

DIET'S DETERMINATION OF LARGE HERBIVORES

OF THE HIGH ARCTIC

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INTRODUCTION

Large herbivores in the High Arctic live under extreme conditions and have a limited diet due to climate, which results in restrictions on the amount and variety of vegetation (1).

Both plants and animals in this Arctic desert have had to develop strategies to survive (2, 3). Furthermore, consequences of climate change in this area are beginning to be evident.

OBJECTIVE



Determine the diet of two large herbivores in the High Arctic, focusing on interspecific differences.

MATERIAL AND METHODS

- **Study area:** Hall area of the northern region of Greenland and Ellesmere Island of Canada.
- **Target species:** muskox (*Ovibos moschatus*) and caribou (*Rangifer tarandus*).
- **Technique:** microhistological analysis of feces.
- **Statistical analysis:** descriptive statistics and Fisher's test (interspecific differences).

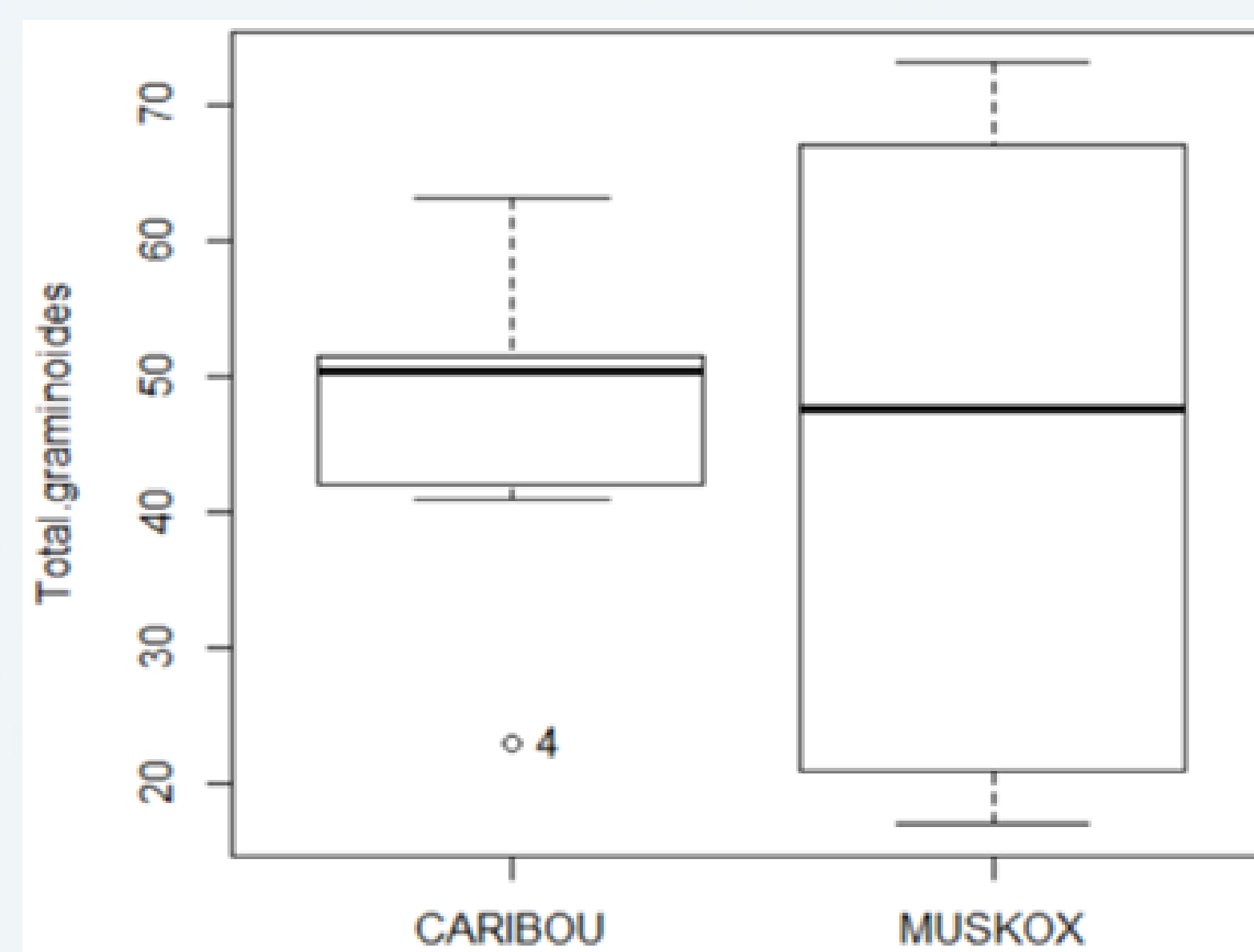
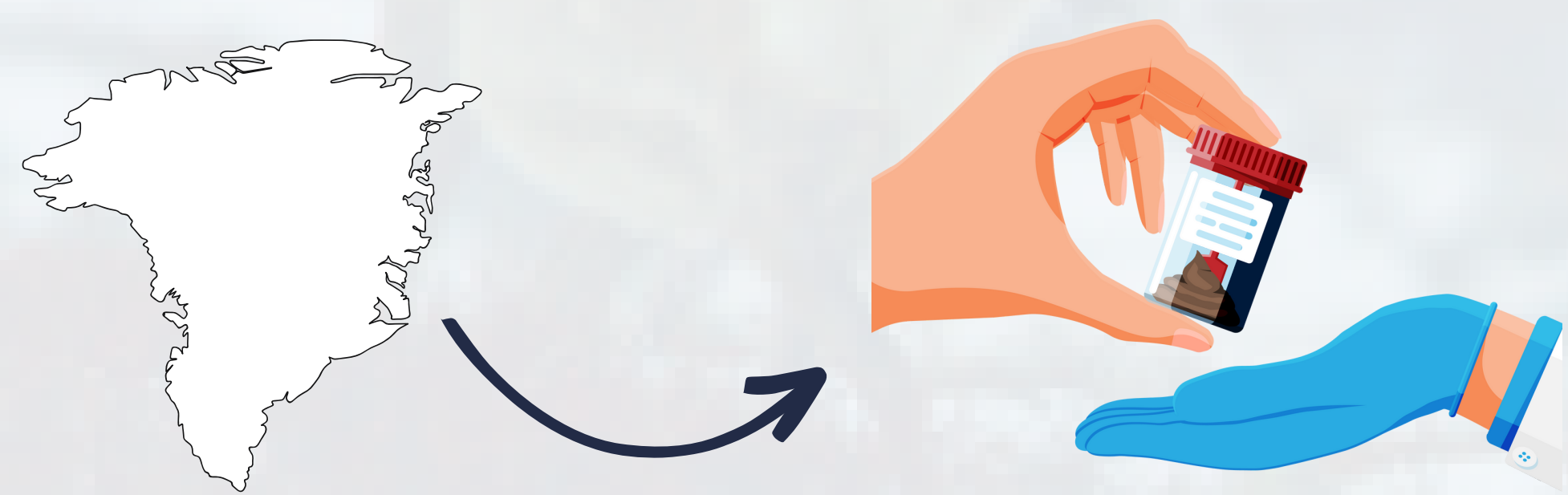


