

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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WEDNESDAY, JULY 1, 2020

Session 6: 4th IR / Next generation advances in rangeland management

11h30 to 13h00 SAST (GMT+2)

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Keynote
SPEAKER



Louise Jupp
TERRECO AVIATION (PTY) LTD

**DRONE ON THE RANGE:
DRIVING BETTER
PASTURE AND
GRASSLAND
MANAGEMENT PRACTICES**



PRESENTERS

1

Louise Jupp

KEYNOTE ADDRESS: Drone on the range: Driving better pasture and grassland management practices

2

Anthony Palmer

Recognising the structure and functionality of novel landscapes arising from abandoned arable lands: remote sensing in assessing Land Degradation Neutrality

3

Gregor Feig

The importance of integrated long term environmental research infrastructures for rangeland management: facilities and data for the 4IR

4

Anisha Dayaram

National Vegetation Map 2021: Our goals and an opportunity for the GSSA to contribute to the structure of the next version

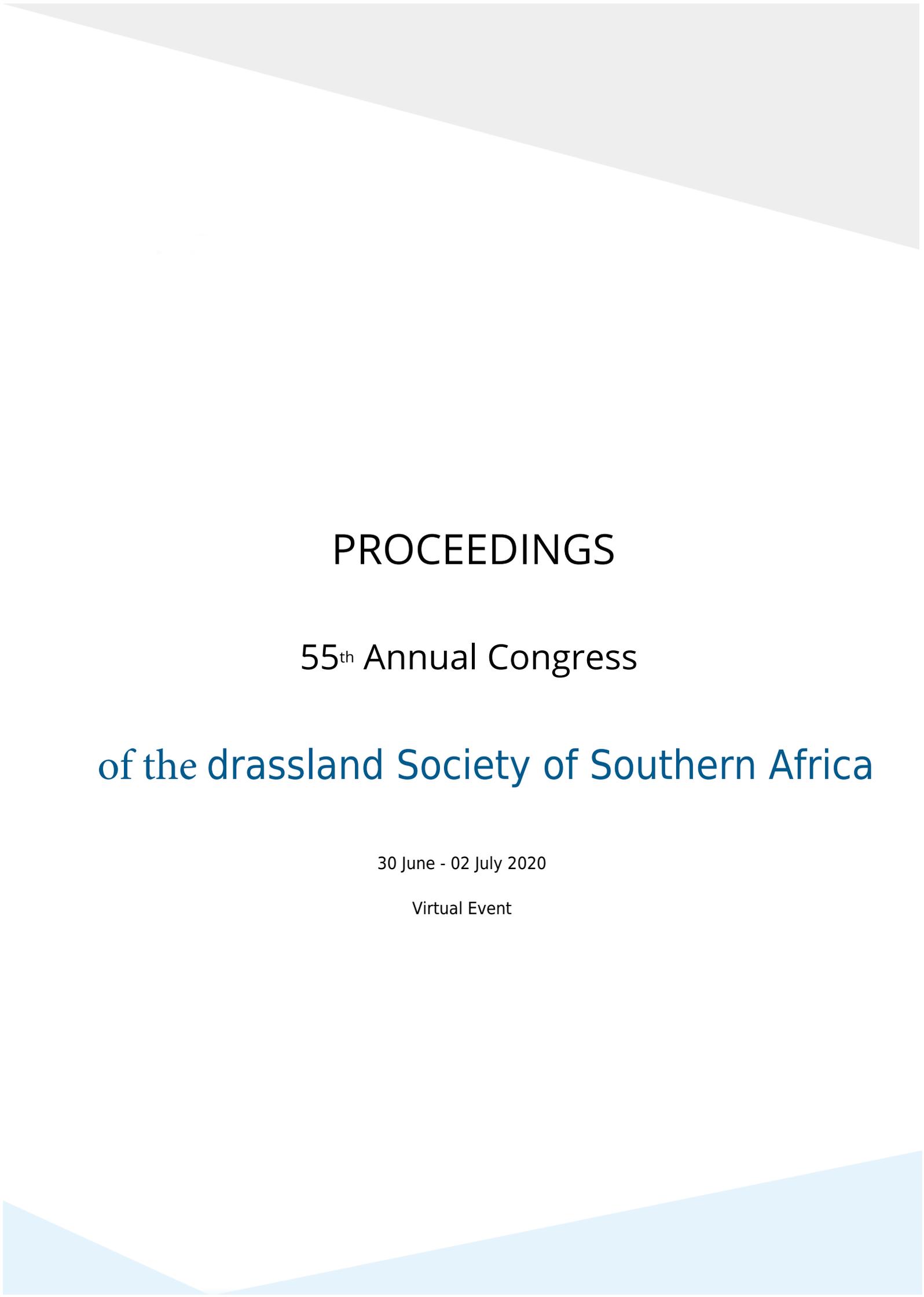
5

Sawsan Hassan

Estimating carrying capacity using crowd sourcing & VegMeasure under Covid-19

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PROCEEDINGS

55th Annual Congress

of the drassland Society of Southern Africa

30 June - 02 July 2020

Virtual Event

Submission ID : GSSAC55187

Estimating rangeland carrying capacity using crowd-sourcing and VegMeasure under Covid-19

Submission Topic : 4th IR / Next generation advances in rangeland management

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Rangelands represent the largest land cover in Jordan, comprising more than 80% of the total land area. They are the main rural livelihood, contributing to economic growth, poverty reduction, as well as holding cultural significance. However, these fragile ecosystems have been on a steady decline. To alleviate degradation several sustainable rangeland interventions have been undertaken. One of the key interventions is the implementation of a rotational grazing system. Unfortunately, with the prolonged confinement and widespread restrictions on mobility, scientists were not able to get to the site and conduct necessary fieldwork. Thus, the aim of this study was to explore innovative ways for estimating carrying capacity respecting the containment efforts involving quarantines due to Covid-19. The target site is called Majidyia