

## ***Interactive comment on “The effects of grazing on the spatial pattern of elm (*Ulmus pumila* L.) in the sparse woodland steppe of Horqin Sandy Land in Northeastern China” by M. Zhang et al.***

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RC:When I read your work title I had the impression that you will investigate the interaction between some soil characteristics and its relation with the spatial pattern of elm. The title is too large (The effects of grazing on the spatial pattern of elm (*Ulmus pumila* L.) in the sparse woodland steppe of Horqin Sandy Land in Northeastern China ) you can resume it especially the final part , you already told us about the exact location in your abstract.

AC:Thanks for your comments. In fact, it is the first time to receive the comments on the range of title. We did not how to response it, but just listed papers with similar title.

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Jiang et al. 2014. Effects of vegetation cover on recruitment of *Ulmus pumila* L. in Horqin Sandy Land, northeastern China. *Journal of Arid Land*, 6(3):343-351.

Tang et al. 2014. Effects of exclosure management on elm (*Ulmus pumila*) recruitment in Horqin Sandy Land, Northeastern China. *Arid Land Research and Management*, 28(1):109-117

Jiang et al. 2014. Plantations of native shrub species restore soil microbial diversity in the Horqin Sandy Land, northeastern China *Journal of Arid Land*, 6(4):445-453.

Li et al. 2014. Soil seed bank characteristics beneath an age sequence of *Caragana Microphylla* shrubs in the Horqin Sandy Land region of Northeastern China. *Land research and management*, 25(3):236-243.

Zhou et al.2012. The return and loss of litter phosphorus in different types of sand dunes in Horqin Sandy Land, northeastern China. *Journal of Arid Land*, 4(4):431-440.

RC:In the abstract part you used an abbreviation DBH, It will be good and easy for reader if you refer just one time to its meaning Diameter at Breast Height (DBH) and then you can use the abbreviation.

AC:Thanks for your comments. We revised it follow your advice.

Page 3340 Line 4 : .. different diameter at breast height(DBH) classes..

RC:In the study area, you wrote (two permanent plots, with one of 44.2 ha (650 m\_680 m) that was fenced, and another of 10.5 ha (300 m\_350 m) that was grazed), but when you see the figure 1a you can found that the maximum x value is 250, in addition to the trees that located in the margin of this plot is parallel to 200 x value, that mean the real area will be 7 ha (200 \_ 350m) not 10.5ha. I think it will be good if modified the size of the two figures with different size, the big area have a big figure and the small area has the small one, and you can save or change the grade scale. Also, it will be good if you give to the points three different colors related to your studied classes, class 1(10cm\_DBH\_15cm), class 2 (15cm<DBH\_20cm), and class 3 (DBH>20cm),and then

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you can present a legend with the color meaning in the figures.

AC:Thanks for your comments. We do our experiment in the fenced and grazed plots. The area of these plots is certain. Although the elm trees are not fully distributed in the grazed plot, it is also worked on the density of elm trees. Therefore, we did not agree with your comments that the area of grazed plot should be modified. Of course, "give to the points three different colors related to your studied classes" is a nice idea. We had to say it is a technical improvement and could have less contribution to improve our understanding.

RC:In the part of Data Collection and Analysis you referred to Ripley's  $L(r)$  value = 0 for completely spatial randomness (CSR),  $L(r) > 0$  for aggregated pattern, while  $L(r) < 0$  for regular pattern, after your analysis you did not mention to this values in your discussion part even though it is explained in some results figures.

AC:According to Ripley function in spatial pattern analysis, the Ripley's  $L(r)$  value could be considered as an indicator of spatial patterns. The spatial patterns, which is known based on Ripley's  $L(r)$  value, is more important than Ripley's  $L(r)$  value itself. Similar analysis is in the literature, for example, Gray and He (2009).

Gray, L. and He, F.: Spatial point-pattern analysis for detecting density-dependent competition in a boreal chronosequence of Alberta, *Forest Ecol. Manag.*, 259, 98–106, 2009.

RC:The discussion part it is not easy to follow, and the conclusion part it should improve to be clearer, you said degraded sandy land of Northern China, while you did not present any indicators about how is the degradation in your studied area.

AC:Thanks for your comments. Discussion in the degradation of Horqin Sandy Land is a long story and not the focus of this manuscript. We listed some literature talking on the degradation sandy land of Northern China.

Miao et al. 2015. Effectiveness of shrub planting and grazing exclusion on degraded

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sandy grassland restoration in Horqin sandy land in Inner Mongolia. *Ecological Engineering*, 74:164-173.

Zhang et al. 2012. Effectiveness of ecological restoration projects in Horqin Sandy Land, China based on SPOT-VGT NDVI data. *Ecological Engineering*, 38(1):164-173.

Han et al. 2010. Change trends for desertified lands in the Horqin Sandy Land at the beginning of the twenty-first century. *Environmental Earth Sciences*, 59(8):1749-1757.

We thank you for reading our manuscript and for giving advices.

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Interactive comment on *Solid Earth Discuss.*, 7, 3339, 2015.

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