Figure 1. Box-plot of the mean percentage of total grasses.

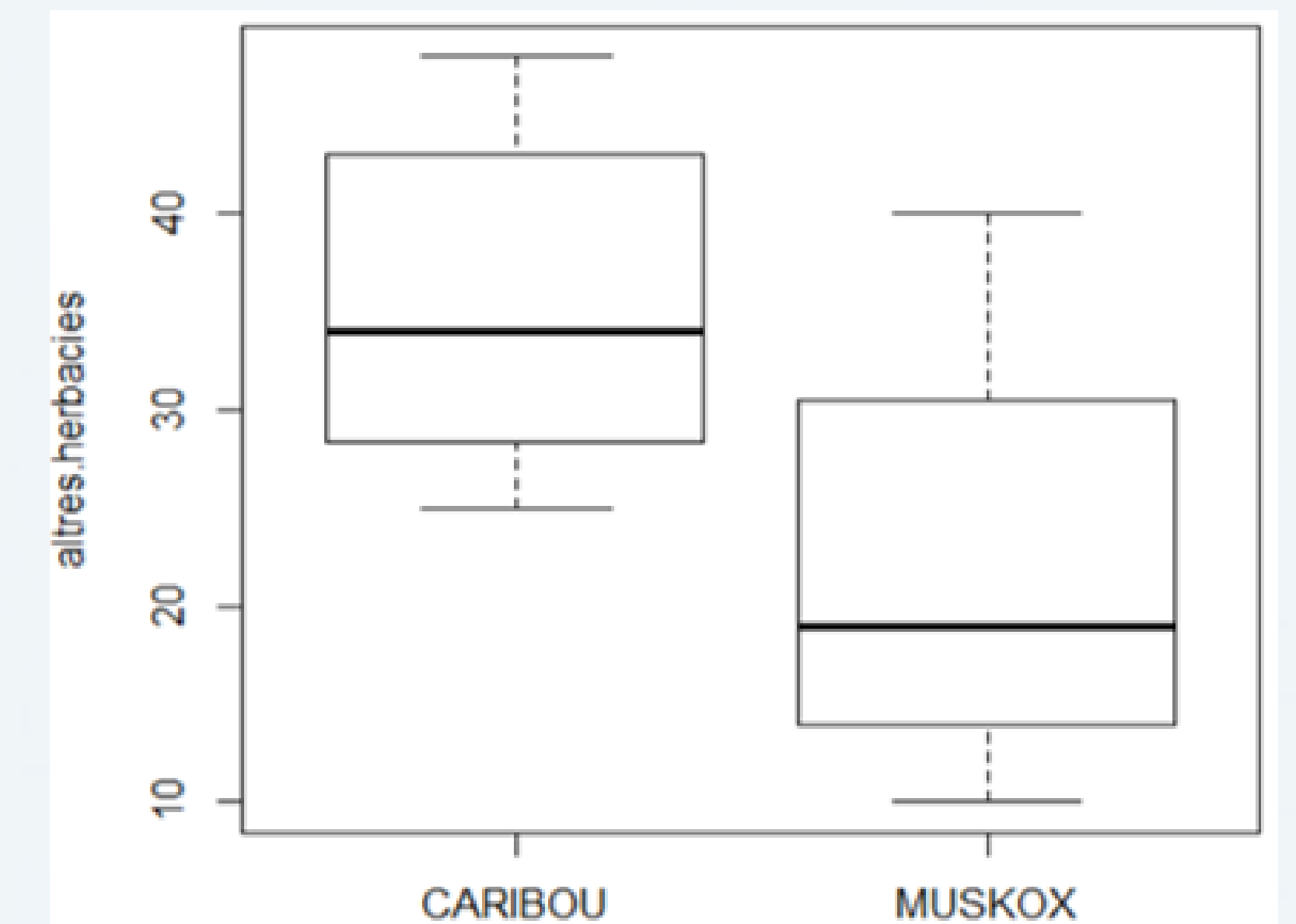


Figure 2. Box-plot of the mean percentage of non-grass herbaceous species.

