

REPORT ON IMPROVEMENT OF ALPINE MEADOWS AND ASSESSMENT IN THE JARIPHUSA AND WANGJILA REGION OF THE PARK.

1. Introduction/Background

With the dwindling of the nomadic yak herding communities in recent years, the alpine meadows/grassland once used as pastureland is gradually replaced by the rapid growth of *Juniper* bushes by developing lateral branching spreading over maximum open space from as low as the ground level coupled with other pioneer shrub species of *Rosa sericea* and *Berberis asiatica*, within which no grasses could grow. The places such as Wangjila, Maniting, Jariphusa, Geloji, and Yakchu are often used by the yak herding communities either for summer and winter grazing grounds or while on transit during migration. However, the diminishing trend of the grassland due to encroachment by *Juniper* bushes and other shrub species in the region has not only left the few yak herding communities who still use this grassland to graze their yaks worried, but also deteriorated the natural habitat for the wild herbivores which constitute main prey species for the thriving tiger population in the region. This region is an important grazing land not only for yaks, sheep, and horses but also for wild ungulates.

In order to maintain the perpetuity of the grassland, the park management with fund support from Bhutan for Life in the year 2020 has carried out interventions focusing on the activity of improvement works of alpine meadows by de-branching the spreading *Juniper* bushes piloting from Wangjila and established permanent sample plots to assess the impact of *Juniper* bushes on natural grassland, to carry out a pilot project of de-branching the *juniper* growths and comprehend the results, and to recommend the possible intervention to resolve the issue of vanishing grassland.

As a continued work intervention, during this Financial Year (2022-2023), work was executed on the Improvement of Alpine Meadows and Assessment in the Jariphusa and Wangjila regions of the park. The main activities comprise the following:

- De-branching/pruning and thinning of *juniper* bushes in and around Jariphusa pasture/grassland to open up grassland for wild ungulates and domestic yaks;
- Assemblage/piling up of debris and carry out controlled burning to accelerate palatable native grasses growth; and
- Collect vegetation data, and soil & bio-mass samples from the established vegetation plot size of 1m x 1m for alpine grassland assessment at Wangjila.

2. Work execution

During the fieldwork, two groups were formed: Group-I and Group-II

Group-I: Alpine Meadow Improvement works:

Seven technical staff along with two power chain operators carried out alpine grassland improvement works by de-branching overgrown *Juniper* trees and thinning their saplings and bushy undergrowth, and clearing and cutting off understory growth of thorny *Rosa sericea* and

Berberis asiatica and other bushes to open up the areas to induce suitable space for the growth of palatable grasses in order to maintain and support the sustainability of profound alpine grassland for the mega population of herbivores (Himalayan musk deer, sambar deer, blue sheep, gaur, barking deer, serrow, Himalayan ghoral) and encourage and support grazing ground for the dwindling yak herding communities. Also carried out pilling/assemblage of debris (debris from de-branching, thinning, bushes, etc.) in appropriate places/spots for drying and control burning later on.

Group-II: Vegetation Assessment and Soil & Bio-mass samples collection:

Three technical staff were involved to collect vegetation data (trees & shrubs, regeneration, grasses) in the established plot size of 1m x 1m and recorded species details after duly identification of the grasses and plant species in the formats. A soil sample of 500 grams and bio-mass were collected in each plot in sub-quadrat segments. After collection, soil, and bio-mass samples were weighed using a spring balance to determine the wet weight and let the sun dry in the packed plastic bags. Before transporting the samples, the samples were grouped and packed in accordance with their plot serial numbers to avoid mixing the samples.

3. Achievements/Outcome

More than 10 hectares of alpine grassland that is previously used the land for grazing but later encroached by *Juniper* and other bushy undergrowth were opened up space to induce the growth of palatable grass species for the yaks and wild ungulates.

About 120 samples of soil and bio-mass were collected and transported to Park HQ for further analysis. More than 100 plots were completed and detailed information on vegetation, regeneration, and grasses was recorded in the formats. The data will be used to determine the impacts of *Juniper* bushes on natural grassland, de-branching interventions, and recommend possible interventions to resolve the issue of dwindling alpine meadows.

4. Recommendation/Suggestion

Field observation reveals that the vast prime alpine grassland is on the verge of intrusion made by *Juniper* growth coupled with *Rosa* and *Berberis* species, hence more areas need to be brought under alpine improvement interventions for a persistent thriving population of yaks and herbivores for all times to come.

Photographic shreds of evidence from the field



Photo: Before work execution



Photo: After completion of the work



Photo: Work execution



Photo: Piling and burning of debris

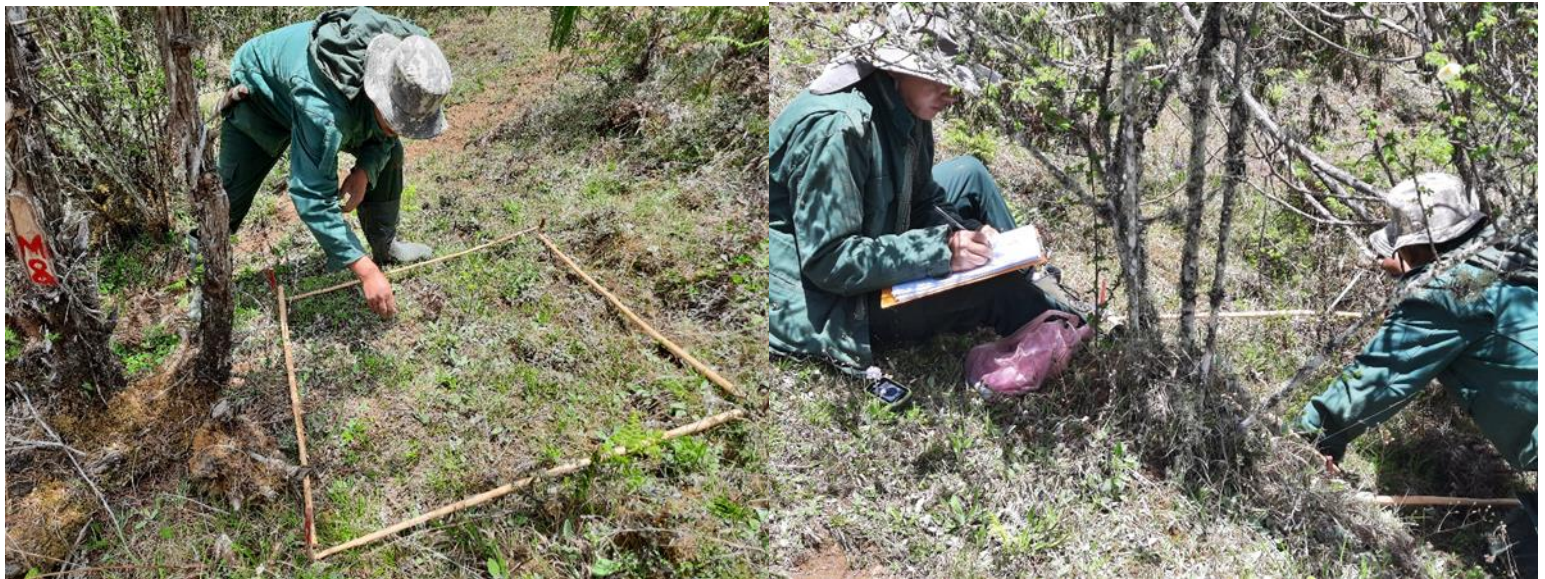


Photo: Vegetation sampling and recording



Photo: Soil & Bio-mass sample collection, sun drying and segregating into groups.



Photo: Journey towards working sites from the nearest road head