Reply to Reviewer #1:

General comments: This manuscript reports data from a comprehensive study in northern Mongolia that assessed leaf morphological traits at eight varying grassland communities distributed along a precipitation gradient. The effects of grazing on leaf area, leaf mass, and biomass were noted for hundreds of species at 6 of the 8 community types. The results suggest that SLA was a useful trait to classify functional group differences, but the greatest predictor of differences in SLA was species identity. Additionally, growth responses following grazing varied among communities, with slight positive responses in wetter regions, and negative responses in drier regions. I believe this research has considerable value for grassland ecologists worldwide. For this, I recommend it to be published after some revision.

With the monstrous number of species, locations, classifications, and comparisons used in this manuscript, it is imperative that the organization and presentation of the results and discussion are as concise as possible. For the sake of better presentation and interpretation of the results, I suggest the following specific comments and technical corrections.

1. Comments: In paragraph 2.2, It is important for authors to address clearly why the aboveground biomass approximate the net primary productivity in temperate grassland during July to August.

Reply: We very much appreciate this important point made by the reviewer. In the Inner Mongolia grassland, both monthly mean temperature and precipitation reach their annual peak concurrently in July. Based on the long-term observations of vegetation dynamics, the standing aboveground biomass in our study area usually reaches its annual peak in August, which has been commonly used to approximate the aboveground net primary productivity (ANPP) in many previous studies in the Inner Mongolia grassland (see Bai et al. 2004. Nature 431:181-184; Bai et al. 2008. Ecology 89: 2140-2153) and as well as in the North America short grass steppe

(Lauenroth and Sala. 1992. Ecological Applications 2: 397-403).

In this study, the vegetation and soil sampling were conducted during July 28 to August 14, 2007, when the standing aboveground biomass reached its annual peak. Thus, we used the peak standing aboveground biomass to approximate ANPP at the ungrazed sites, but it was only used for standing aboveground biomass at the grazed sites. We have added this information in the Methods section and revised the text accordingly in the current version of our manuscript.

2. Comments: Paragraph 2.5 should be shortened, explanation to so called "biological realm" is unnecessary.

Reply: We agree that Paragraph 2.5 was a little bit redundant. We have totally reorganized this paragraph as per suggested by the reviewer.

In the current manuscript (**2.2 Vegetation and soil properties**), we just mentioned that all species were further classified into functional groups based on their life forms and water ecotypes. Four life forms are composed of perennial grasses (PG), perennial forbs (PF), annuals and biennials (AB), and shrubs, semi-shrubs and trees (SS). Five water ecotypes are consisted of xerophytes (X), meso-xerophytes (MX), xero-mesophytes (XM), mesophytes (M), and hygrophytes and hygro-mesophytes (HH).

3. Comments: Paragraph 3.2 can be simplified to make it understood easily, or it can be deleted because it has less relation with your main topic.

Reply: We have simplified this paragraph for clarity and deleted the information less relevant to our main topic as per suggested.

In the revised paragraph, we just presented the leaf traits distribution of 263 species from eight ungrazed communities, representing four vegetation types (i.e., meadow, meadow steppe, typical steppe, and sand dune). In Fig. 1, we only exhibited the variations in specific leaf area across different life forms and water

ecotypes, which are further discussed in the Discussion section of the revised manuscript.

4. Comments: In the last sentence of text of paragraph 3.5 (P9957L10), some Figures or Tables should be cited to show your judgement.

Reply: We have cited these Figures and Tables in the revised text as suggested.

5. Comments: Similarly, the authors should cite several Figures or Tables to show the judgements or conclusions.

Reply: We have revised the Results section as suggested by the reviewer.

6. Comments: P9960L2-11, The paragraph "It has…2002)" can be deleted or removed to discussion

Reply: We have removed the whole paragraph as per suggested.

7. Comments: Technical corrections

(1) Comments: P9946, L2-5, "However, there has been…controversy on…, thus more …at the species level", the authors should say more about controversy in species level, so that the research on species level is necessary. That is, to set up the connection between the "controversy" and "researches on species level".

Reply: We have totally revised the abstract as suggested by the reviewer. In the revised manuscript, the abstract organized by focusing on four major points: current controversy, objectives, methodology, and major findings.

(2) Comments: P9946, L19, "ecosystem functioning" should be specified here, which functioning?

Reply: In this study, the ecosystem functioning refers mainly to community properties, such as leaf area index, leaf biomass, and standing aboveground biomass in particular. We have added this information and revised the abstract accordingly.

(3) Comments: P9946, L24, “it is feasible to” should be substituted by “imply that we can”

Reply: Revised accordingly.

(4) Comments: P9947, L10, “focused” →focusing

Reply: Revised as per suggested.

(5) Comments: P9947, L26, “and put forward it is” →which makes it

Reply: Done.

(6) Comments: P9948, L7, “community eventually” →community level and eventually

Reply: Revised accordingly.

(7) Comments: P9948, L18, “we address” →we try to address

Reply: Revised as per suggested.

(8) Comments: L19, across→with

Reply: Done.

(9) Comments: L22, were→can be

Reply: Revised.

(10) Comments: P9950, L5, Specify the area of quadrats after 5-30 quadrats

Reply: We have reorganized the sentence for clarity.

(11) Comments: L12, add “parts’ after “The aboveground”

Reply: Done.

(12) Comments: L17, plant materials→samples

Reply: Revised accordingly.

(13) Comments: L25, as→consist of

Reply: Have done.

(14) Comments: L26 measurement→be measured

Reply: Done.

(15) Comments: P9951, L2-4, The sentence “According to… measurements” should be changed into “Five methods were used to measure leaf area in accordance with the leaf morphologies”.

Reply: Revised as suggested.

(16) Comments: L6, “the sum weight of the” →the sum of

Reply: Done.

(17) Comments: P9952 L5, determined→involved

Reply: Revised as suggested.

(18) Comments: P9957L23, across→with

Reply: Done.

(19) Comments: P9958L17-20, deleted the sentence “Most… 2002)”

Reply: We have deleted the sentence as suggested by the reviewer.

(20) Comments: P9959L24, deleted the word “indirectly”.

Reply: Done.