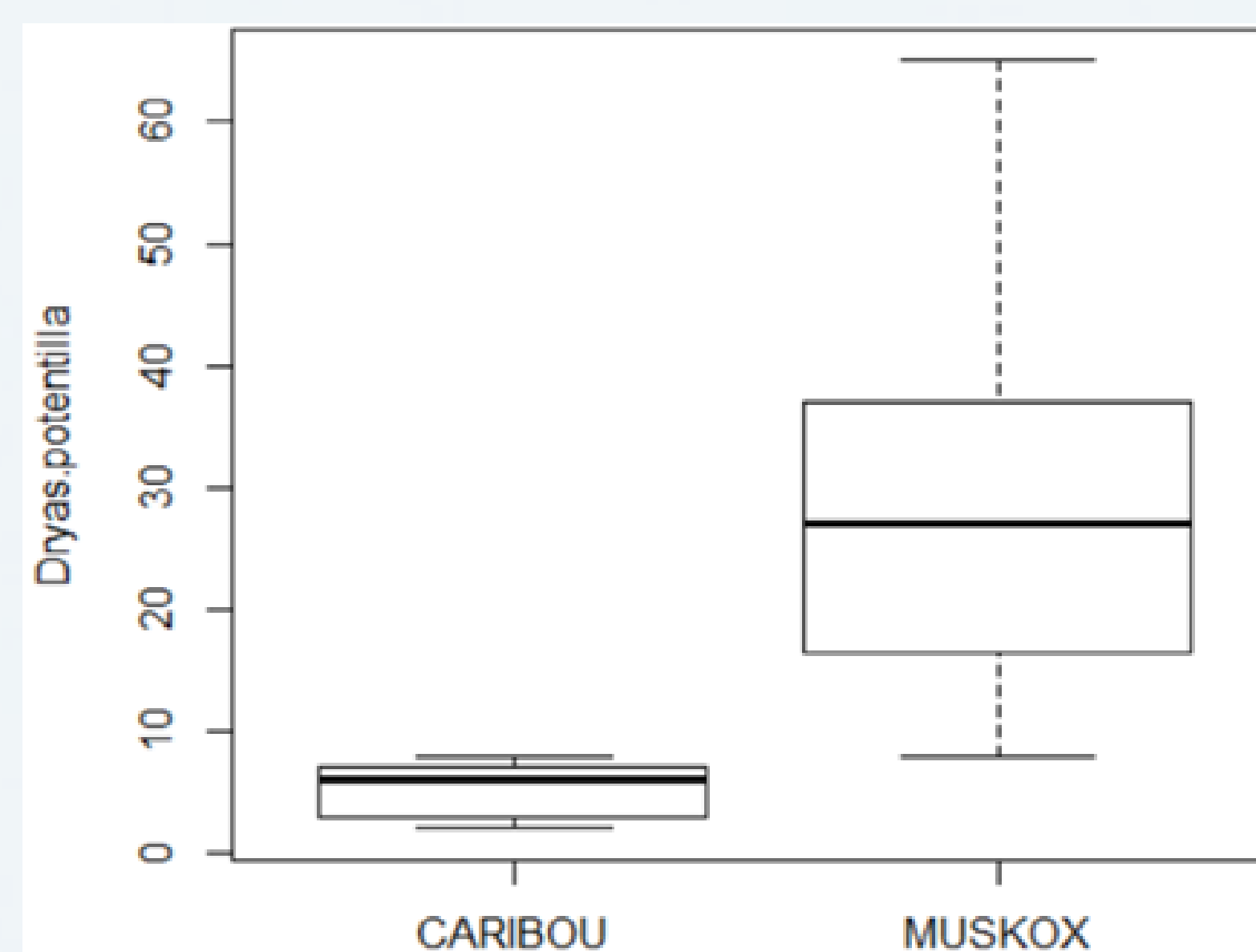


Figure 3. Box-plot of the mean percentage of *Dryas/Potentilla*.

