

Tamworth pigs as ecological analogs of wild boar in a re-wilding scheme

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INTRODUCTION

The success of re-wilding schemes as a conservation tool is assumed to depend on the extent to which feral domestic herbivores can mimic the ecological effects of their wild ancestors. The Tamworth pig (*Sus scrofa scrofa*) has a semi-feral nature and rare breed status that makes it appealing for use in re-wilding schemes. However, its ecological impacts, and the extent to which they are similar to those of wild boar, are unknown.

Aim

To investigate the patterns of habitat use and ecological impacts of Tamworth pigs used in a re-wilding scheme and to compare this to what is known for wild boar.

Objectives

To compare patterns of digging and grazing during summer and winter

To compare pig diet during summer and winter

To compare plant and invertebrate communities in areas dug by pigs with that in non-dug areas

METHODS

The study was carried out at Knepp Castle, West Sussex, England where in January 2005 two Tamworth sows and eight piglets were introduced to a 283ha restored deer park. Data on the behaviour of the pigs, their diet and ecological impact were collected during summer (July 2005) and winter (December 2005–February 2006). We measured the proportion of the following components as % volume of each fresh excrement samples: roots, above-ground herbaceous material, beech mast, soil and invertebrates. Ecological impact on invertebrate and plant communities were surveyed in 12 dug areas in the grassland and 12 not-dug areas of grassland. Invertebrates were sampled using pitfalls and the % cover of each vascular plant species was assessed within a 2m radius around each trap.

Table 1. The composition of pig excrements collected in the summer and winter surveys. Figures are mean percentage composition by fresh volume (\pm SE).

Material	Summer percentage	Winter percentage
Herbaceous	99.93 \pm 0.06	16.70 \pm 5.00
Roots	-	1.13 \pm 0.44
Mast	-	14.33 \pm 2.10
Soil	-	62.67 \pm 4.11
Invertebrates	-	< 1%

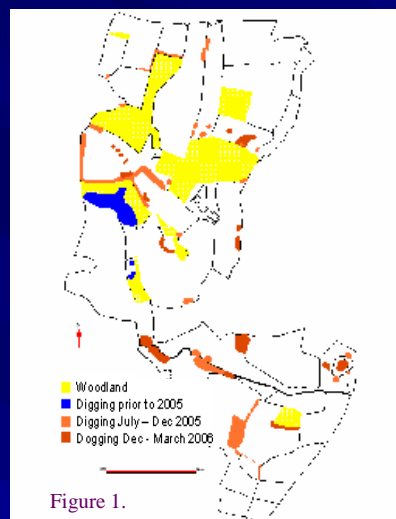
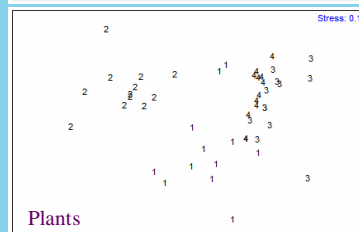


Figure 1.

MDS plots for invertebrate communities and plant communities. 1= summer dug areas; 2 = summer not dug areas; 3 = winter dug areas; 4 = winter not dug areas.



RESULTS & DISCUSSION

Pigs dug little during the summer but grazed all grasslands. In winter both woodlands and grasslands were used by pigs for rooting/digging but the pigs showed a preference for field edges, borders of roads, sparse woodland patches and the areas directly below and surrounding big trees. Diet showed a corresponding pronounced seasonal shift; in the summer the pigs fed almost entirely on herbaceous material whilst in the winter the pigs also fed substantially on mast and roots (Table 1). Pigs were also very frequently observed consuming earthworms and other invertebrates during digging but we were unable to detect many remains of invertebrates in the faeces.

An MDS and ANOSIM analysis of summer invertebrate community composition for dug areas and not dug areas found no overall significant difference between the dug and nearby non-dug invertebrate communities in either the summer ($R = 0.067$, $P = 0.074$) or winter ($R = 0.031$, $P = 0.243$) survey. The close to statistically significant differences in the summer survey were largely caused by the invertebrate communities of the dug areas having a lower proportion of hemiptera and aranea that need foliage as part of their habitat.

There were significant differences in the composition of the plant communities on dug and not-dug areas in both the summer ($R = 0.777$, $P = 0.001$) and winter survey ($R = 0.405$, $P = 0.002$) (Figure 3). In the summer survey, digging activity the previous winter resulted in areas being opened up and colonised by early successional species such as *Ranunculus repens* (creeping buttercup) *Trifolium repens* (white clover) and *Veronica arvensis* (field speedwell). In the winter survey, re-colonisation had not had time to occur but the pigs were preferentially disturbing grasses (particularly *Lolium perenne*, (Rye grass)).

CONCLUSIONS

Tamworth pigs used in a re-wilding scheme appear to share some ecological attributes with wild boar. Both show seasonal variation in activity patterns. Causes determining choice of areas to dig are unknown but may relate to soil compaction or water content as well as to food availability in the soil. Both pigs and boar winter dig for worms and invertebrates as well as tubers and graze on grasses during the summer. Such disturbance may enhance beta species diversity, depending on frequency and pattern of disturbance. The role played by boar and feral pigs in biodiversity conservation at a landscape scale requires further investigation.