at large spatial scale)
- Reconstruction of maize field cover distribution
- Development of the model linking patterns of colonization and environmental/anthropic variables

Mini-conclusion

Understanding the major factors that contributed to the spatial colonization of new territories by wild boar during these last three decades is of major importance to help developing efficient management strategies of the species in agricultural landscape.

A moving wild boar group: Towards north and its agricultural landscape?

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