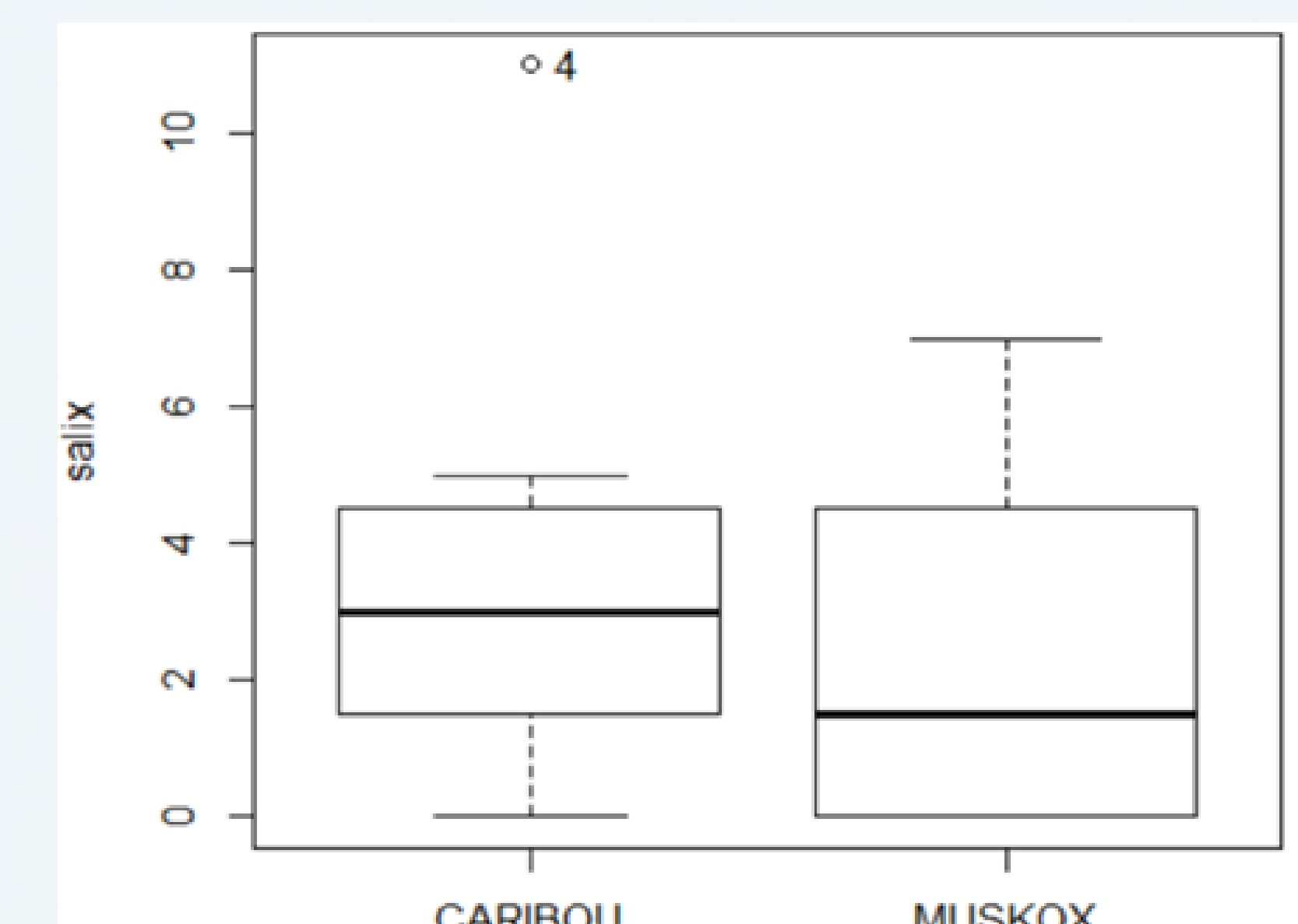


Figure 4. Box-plot of the mean percentage of *Salix artica*.