which is located 40 km south-east of Amman and has an average annual precipitation of 150 mm. In mid-March of 2020, the Government of Jordan imposed total lockdown where travel was banned. Thus, all field visits scheduled during the peak growing season were cancelled. To overcome this barrier, available technologies based on remote sensing, and crowd-sourcing, coupled with ground-truthing data, were explored. Targeting the youth among the community, members who were familiar with modern technology (such as smart phones) were asked to take straight down images across the landscape while respecting social distancing. Each image covers a surface area of approximately 1 m². After taking each image a 1 m² quadrat was placed and the vegetation was clipped and weighted. Digital images were sent to scientists for image processing. The colours recorded by the digital camera were interpreted using VegMeasure[®] software to create meaningful classes in order to measure the percentage cover of foliage, leaf litter, and bare ground. Close-up images of the dominant plants along with local plant name were also used to identify the species composition. Since each image was geotagged, we were able to overlay these points on a map and perform inverse distance weighing interpolation giving us a general view (map) of the natural vegetation across the landscape. Vegetation cover and biomass were positively correlated ($p < 0.05$) with R-squared 0.85. Considering the estimated grazable biomass and the number of livestock owned by the community the carrying capacity was determined. During a crisis, networking and exchange of good practices and procedures with pastoral communities, especially youth, is essential so that real-time rangeland condition can be brought to the attention of the local authority. The proposed protocols offer a rapid, cost-effective and

easy to use technique for sampling vegetation while maintaining the needed social distancing and hygiene requirements. Monitored areas can be revisited each season or year to assess the spatial and temporal effect of natural and human-induced factors. At the same time, additional income could be generated through engaging of community youth. Moreover, encouraging dialogue with decision makers can help in addressing the specific needs of the agro-pastoralists. This, in turn, will ensure gaining more trust and achieving sustainable restoration objectives.