

Congress 55

Virtual event

29 June - 2 July 2020

*Advancing
rangeland ecology
and pasture
management in
Africa*

Grassland Society of Southern Africa

1966 - 2020



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TUESDAY, JUNE 30, 2020

Session 3: Communal rangeland dynamics, governance and restoration

11h30 to 13h00 SAST (GMT+2)

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Keynote
SPEAKER



Nicky McLeod
ENVIRONMENTAL & RURAL SOLUTIONS

THE SURPRISING
POTENTIAL OF
LIVESTOCK TO RESTORE
RURAL RANGELANDS
AND VILLAGE
ECONOMIES

PRESENTERS

1

Nicky McLeod

KEYNOTE ADDRESS: The surprising potential of livestock to restore rural rangelands & village economies

2

Igshaan Samuels

Long-term changes in pastoral mobility in a semi-arid montane region of SA: The role of policy and legislation

3

Toshpulot Rajabov

Impact of aspect on vegetation characteristics in the mountain grasslands of Tajikistan

4

Yvette Brits

Communal cultivated pastures: Successes and failures – lessons to be learned for a value-added future

5

Maud Sebelebele

"Ons Plante In Ons Manier": An ethnographic case-study of how herders in the Leliefontein Communal Area apply Indigenous Ecological Knowledge (IEK) to ascertain the "value" of fodder-plants

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Clement Cupido

The vanishing herders of Namaqualand: Implications for indigenous knowledge and rangeland management

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PROCEEDINGS

55th Annual Congress

of the drassland Society of Southern Africa

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Impact of aspect on vegetation characteristics in the mountain grasslands of Tajikistan

Submission Topic : Communal

Rangeland Dynamics, Governance and
Restoration

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Tajikistan grasslands are mostly mountainous and consist of high-elevated summer and low-elevated winter pastures traditionally managed through flock mobility. The vegetation structure and composition in these diverse landscapes is strongly influenced by several environmental factors, including topography, elevation, slope gradient and aspect. The current study investigates the influence of aspect on *Artemisia* species-dominated vegetation in summer and winter pastures in northern Sughd Province, Tajikistan. Two V-shaped dry valleys with north and south-facing aspects were selected in summer and winter pastures. In each valley, three monitoring sites were established along an elevational gradient with two contrasting aspects in each site. In total, 12 sites were selected. At each site, vegetation sampling was conducted during two peak biomass-accumulation periods of the year (May and November). Attributes of perennial vegetation (species composition, plant cover and density) were described using three 10 x 2 m quadrats at each sampling site. Green biomass of overstory vegetation was determined by randomly selecting and clipping of above-ground biomass of perennial shrubs. Standing-crop of annuals was identified within 1 x 1 m quadrats, randomly distributed with three replications. Effects of aspect were profound on species diversity and botanic composition of both pastures. North-facing aspects were dominated mostly by perennial semi-shrubs as *Artemisia persica* and a wide variety of annual species, whereas south-facing aspects were characterised by the monotonous and unpalatable annuals *Taeniatherum crinitum* and *Bromus tectorum* with perennial semi-shrubs being scarce. Perennial plant density was also higher on north-facing than on south-facing aspects for the winter pasture in November (130,700 and 22,000 plants.ha⁻¹) and in May (87,200 and 54,300 plants.ha⁻¹), while there were no significant differences in the summer pasture. For both pasture-types, and during both biomass-accumulation periods, the standing crop was higher ($p < 0.05$) on north-facing aspects in comparison to the south-facing aspects due to the specific dominant species with various life forms. In particular, the absence of annual species in November considerably increased the variability of herbage biomass between the two aspects this being very low on south-facing as compared to north-facing aspects. Thus, the difference in vegetation physiognomy was obvious at the end of the vegetation period when understory herbaceous species were senescent. Results from this study indicate higher seasonal vegetation diversity and carrying capacity in the north-facing compared to south-facing aspects, implying that aspect should be factored in when designing restoration and/or grazing management approaches. Due to higher resource availability in north-facing, the expectation is that vegetation will respond quicker when compared

to south-facing slopes, which would allow for animals to spend relatively longer periods in these slopes. Finally, considering the aspect-driven vegetation dynamics in mountainous ecosystems will lead towards improved management of these increasingly utilised grasslands in Tajikistan and similar ecosystems.