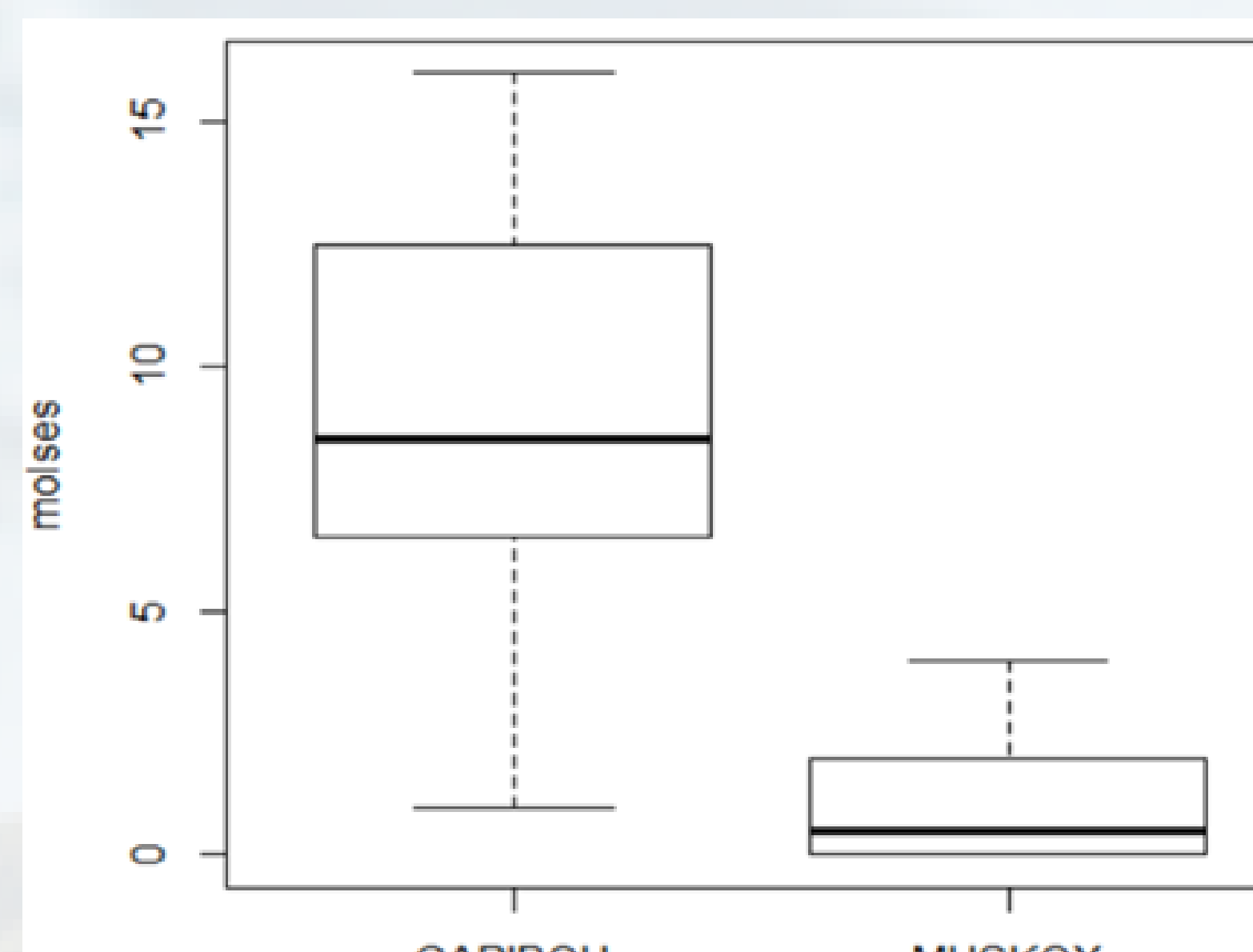


Figure 5. Box-plot of the mean percentage of mosses.

| Groups of plants | p-value |
|-------------------------|------------|
| Total grasses | 0,09459 |
| <i>Dryas/Potentilla</i> | 0,00003165 |
| Other herbaceous | 0,7331 |
| <i>Salix</i> | 0,5481 |
| Mosses | 0,01084 |

Table 2. Fisher's exact test results.

Our results showed a high consumption of grasses and other herbaceous plants and a poorly ingest of *Salix arctica*.

RESULTS

Table 1. Statistical summaries with the average percentage of different groups of botanical species and their standard deviation, separated by animal species.

| (%) | Caribou (Ellesmere area) | | Muskox (Hall area) | |
|-------------------------|--------------------------|----------|--------------------|----------|
| | Mean | σ | Mean | σ |
| Total grasses | 46,71 | 11,63 | 45,125 | 23,38 |
| Other herbaceous | 35,46 | 8,59 | 22,13 | 10,95 |
| <i>Dryas/Potentilla</i> | 5,2 | 2,36 | 29,25 | 17,97 |
| <i>Salix arctica</i> | 3,63 | 3,38 | 2,38 | 2,67 |
| Mosses | 9 | 4,72 | 1,13 | 1,55 |

DISCUSSION AND CONCLUSION

Facts discussed on the project suggest that these animals follow an opportunistic feeding depending on the availability of plant biomass in the specific moment. There is a good distribution of resources between both species due to behavioral differences. These finding highlight the need for further studies to better understand these ecosystems and their changes.

REFERENCES

1. H. Meltotte et al. (2015). Arctic Biodiversity Assessment – Status and trends in Arctic biodiversity
2. Henry P. Huntington et al. (2004). Conservation of Arctic flora and fauna.
3. Lin et al. (2019). Biological adaptations in the Arctic cervid, the reindeer (*Rangifer tarandus*). Science, 364(6446).

